

Fighter Ace II

Pilots Guide



By Rich Teachout and David Pierot

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the ONLY way to fly online!

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Chapter 1 Introduction / Quick Start

Welcome to the unfriendly skies of Fighter Ace II! Strap one of WW II's mightiest fighters to your virtual backside and prepare for TOTAL WAR! Microsoft Fighter Ace is a premium, subscription-only game that hurls YOU into the cockpit in a massively multiplayer aerial melee guaranteed to get your heart pounding and adrenaline squirting through your veins. Best of all, you will be pitting your skills against REAL opponents in REAL time!

System Requirements

Minimum system requirements for Fighter Ace II

This configuration is the minimum required to experience Fighter Ace II. Using the recommended configuration (below) will drastically enhance game play.

- Multimedia PC with Pentium 200Mhz or compatible processor
- Microsoft® Windows® 95 or Windows® 98
- DirectX 6.1 or higher
- Super VGA (800X600) video card supporting 16-bit color
- 32 MB RAM or higher
- 100 MB of available hard disk space
- Super VGA (800 X 600) monitor
- 28.8 Kbps Internet access
- Microsoft® Internet Explorer 4.x, AOL 3.0 or higher, MSN 2.0 or higher, or Netscape 4.x
- Mouse or compatible pointing device

Fighter Ace II recommended configuration

- Multimedia PC with PII 300 MHz or higher, or comparable processor
- Microsoft® Windows 98
- DirectX 6.1 or higher
- Microsoft Direct 3D version 6.1-compatible Graphics Accelerator card, with 16mb Video RAM
- 64 MB System RAM or higher

- 100 MB of available hard disk space
- VGA monitor supporting 16-bit color and resolutions up to 1024 X 768
- 28.8 Kbps or greater Internet access
- Microsoft® Internet Explorer 4.x, AOL 3.0 or higher, MSN 2.0 or higher, or Netscape 4.x
- Mouse or compatible pointing device
- Force Feedback peripherals compatible to DirectX 6.1
- DirectX 6.1 compatible sound card with speakers

Signing up and logging in

Before you can take to the skies online, sign up and log in with the MSN Gaming Zone (www.zone.com). Follow the steps below.

- **Establish a Zone ID:** This can be done from anywhere on the Zone by clicking the **Services** link. A new window will open on the left side. Click **New Player Signup**. You can also sign up from the Fighter Ace page by clicking the link under the **What you'll need** heading. Follow the prompts to establish your Zone ID (it's FREE).
- **Download the Software:** You can download from <http://zone.msn.com/fightrace/downloads.asp>. You can also find it under **What you'll need** on the Fighter Ace page.
- **Install Fighter Ace:** When you begin the download, you'll be prompted to save the file to disk. Remember where you saved this file (just save it to your desktop for now). Once downloaded, you should see a **Fighter Ace Setup** icon. Double-click it, and the Fighter Ace installation process begins.
- **Subscribe:** From the Fighter Ace page, click **Subscriptions** on the left side of the screen. In the new window that opens, select **Fighter Ace** as the game. Enter your Zone screen name and password. When you click **Submit**, you will have the option to sign up for a free three-day trial, redeem any coupons you have, or buy a subscription to Fighter Ace (located at the bottom of the window).

Quick Start

Note: On any of the pre-flight screens you can right-click anywhere to access Help on that particular topic. You can also right-click any empty portion of the screen to bring up the Help index. While in flight, press **F1** to access Help. You can open a more extensive Help screen by pressing **CTRL+F1**.

If you have your Zone screen name and your Fighter Ace subscription, and want to dive right in, follow the steps below. Good luck!

1. Establish your Internet connection.
2. Start Fighter Ace.
3. From the Fighter Ace screen click **Play**.
Your web browser will open to the Fighter Ace main page and you will be prompted to log in to the Zone.
4. Log on to the Zone.

5. Once you are logged in, select one of the Arenas you'd like to fly in (we suggest starting with Arcade if you are a beginner). The next page will open, showing you the different rooms available in the category you selected.
 6. Select one of the rooms. A lobby window will open, showing the players currently logged in.
 7. Click **Fly Now** to launch Fighter Ace.
 8. From the **Headquarters** screen, select your country, and then click **Select Plane**.
 9. Select the plane and ordnance desired, and click **Fly now!**
- You will appear on a runway within your selected country. Good luck!!

The Main Screen

When you launch Fighter Ace II, the main screen will appear. From here you can select Play, Training, or Uninstall.

- **Play** This option launches Fighter Ace online. Your browser opens and the Fighter Ace web page appears for your logon. Once you've selected your game room and launched Fighter Ace, the Headquarters screen appears.
- **Training** This option takes you directly into Fighter Ace in offline mode. The Training screen appears. In this mode the Headquarters screen is not available.
- **Uninstall** Clicking this button causes Fighter Ace to be removed from your computer.

Game Commands

The following list shows all of the controls available in Fighter Ace II and their default keyboard assignment. You can change keyboard assignments in the Customize Flight Commands screen.

Flying Commands

Action	Keyboard Command	Joystick Command
Left bank	; (SEMI-COLON)	Stick left
Right bank	' (APOSTROPHE)	Stick right
Nose up	/ (FORWARD SLASH)	Stick back
Nose down	[(LEFT BRACKET)	Stick forward
Rudder right	X key	Twist stick right or press right rudder pedal
Rudder left	Z key	Twist stick left or press left rudder pedal
Trim controls	T key	
Center rudder	S key	
Flaps extend	F key	Button 5
Flaps retract	D key	Button 6
Engine 1 control	CTRL+SHIFT+E+1	

Engine 2 control	CTRL+SHIFT+E+2	
Engine 3 control	CTRL+SHIFT+E+3	
Engine 4 control	CTRL+SHIFT+E+4	
Engine on/off	CTRL+E	
Increase throttle	= (EQUAL SIGN)	
Decrease throttle-	- (MINUS SIGN)	
Max throttle	SHIFT+= (EQUAL SIGN)	
Min throttle	SHIFT+- (MINUS SIGN)	
WEP (War Emergency Power)	CTRL+W	
Landing gear	G key	Button 8
Dive brakes on/off	V key	
Wheel brakes on/off	B key	Button 7
Full wheel brakes	CTRL+B	
Pilot oxygen	CTRL+O	
Bail out!	ALT+E	

Sounds

Action	Keyboard Command	Joystick Command
Sound effects volume decrease	ALT+- (MINUS SIGN)	
Sound effects volume increase	ALT+= (EQUAL SIGN)	
Engine volume decrease	CTRL+ALT+- (MINUS SIGN)	
Engine volume increase	CTRL+ALT+= (EQUAL SIGN)	

Weapons

Action	Keyboard Command	Joystick Command
Fire all guns	SPACEBAR	Button 1 (trigger)
Fire machine guns	ALT+SPACEBAR	
Fire cannons	SHIFT+SPACEBAR	
Fire rockets	CTRL+SPACEBAR	
Drop bombs	ALT+BACKSPACE	
Drop aux. fuel tanks	CTRL+BACKSPACE	

Views

Action	Keyboard Command	Joystick Command
Cockpit view	F2	
Full screen	F3	Button 3
3-D cockpit	CTRL+F4	
Padlock view to enemy	F4	Button 4
Padlock view to teammate	ALT+F4	
External view - parallel to plane	F7	
External view – parallel to ground	F8	
Stationary view – repeat pan	F9	
Stationary view – w/ tracking	F10	
Bombardier	BACKSPACE	
External view – tank groups	SHIFT+F7	
Up	NUMPAD 5	
Left	NUMPAD 4	
Right	NUMPAD 6	
Back	NUMPAD 2	
Left back	NUMPAD 1	
Right back	NUMPAD 3	
Left forward	NUMPAD 7	
Right forward	NUMPAD 9	
45 degree up – any view	Add NUMPAD 5 to each view	

Visual Info

Action	Keyboard Command	Joystick Command
Name of player tag (screen name)– Show/Hide	ALT+F5	
Distance from you Tag – Show/Hide	CTRL+F5	
Country Tag – Show/Hide	CTRL+ALT+F5	
Player rank Tag – Show/Hide	CTRL+SHIFT+F5	
Squadron Tag – Show/Hide	ALT+SHIFT+F5	
Highlight airfields toggle	ALT+F3	
Ground grid	CTRL+F3	
Smoke trail length increase	SHIFT+F9	
Smoke trail length decrease	CTRL F9	

Altitude type toggle	ALT+A	
Speedometer – True/Indicated	ALT+S	
Turn / Flight scoring data: on/off	CTRL+S	
Onscreen messages – Move/On/Off	ALT+M	
Damage info	CTRL+D	
Change analog control in section 1	CTRL+1	
Change analog control in section 2	CTRL+2	
Change analog control in section 3	CTRL+3	
Change analog control in section 4	CTRL+4	
Change analog control in section 5	CTRL+5	
Analog controls – Show/Hide	CTRL+6	
Status lines full/short	ALT+D	

Windows

Action	Keyboard Command	Joystick Command
Quick ref screen on/off	F1	
Help on/off	CTRL+F1	
In-game Help	ALT+F1	
Communications log on/off	L key	
Player score on/off	ALT+L	
Countries score on/off	CTRL+L	
System report on/off	SHIFT+L	
Player roster	ALT+P	

Navigation

Action	Keyboard Command	Joystick Command
Radar	CTRL+R	
In-game map	M key	Button 2
Strategic map	CTRL+M	
Tactical map	SHIFT+M	
Padlock view- nearest enemy	E key	
Padlock view -nearest enemy in view	ALT+V	
Padlock view –teammate	W key	
Padlock view -next plane	. (PERIOD)	
Padlock view -previous plane	, (COMMA)	

Communications

Action	Keyboard Command	Joystick Command
Send to all	ENTER	
Send to enemy	7	
Send to team	8	
Predefined message to all	ALT+ENTER	
Predefined message to enemy	ALT+7	
Predefined message to team	ALT+8	
Direct message to player	CTRL+ENTER	
Move to Next Message/Airfield (map mode)	TAB key	
Move to previous msg/airfield (map mode)	SHIFT+TAB	
Gag player	Q key	
Un-gag player	CTRL+U	

Other

Action	Keyboard Command	Joystick Command
Film on/off	SHIFT+R	
Take a screenshot (saves as .bmp file)	CTRL+Z	
Pause (offline only)	P key	
Time compression (offline only)	CTRL+T	

Chapter 2 Fighter Ace Options

Once you've launched Fighter Ace, you'll choose a series of tabs to enhance your combat flight experience:

- **Headquarters** This screen contains the situation map and player roster, and you can select the country you want to fly for as well as your squadron affiliation.
- **Settings** Choose your settings for your Fighter Ace II program, and select the realism level you want.
- **Training** You can train for missions before you fly them. You can train online or offline, ideal for novices to get up to speed before entering an online arena combat.
- **Film** Replay recordings of missions you've flown.
- **Scores** See the breakdown of your scores, as well as a report of what you've done while in flight.
- **Exit** closes the Fighter Ace II program.

This chapter explains those options in detail.

Headquarters

The Headquarters screen is available only when you are online and logged into a Fighter Ace game room.

- **Quick Guide** The Quick Guide gives you brief bits of information about the current page.
- **Player Roster** The roster shows current players in the game by their Zone ID that they entered the game in. You can scroll through the list by clicking on the scroll arrows or clicking in the scrollbar area.
- **Select Country** This is where you choose the country you want to fly for. Click on the dropdown arrow to see your choices. Click on the country you want to fly for.
- **Select Squadron** You can select your squadron affiliation or select none if you wish to fly as a solo pilot. Important: If you are part of a squad, you **MUST** select the squad from this dropdown menu, or your score will **NOT** be added to your squads.
- **Select Plane** This will take you to the Select Plane screen. From this screen you will be able to choose any plane available for the country you have selected in the Select Country drop-down box.

In the Select Plane screen, you will find these options:

- **Aircraft** This screen shows the aircraft you've selected with the ordnance that is currently loaded. If you make changes to the aircraft via the Loadout dropdown box, these will be reflected in this view. At a glance you can see whether you have loaded rockets, bombs, or auxiliary fuel tanks and their placement on the aircraft.
- **Aircraft Selection dropdown box** You can choose the aircraft you wish to fly from the country you previously selected. Click on the drop down arrow and you will see the aircraft that are available to you. Click on the plane you wish to fly. When you click the "Fly Now" button below you will be in this airplane.
- **Ordnance Loadout** This control allows you to set up several important aspects of the aircraft's ordnance loadout as laid out below:

- **Rockets** Clicking in this box gives you a full complement of rockets if they are available for this aircraft. It is not possible to load less than a full load of rockets
- **Fuel Tanks** This check box will load auxiliary fuel tanks onto your plane if available
- **Bombs** Clicking this drop down box will give the bomb ordnance choices available for your aircraft.
- **Fuel Slider** This slide bar controls the amount of internal fuel (separate from external fuel tanks) carried in your plane's internal tanks. This fuel cannot be jettisoned like external fuel and must be used up.
- **Guns fire focus** This slide bar sets the distance at which your wing gun's fire is concentrated. If it shows that the guns are FIXED, it means that they are centerline-mounted guns on the fuselage of the plane and setting convergence is not required.
- **Flight Tag** This shows your flight ID that will be shown to other players in the game. It will be a composite of your Zone ID and squadron or other affiliation
- **Back button** This button will take you back to the previous screen.
- **Fly Now button** This button will launch your plane to the runway and into the game. Have fun and Check Six!
- **Plane Briefing** This box gives you information on the current plane selection. The aircraft will be displayed in the upper left hand side of the Plane Selection screen.

Settings

The following options are available from the Settings tab.

Display Settings

The Display area is in the upper-left corner of the Settings screen. In this area you have the following options:

- **Driver** This will display the currently selected video driver based one which rendering mode is selected. If you have more than one option available, you can select it by clicking on the dropdown menu here.
- **Rendering Choices** may select one of three possible rendering choices for your video card. Your selections will depend on your video card's capabilities as outlined by its manufacturer. Generally your game performance and visual appearance will be far better with either Direct 3D or 3Dfx (Glide) if you have a good hardware 3D card, than with the standard Software Acceleration. Whether you choose Direct 3D or 3Dfx (Glide) depends on your own card's capabilities.
- **Low Quality Terrain Textures** Check this box if your computer is at or near the minimum system requirements, as it may improve your frame rate.
- **Dynamic Lighting** This checkbox enables dynamic lighting. Dynamic lighting is a special function of 3D cards and makes all of the scenes that are rendered appear to be lit by a single source (the sun in Fighter Ace II for instance) as opposed to being bathed in a uniform light with no particular source
- **Screen Resolutions** These buttons will allow you to choose the screen resolution you see in flight, that is how finely the scenes are rendered
- **Ground Object Textures** This option controls the textures for all ground objects, buildings, factories, AAA emplacements and control towers. If you turn them on, the objects look much more realistic in all modes.

- **Propeller Visible From Cockpit** This option turns the visible propeller arc on and off.
- **Terrain Geometry Details Slider** This slider controls the level of detail that the terrain you fly over will be rendered at. The farther to the right you move the slider, the more detail will be rendered.
- **Smoke Length Slider** This slider controls the length of the smoke trail behind wounded aircraft in your view. It also controls the length of dust trails behind moving ground objects like tanks and smoke plumes over damaged factories and ground targets.

Arena Settings

The Arena area is in the Game Settings area of the Settings screen. On the Arena Settings screen you can create your global settings for offline play. Once you go online, the MSN Gaming Zone's server will automatically set most of these settings; depending on the arena you have selected. You can arrange these settings to replicate any online arena's settings for offline practice. In this area you have the following options:

- **Game Name** This indicates what game your client (your computer) is set for, like Free for All, Territorial Combat, etc
- **Game Type** This indicates what type of game your client (your computer) is set for, like Common, Training, etc.
- **Terrain Name** This indicates the type of terrain map that you will be playing on. Different maps are created for different arenas in Fighter Ace II and sometimes special maps will be created for particular events or contests.
- **Password** The password option is be used for private configurable games available from Fighter Ace II's website.
- **Score** The score option is used for private configurable games available from Fighter Ace II's Web site.
- **Limited Ammo** With this option you set the ammo to what would have been carried by the aircraft in real life, instead of unlimited ammo.
- **Limited Fuel** You can set the fuel to what would have been carried by the aircraft in real life, instead of unlimited fuel.
- **Start on Airfield** If you check this option, when the game starts all participants start on a runway instead of in-flight.
- **Oxygen Equipment** With this option checked oxygen equipment is required for the game. Above approximately 10,000 feet or 3,000 meters, you will have to press **CTRL+O** to turn on the flow of oxygen to your pilot. Otherwise your pilot's reactions will be slowed, ultimately leading to loss of consciousness and control of the aircraft. If the oxygen deprivation is severe your pilot may die.
- **Limit without oxygen** This option sets the upper limit for your pilots without oxygen. Beyond this altitude oxygen deprivation effects will start to appear.
- **Limit with oxygen** This option sets the absolute altitude limit for your pilot even with supplemental oxygen. This condition simulates the problems encountered by humans in unpressurized cockpits or without pressurized suits above certain altitudes.
- **Blackout and Redout** This option enables blackouts and redouts caused by excessive G-forces
- **Check Collision on Ground** When this box is checked, planes can collide and explode while on the ground. If it is not checked, planes may seem to pass through each other on the ground without harm.

- **Name Tags Available** With this option you see other pilots' nametags while in flight to aid in identification.
- **Distance Tags Available** With this option you see distance tags on other planes, which gives you range information.
- **Camp Tags Available** With this option you see Camp tags on other planes, which give you team affiliation information.
- **Rank Tags Available** With this option you see the ranks of the pilots of other planes.
- **Squadron Tags Available** With this option you see the squadron affiliation of the pilots of other planes.
- **Alliances** This option shows information on any alliances currently in progress. In a regular online game on the Zone, the countries checked are allied with your country and you should not shoot at any of their pilots or planes. In Private Games you can set the Alliances for the players in your game. The Alliances box represents up to 5 possible Alliances in columns 1-5. There is an additional column titled Out. Any countries in the Out column will be unavailable in the game, as will any planes of that country.
- **Cockpit Views Only** If you select this option the only views you will have from your plane will be cockpit views (similar to pressing F2 while in flight). Selecting this option in a Private Game will cause all of the participants of the game to have only cockpit views.
- **Show on Map** This control allows you to decide what planes you would like shown on your map view. You can select None, Enemy, Friend, or All.

Additional Settings Screen for Private Games

When you launch a private game, this screen will appear. In Private Games you can set up your own custom online arena via the MSN Gaming Zone. The following options are available in the Private Game screen:

- **Bombs and Rockets Available** Checking this box makes bombs and rockets available to the players in your Private Game.
- **Count Exit as Crash** Checking this box will cause any exiting player to be recorded as a crash as far as the game is concerned. This will usually mean that the player loses and cannot re-enter the game.
- **Repair Time on Airfield** This option determines how long players must sit stationary on an airfield before their planes are repaired and re-armed on landing. The setting is in numbers of seconds of time.
- **Damage when Crash is Kill** This option determines how much damage must be done to a player's plane before it is counted as a kill in the game. The setting is in percentage of damage that must be done to count as a kill.
- **Visibility**
 - **Bomber Range** This control determines the distance at which a bomber will become visible to the players in the game. It is set in feet or meters depending on your choice in the Other Settings screen of the Fighter Ace II game.
 - **Fighter Range** This control determines the distance at which a fighter will become visible to the players in the game. It is set in feet or meters depending on your choice in the Other Settings screen of the Fighter Ace II game.
 - **Tag Range** This control determines the distance at which an aircraft's tags will become visible to the players in the game. It is set in feet or meters depending on your choice in the Other Settings screen of the Fighter Ace II game.

- **Padlock Range** This control determines the distance at which your padlock view will lock on to another plane in the game. It is generally a bad idea to set the padlock view range beyond the visual range as your padlock will lock on to what appears to be empty air. It is set in feet or meters depending on your choice in the Other Settings screen of the Fighter Ace II game.
- **AI Quality** This drop-down control sets the accuracy and skill of the AI gunners in the game. This includes both Bomber Gunners in the air and Anti Aircraft Gunners on the ground. You can select from four different levels Novice, Regular, Veteran and Ace.
- **Tournament**
 - **Number of Lives** This control determines the number of lives each player will have in the game. It can be set from 1 to 99 lives for each individual player.
 - **Start Shoot Delay** This control determines how long the delay is before the game competition actually starts. The game will launch and the players will be able to take off and fly their planes but they will be unable to shoot at each other with guns or rockets or drop bombs. Each player will see a counter counting down the number of minutes until the competition starts. Once it reaches zero game will proceed as usual.
 - **Ghosting** If this item is checked, when the player has reached their life limit they will still be able to fly around and observe what is happening in the game but they will be invisible to all other players still playing. This is fun way for people to see what the outcome of the match is without interfering with the other players.
 - **Available Planes** This control determines what planes will be available to players in your game. You can disable the plane by clicking on it to highlight it and clicking Disable. If you change your mind you can re-enable the plane by highlighting it and clicking Enable. The planes will on be available in the countries of their origin, that is German planes will be available to those players flying GE, Japanese planes to those players flying JP, but you cannot make US planes available to those flying SU.

Flight Difficulty Settings

The Flight Difficulty Settings determine the realism level of the flight model you encounter while in the game. Once you go online, the Zone's server will automatically set most of these settings; depending on the arena you've selected. The exception is in private arena games, where you can set nearly all the parameters of the game yourself.

- **Flight Difficulty** With these options you can raise the flight difficulty to increasingly more challenging levels. When you click one of these buttons, a large number of the items below will change, each having a bearing on the challenges of that level of flight.
 - **Arcade** The simplest level and avoids most of the realism features such as blackouts, stalls and spins.
 - **Intermediate** Implements some of the realism features without having to deal with the complexity of full realism.
 - **Realistic** Brings you the ultimate flight challenge with all of the flight features found on real aircraft.
- **Features**
 - **Moments from Hits** If this box is checked kinetic energy from the hits from your opponents guns will be fed into your virtual airframe affecting your flight path and control inputs.

- **Weight of Asymmetrical Load** If this is checked, then when an external bomb, rocket or fuel tank rack is damaged and the ordnance is hung up, the asymmetrical load will affect your aircraft's performance. The weight and drag tends to pull your aircraft toward the side where the ordnance is stuck.
- **Wind** When this is set, there is a virtual wind at ground level that must be contended with, particularly in landing. For an indication of the direction of the wind check the windsock located on the field.
- **Realistic Flight Dynamic**
 - **Torque Effects** When this option is checked, the torque of your engine affects the handling of your aircraft and it will tend to pull your aircraft's nose to one side or the other depending on the direction of the rotation of the engine.
 - **Guns Backforces** When this option is checked, the firing of your guns will affect your aircraft by feeding recoil forces into the airframe. If the guns on one side of the plane are damaged, the guns backforces will be asymmetrical and tend to pull to one side.
 - **External Load Aerodynamics** When this option is checked, the external load carried by your aircraft will affect your aircraft's performance with increased drag and weight. The amount of drag and weight penalty will vary according to the type of ordnance carried.
 - **Compressibility** This option is checked, the stick does not change the aircraft's flight path significantly. You must throttle back and slow the aircraft down. Utilizing the aircraft's air brakes can provide additional slowing.
 - **Stall and Spin** If you select this option, your aircraft will be subject to spins
- **Limits**
 - **Flaps Stress Speed Limits** If this box is checked your flaps will have definite stress limits that they will be subject to.
 - **Touchdown Speed Limits** If this option is checked, touching down for landing at higher speeds may damage or destroy your landing gear, which may result in damaging or destroying your aircraft.
 - **Taxiing Speed Limits** If this option is checked, you will not be able to taxi over unpaved ground over certain speeds. If you exceed that speed your landing gear will snap off.
 - **Engine Over Speeding Damage** If this option is checked, your plane's engine will have definite stress limits. You will have problems with engine overspending if you dive at full throttle. You must be aware of this limitation or risk damaging your engine
- **Gear Speed Limits** If you select this check box you will not be able to lower your gear above recommended speeds. If you've deployed your gear at a lower speed and accelerate past that, then your gear will be damaged, stuck or destroyed. A
- **Airframe Damage**
 - **Airframe Damage due to G forces** Aircraft have definite stress limits for their airframes. Typically they cannot tolerate over nine positive Gs or three negative Gs. If you exceed these limits your airframe will fail, causing your plane to disintegrate.
 - **Airframe Damage due to Over Speeding** World War II aircraft airframes could be damaged by excessively high speeds. This level of speed is hard to attain in

anything but a dive. When diving use caution to not exceed your maximum speed.

Other Settings

- **Save to File** Here you can choose what Log items get saved.
- **None** No events or files are saved from the game.
- **Chat** This will save all typed conversations that go through the Fighter Ace II game server. This is handy if you want to keep track of what your friends and enemies have said. Often in the heat of combat, or if you have switched off your in-flight chat box, it's hard to keep up with the flow of chat. This allows you to look back and see what has been said.
- **Events** This will keep track of events that have been recorded such as kills, crashes and deaths as well as any server messages that have been sent to you by the Fighter Ace II server.
- **Both** This will record both events and chat.
- **Measurement Units** Here you can choose to display flight information in either the Metric or English measuring systems. All instruments and digital information systems will then display in those units.
- **Break Log Screen** When you select Log Screen while in flight (press the **L** key), this screen can be divided into two or three parts.
- **Two Part** This will divide the screen into Events and All Chat, for both your team and the enemy.
- **Three-Part** This will divide the screen into Events, Team Chat and Enemy Chat.
- **Country Colors** You can change the colors that the different countries display in. This affects their tags and chat.
- **Flight Keyboard Mode** If you fly by keyboard alone, these check buttons determine how your controls will work:
 - **Self Centering** If you select this mode the control will continue to move until it hits its extreme, as long as you hold the button down. When you release the button the control will move to its center or neutral position.
 - **Incremental** If you select this mode the control will move one increment at a time for each keystroke. The controls must be centered manually and will not return to its center without your input.
- **Default Colors** With this option the country colors revert back to their default settings.
- **Stall Buzzer** With this option you will get an audible stall warning whenever your airplane approaches stall.
- **On Screen Analog Controls** This determines whether your analog dials are transparent or solid in appearance. These dials are available to you in your Full Screen view in addition to the digital information that displays on the top of the screen

Control Settings

- **Joystick Calibration** Clicking this button starts the game's joystick calibration routine. The joystick controls your plane's pitch (up and down motion of the nose) and roll (twisting around the line of the fuselage) action.

Proper calibration is essential for good control of your aircraft. You should calibrate your in-flight control devices in Windows® first:

1. Select **Start**.
2. Select **Settings**.
3. Double-click **Control Panel**.
4. Select Game **Controllers**.
5. The Game Controllers window should indicate the correct control device and show the status as **OK**.
6. Click **Properties**.
7. Click **Calibrate** and follow the instructions there. If you have a rudder control device, make sure to check that box.

Once you have calibrated your settings within Windows, you can calibrate your control devices in Fighter Ace II.

1. Go to the **Settings** screen.
2. Click the **Joystick Calibration** button and follow the on screen instructions.
2. When you are finished will you get a message if the calibration was unsuccessful.

If you have rudder pedals and/or a force-feedback stick, follow the above procedure using the appropriate "Calibrate" buttons on the settings screen.

- **Force Feedback Effects** This option applies only if you have a force-feedback joystick. When you select this option, force feedback effects are transmitted back to your stick, so that you feel surface bumps while on the ground, experience the hits from enemy guns, and when fire from you guns.
- **Force Feedback Forces** This option applies only if you have a force-feedback joystick. When you select this option, force-feedback forces will be transmitted back to your stick, so that control forces get stiffer the faster you go, and the stick will vibrate as you approach stall. These are useful cues to let you know how your aircraft is performing.
- **Rudder Calibration** This option starts the game's rudder calibration routine. The rudder controls your aircraft's yaw axis, which is the left-to-right movement of the nose, particularly on the ground.
- **Rudder Deadzone** This sets the amount of free play in your stick before it starts to move the plane rudder. This is used primarily for those joysticks that make the rudder function move with the twisting of the joystick, such as the Microsoft® FFB Precision Pro or the standard Precision Pro. Experiment and see what works for your style of play.
- **Throttle Calibration** This option starts the game's throttle calibration routine. The throttle controls the aircraft's engine and its ability to climb.

Customize Flight Commands

On this screen you will be able to map key functions to different control devices like joysticks and throttles. You will also be able to reconfigure your keyboard controls to your own custom setup.

- **Scheme** This option shows all of the available, currently created command schemes you have created. The Default command scheme is the original command scheme shipped with Fighter Ace II. To create your own scheme, click your right mouse button on New.
- **New Scheme** With this option you can create your own personalized, customized command scheme. Name your scheme and then double-click any command keystroke or

joystick setting you want to change. When prompted, click the replacement keystroke you want. If the keystroke is already being used, you'll be prompted to use that keystroke for the command or use the original default one.

- **Delete Scheme** If you highlight an unwanted scheme and click this button the entire scheme will be removed. **USE THIS COMMAND WITH CAUTION.**
- **Undo Changes** Clicking this button before leaving this screen will undo any changes you've made and return to the saved scheme.
- **Commands** This option refers to all of the various in-flight commands that you can configure and customize.
- **Customize Replay Commands** With this option you can configure your replay commands that control your in-flight film and camera movements.

Audio Box

- **Sound Effects Volume** This slider controls the volume of all the sound effects in the game other than the engine volume.
- **Engine Volume** This slider controls the volume of the engine sound.
- **Discard Changes** Clicking this button will undo whatever changes you have made to the settings on this screen during this session.

Training Screen

- **Select Mission** This option selects the Training missions to be displayed in the Mission Selection Box and the Mission Description box.
- **Training Demos** This option selects for Training Demos to be displayed in the Mission Selection Box and the Mission Description box. These training films illustrate different combat maneuvers that are an essential part of your flight repertory. You can look at them from in-cockpit, or press F7 or F8 to get an external view of the plane.
- **Mission Selection** Choose the mission you want to fly by clicking its training mission and then click Select Plane. Each mission develops a different area of your necessary Fighter Ace skills. What exactly the mission will be working on is shown in the Mission Description Text Box.
- **Mission Description** Clicking this option shows the description of the mission shown in the Mission Selection Box. It will tell you if you must select a particular airplane and the ordnance load necessary to carry out the mission. It will also give you information that is helpful in the understanding of the mission profile or the techniques being illustrated.
- **Custom Free Flight** With this option you can fly offline without the necessity of any mission parameters or other planes or tanks in the arenas. You can select the type of terrain in the Arena Settings screen, using the Terrain Name drop-down box. This is useful if you want to practice your aerobatic skills or test aircraft performance offline.
- **Training Demos** This is where you can select Training Demos to be displayed in the Mission Selection Box and the Mission Description box.

Film Screen

- **Films Available** Click this option to see a list of Fighter Ace II films you can play.

To play a film

1. Select the title of the film you want to play.
2. Click **Play**.

—Or—

Double-click the film's title.

To stop the films press the **Escape** button.

Other films commands:

Action	Command
Enable out-of-plane camera commands	BACKSPACE
Fast forward	PAGE DOWN
Fast rewind	PAGE UP
Forward regular speed	RIGHT ARROW
Reverse regular speed	LEFT ARROW
Forward one frame at a time	UP ARROW
Reverse one frame at a time	DOWN ARROW
Take a screenshot	CTRL+Z
Out-of-plane view - external view: parallel to plane	F7
Out-of-plane view - external view: parallel to plane	F8
Rotate camera left/right	1 and 2 keys (keyboard) or use mouse for free panning.
Zoom in and out	3 and 4 keys (keyboard)
Move camera up and down	5 and 6 keys (keyboard) or use mouse for free panning.

- **Delete Film** With this option you can delete any unwanted films.

To delete a film

1. Select the film's title.
2. Click **Delete**.

Warning! Use this command with caution! Once a film is deleted it is gone forever.

Scores

If you're the competitive type, you'll want to know how you match up against the other pilots. Fighter Ace provides a comprehensive scoring system that keeps track of your career for you. Not only can you compare your scores with all the other pilots, you can track your squadron's performance can be tracked as well!

Aircraft Kills

Each fighter or bomber is assigned a different numeric value based on its overall quality. In addition, both pilot's ranks are taken into consideration when an overall score for a kill is calculated. The following two elements go into scoring an air-to-air kill.

- **Value of the plane** 100–200 for fighters, 600–700 for bombers.
- **Rank** Victims rank value is divided by the killers rank value, and then multiplied by 100. Example (Capt) / (LtCol) x 100= score bonus.

It is also possible to LOSE points. The following list shows the possible events that will cause you to lose points.

- **Crash** Lose the cost of the plane.
- **Pilot death** Lose 100 points.
- **Crash-land in friendly territory** Lose ½ the cost of the plane.
- **Crash-land in enemy territory** Lost 100 points plus the cost of the plane
- **Bail over friendly territory** Lose the cost of the plane.

In addition to an actual score, the number of actual kills and deaths are tracked for the pilot. Usually, if you engage an enemy plane, fire at it and shoot it down, you will receive the credit for the kill. However, different circumstances will dictate whether or not a pilot is given credit for shooting down an opponent. These circumstances are illustrated below:

- **Multiple attackers do damage to an enemy plane** The kill is awarded to the attacker who did the most damage to the enemy plane. If the other attacker did 20% or more damage as well, he or she will be awarded an assist.
- **If after you damage the other pilot and he or she successfully survives a crash landing in his/her own territory** No kill is awarded.
- **If your target goes down in enemy territory** You will be awarded the kill regardless (this is assuming you caused more than 20% damage before your target crash-landed).

Ground Target and AI (computer-generated) Kills

Each ground unit or structure is also assigned a numeric value. The score that you receive for destroying these units is equal to its cost value. If using bombs destroys a moving ground unit, the score is quadrupled.

Target	Score
Tank factory	300
Church	100
Fuel tank	50
Large ammo bunker	120
Plane factory	300

Ammo factory	300
Ammo bunker	100
Fuel factory	450
Smokestack	20
Rail yard	150
Hangar	150
Headquarters	100
Hardened fuel tank	100
Barracks	50
House	20
Truck	10
Shed	10
Hardened ammo bunker	150
Tanks	35–85

Rank

In Fighter Ace, you are promoted to higher ranks based on your overall score. Each arena tracks its own scores separately, so you won't lose your rank of Major in the Arcade arena when you try to fly in Territorial Combat for the first time. Here is a breakdown of each rank and what score it takes to attain them:

Rank	Score needed
Cadet (Cdt)	0–999
Sergeant (Sgt)	1000–1999
Second Lieutenant (2Lt)	2000–3999
First Lieutenant (1Lt)	4000–5999
Captain (Cpt)	6000–9999
Major (Maj)	10000–13999
Lieutenant Colonel (LCol)	14000–21999
Colonel (Col)	22000–29999
Brigadier General (Gen)	30000–46000

While you are flying, your pilot's crashes, kills, and deaths are displayed in the upper-right corner of your screen. You can toggle this information on and off by pressing the **S** key. You can also access more detailed information about your score by pressing **ALT+L** while in flight. This will show you your current and your overall score.

All of your pilot information is stored on the MSN Gaming Zone in the Profiles section. When you click Profiles, you will see your Zone name in a new window. By clicking the Ratings tab, you can display your overall score for the TC arenas (scores accumulated from the advanced TC are not

included here). From here you can click on Details in order to view a specific breakdown of your score in each arena that you have flown in.

You can also get pilot information from the Fighter Ace site by clicking the Ratings button from the menu on the left side of the page. From here you can look up pilots, as well as select how you would like the information sorted (by score, kills, etc).

In the detailed report of your score (whether in-game or from your Zone profile), you will see several categories. These are explained below.

Category	Meaning
Pilot kills	How many enemy pilots you actually killed. If a pilot bails out and safely lands in friendly territory, he will live to fight another day.
Pilot deaths	How many times YOUR pilot died in combat. Included in this total is how many times you bailed out and safely landed in enemy territory (it's the same as dying).
Lost planes	How many of your own planes you managed to destroy.
Fighter kills	How many enemy fighters you managed to destroy.
Fighter assists	If you and a comrade team up on an enemy pilot, the kill is awarded to whoever does the most damage. An assist is granted to a pilot who does at least 20% of the damage contributing to the kill.
Bomber kills	How many enemy bombers you destroyed.
Bomber assists	Same as fighter assists, but pertains to bombers.
Tanks	How many tanks you destroyed.
Ground units	How many other ground units such as AA guns you destroyed.
Buildings	How many enemy structures you destroyed.
Planes killed	The number of AI planes that you have shot down.
Kills in a row	How many kills you have currently with no deaths (remember you are also considered dead if you bail over enemy territory).
Current Ace	How many Aces you have accumulated. You gain an Ace each time you make five kills without dying yourself.
Score	Your overall score.
AI score	Your score against any AI-controlled units (usually tanks).
True ratio	Also known as Kills/Deaths ratio. The number of times you killed vs. the number of times you died.

Becoming an Ace

Historically, an Ace was a pilot who had shot down five or more enemy aircraft. In Fighter Ace, you become an Ace if you score five kills without being killed yourself (remember that even if you safely bail over enemy territory, you are considered dead or effectively removed from the war). Once you become an Ace, you get to keep the title until you are shot down. After becoming an Ace, you can go for Double Ace, Triple Ace, and so on. Every five kills you acquire without being killed yourself will add another Ace to your rating. Your kills in a row value resets to zero every time you leave the game and come back in; however, you will retain your Ace status.

As you fly, you will see that other pilots' tags may have one or more asterisks next to their names. Each asterisk represents one Ace, so watch out for the pilots with a whole row of them! Or if you're feeling up to the task, go after one and try to strip one of those Aces off of him.

Squads

In addition to being a great online combat simulator, Fighter Ace also offers a strong community setting. After you fly in the arenas a few times, you will no doubt start to notice familiar players. You may also notice that many of these players have the same prefix attached to their names. This usually means that these pilots are part of a squad—a group of pilots who have organized into a fighting unit.

Being part of a squad has many advantages. If you are a newer pilot and still learning the game, your squaddies can help you improve your skills, as most squads are formed by experienced players. Another big advantage is that if your squaddies are around while you are flying, they will probably give you priority if you call for help!

Many squads organize a certain time when they will all fly together. Some squads even go so far as to have weekly missions, complete with orders sent over email prior to mission day. A whole new skill set is required for real team play, and it can be very exciting and rewarding to accomplish your assigned task!

Finally, when you belong to a squad you will meet people from all across the country (or around the world for that matter). There are online flight sim squads that have been around for years and years and have their own traditions, customs, and history!

If you know the name of the squad you would like to join, you can petition the owner of the squad.

1. Go to the Fighter Ace main Web page at www.zone.msn.com/fightera
2. Click **Profiles** near the top.
3. In the new window that opens, click the **Teams** tab.
4. Enter the name of the squad, and select Fighter Ace in the box below that.
5. Click **Go**.

The squad (team) you are looking for should appear on a list.

6. Click the squad once.

You will see the team description and the owner's Zone name. Below, you will see a **Petition for Membership** button.

7. Click the **Petition for Membership** button to send a message to the owner; if your petition is approved, you will be notified.

Once you are active in a squad, you can choose to have your score added to the squad's score by selecting the squad from the drop-down menu in the **Headquarters** screen. Be careful though, if you are flying for your squad and you lose points, so will your squad!

Chapter 3 Flight Training

Now it's time to get you off the ground. The following information will get you familiar with the basic controls, views, and navigation tools necessary for an effective air combat experience. After you master the basics of flying in Fighter Ace, you may want to try out some advanced flying techniques.

Instruments

The instrument panels in each Fighter Ace plane look slightly different from each other, have different instruments, and not all the instruments on the panels are functional. What you'll find in most planes are the basics:

Instrument	What it displays
Altimeter	Altitude. The short needle indicates thousands of feet/meters; the long needle indicates tens of feet/meters.
Airspeed	Indicated airspeed in miles per hour or kilometers per hour, depending on what you have chosen.
Bank Indicator	The aircraft's position relative to the horizon.
Compass	Magnetic heading.
Engine Power	Engine throttle setting as a percentage.

In addition, at the top left of any View window you'll find more detailed flight instrument data in a numerical format. You can toggle this data on and off (along with scoring data that appears on the top right of the screen) by pressing the **S** key.

Display Abbreviation	What it Displays
S	Airspeed in mph/kph. You can also set it for Indicated or True Air Speed by pressing ALT+S .
A	Altitude in feet/meters. You can change this to Above Ground Level (GND), Above Sea Level (SEA), and Above Field Level (ARF) by pressing ALT+A .
T	Throttle as a percentage.
D	You can get a complete damage readout on your aircraft by pressing CTRL+D .
R	Rudder deflection in degrees.
Flaps	Flap position.
Ammo	Remaining ammunition, as a percentage (displayed only in limited ammo arenas).
Fuel	Remaining fuel, as a percentage (displayed only in limited fuel arenas).
Bombs	Number of bombs on board.
Rockets	Number of rockets on board.
G-meter	Shows number of Gs (force of gravity) the aircraft is experiencing.

The landing gear is down when “G” is displayed onscreen, and the wheel brakes (or air brakes in the Arcade arenas) are set when “B” is displayed. Use the **G** and **B** keys to toggle these options.

WEP: War Emergency Power

By the middle of World War II, most aircraft engine manufacturers had devised ways to temporarily boost the power output of their engines for short periods of time. Although the actual mechanism varied considerably (the Americans used an alcohol and water mixture injected directly into the cylinders, while the Germans favored a nitrous oxide injection), the effects were fairly similar. The engine would suddenly and briefly increase its power output by 5–10%, which was useful in the heat of battle for emergencies or escape.

It wasn't, however, without costs. Usually the engine was prone to detonation (a destructive condition) and in extreme cases, it could leave the engine in a near junk condition. In nearly all cases the engine would require a change of plugs at a minimum and on the other extreme might require a complete rebuild.

Fighter Ace II simulates this setting by providing a temporary boost of engine power on those planes that had such devices. NOT ALL PLANES HAVE WAR EMERGENCY POWER. On the real aircraft, triggering this power boost required a switch or a knob in the case of the German planes, or shoving the throttle through a wire stop on the American planes. Because of the variability of different throttle setups for computer games, a distinct key press triggers WEP. The default key command for WEP is **CTRL+W**, but you can modify this with your peripheral joysticks or throttle setups.

Views

Full view

Press **F3** for Full view, which gives you an unobstructed view of the airspace. Instrument data appears at the top of the screen, and while there's no gunsight, there are crosshairs to help you aim. Press **CTRL+R** to turn on your radar. It will appear as a small window at the lower-right of the screen. Full view makes it easy to find the enemy and see the action, so you'll probably use it more frequently than other views. You can look around in this view if you have a joystick with a hat switch, a programmable joystick or throttle device, or by pressing one of these commands:

Keyboard Command (Num Lock On)	View
1	View left rear
2	View rear
3	View right rear
4	View left
5	View up
6	View right
7	Left forward
8	View forward
9	Right forward

Pressing the **5** key in the number pad with any of the above keys makes any of these views a 45-degree upward view in the same direction. By using these views you can see and track anything

in a 360-degree view around and above your wings. This is invaluable in combat. Practice using these keys until you can track any airplane in any direction.

You can set up these views any way you want if your joystick or throttle device is programmable.

Cockpit view

Press **F2** for Cockpit view, which shows the interior of the cockpit with gunsight and instruments and gives you maximum information about the aircraft and its position. The game is more realistic in Cockpit view, but the cockpit obscures some of what you can see outside. This is the view you will get when you are in the Realistic arenas. In a Realistic arena, press **CTRL+F4** and the view will shift to a Realistic view that you can look around in, complete with cockpit obstructions. In the Arcade Arenas, you will get a Full view without any cockpit obstructions. From any view, you can still look around you using either the mouse or the numeric keypad keys.

Padlocked 3-D view

Press **F4** to lock a panning 3-D view on the nearest enemy. The cockpit will move around as the enemy aircraft does—it's as if you were turning your head to keep the enemy in view. If you maneuver the plane so that the cockpit stops moving, you will be following the enemy aircraft's moves.

Once you're in Padlocked 3-D view, press the (.) PERIOD key (Previous plane) and the (,) COMMA key (Next plane) to change which enemy your view is locked onto. Press the **E** key to lock your view onto the nearest enemy. Then you can press the **W** key to lock onto your nearest friend.

External views

View	Command	Action
Stationary camera view: pan	F10	Shows your plane from the viewpoint of a stationary camera outside the plane that pans as you fly by.
Stationary camera view: repeat pan	F9	Repeats the stationary camera view to cover your entire flight path.
External view: parallel to plane	F7	Shows your plane from the viewpoint of a camera positioned outside the plane and flying parallel to it. (The ground tilts when the plane banks.) Use the mouse or keyboard number keys 1–6 to move around the plane. Use this view to find out where other pilots are in relation to you, and to watch how your plane reacts when you maneuver it.
External view: parallel to ground	F8	Shows your plane from the viewpoint of a camera positioned outside the plane and flying parallel to the ground. (The plane tilts when it banks.) Use the mouse or keyboard number keys 1–6 to move around the plane.

Takeoff

Taking off is the first essential skill of Fighter Ace and is relatively straightforward and simple.

First note the gray 3-dimensional arrow in the middle of your forward view. This points down the runway in the direction that you will be taking off.

Start your engine by pressing **CTRL+E** or advancing your joystick's throttle. Turn onto the runway by activating your left or right rudder (**Z** or **X** key) control (or by pressing on your left or right rudder pedal). On some aircraft you may need to apply differential braking by holding the rudder in the direction you want to go and pressing the **B** key to activate the brake on that side.

Once you are pointed down the runway, drop your flaps by pressing the **F** key and advance your throttle to 100%. As the plane reaches flying speed pull back slightly on the stick and it will lift off of the ground. Pull the landing gear up by pressing the **G** key. Then bring up the flaps by pressing the **F** key.

Keep in mind that if your plane is heavily loaded it will be very sensitive to speed. Trying to make radical maneuvers at low speed and close to the ground can be bad for your virtual health.

Maneuvering

There are four basic maneuvers that any pilot should master:

- Straight-and-level flight
- Turning
- Climbing
- Descending

All other maneuvers, no matter how complex, are simply combinations of these basic four. These maneuvers are executed using the following controls:

Control Command	Effect	Keyboard Command	Joystick
Throttle	Increases/decreases thrust.	EQUAL SIGN (=) / MINUS SIGN (-) keys	Move throttle control.
Ailerons	Bank (roll) the aircraft left/right.	SEMICOLON (;) and APOSTROPHE (') keys.	Move stick left/right.
Elevator	Pitches the nose up/down.	FORWARD SLASH (/) [climb] and LEFT BRACKET ([) [dive] keys.	Pull stick back/push stick forward.
Rudder	Yaws the aircraft left/right	Z key [left], X key [right], C key [center].	Rotate stick left/right/center or actuate rudder pedals.

Straight-and-level flight

To fly straight, make sure that your wings are level (bank left or right as needed) and that your rudder is in the center position. To fly in a level position, watch your altimeter. Control your altitude by adjusting either the pitch (the position of your nose relative to the horizon) or the throttle setting. If you're descending, pull the stick toward you or add power. If you're climbing, push the stick forward, or reduce power.

Turning

An airplane turns by banking. In a bank, the plane starts to slip sideways, and the vertical stabilizer on the tail causes the plane to turn. To turn more efficiently, use a little rudder in the direction of the turn. Pull back slightly on the stick, too, and you'll bring the nose around faster. The greater the bank, the faster the turn (and the more back-pressure on the stick or added power you'll need to use to maintain altitude). Using the rudder by itself is a good way to make quick changes to your heading, but a sloppy way to turn. Bank and use the rudder together.

To maintain level flight as you turn, "paint the horizon" with the gunsight (or the cross hairs in Full view). In general, if the gunsight moves up relative to the horizon, you'll climb as you turn. If it moves down, you'll descend. Watch your altimeter!

Note: Not all joysticks have rotation capabilities to control the rudder.

Climbing

To generate more lift and climb, increase the throttle and pull back on the stick. Eventually your airspeed will start to decrease, so be careful—pull back too far and you'll stall!

Descending

To descend slowly, simply reduce your throttle setting. To descend more rapidly, push the stick forward and dive toward the ground.

Note: If you don't have a joystick and are unaccustomed to controlling a flight simulator with a keyboard, it may seem odd to use the [key to dive and the / key to climb. Think of it this way: the arrow keys are imitating the action of a joystick or flight yoke. Push away from you ([key) to point the nose of the plane down and dive, and pull back toward you (/ key) to bring the nose up and climb.

Landing

With so many enemies to shoot, why would you ever want to take the time to land in Fighter Ace? For repairs! Put the plane down on an airfield (in Team Combat or Territorial Combat, make sure that it's your own team's airfield!), and all damage will vanish. In the Realistic Arenas, you can also replenish fuel and ammunition.

The secret to a good landing is a good approach. Here's how to get your plane down in one piece:

Procedure	Keyboard Command	Joystick Command
1. Locate an airfield (in Team Combat or Territorial Combat, look for your camp's color).	ALT+F3 (turns runway highlighting on and off) M key (displays map)	Button 2 (displays map)
2. Line up with the runway visually about three miles out, at 1,000 feet or so on the altimeter. (One grid square on the map).		
3. Reduce the throttle to about 50%, and slowly (don't climb!) pull the stick toward you to bleed off your airspeed. If you're flying in a Realistic Arena and you don't slow down, you may damage the gear and flaps when you extend them, or they might refuse to extend. The maximum extension speeds are different for each plane.	- (MINUS SIGN)	Move throttle control
4. When you've slowed to below 140 mph or so, lower the landing gear and start a shallow	G key	Button 8

	descent toward the runway.		
5.	Extend the flaps to further decrease your airspeed and increase your angle of descent.	F key	Button 5
6.	Use the throttle to control the descent rate, and the stick (elevator) to control airspeed. Maintain 100–120 mph on final approach. The end of the runway should stay in the same place on your windscreen. If the end of the runway appears to move down the windscreen, decrease power: you're too high. If the runway seems to move up, add power: you're too low.	-/+ (throttle) / key or [key (elevator)	Move throttle control Pull/push stick (elevator)
7.	At an altitude of about 20 feet, cut the throttle, and then flare by pulling the nose up slightly.	/ (FORWARD SLASH)	Pull stick toward you
8.	After touching down, apply the brakes.	B key	Button 7.
9.	Use the rudder to turn while taxiing.	Z [left], X [right], C [center]	Rotate stick left/right/center. Be careful: If you taxi off the runway while moving at more than 37 mph, your plane will explode!

Chapter 4 Navigation

To shoot your enemies down, you need to find them. Here's how to navigate in Fighter Ace.

Find the action

Long curving bands of colored dots visible over long distances indicate tracers from gunfire. Looking for a fight? Head toward the tracers and add to the mayhem. To maximize the visibility of other aircraft, turn on their Distance (**CTRL+F5**), Name (**ALT+F5**), and Camp (**CTRL+ALT+F5**) tags. If you can't find the action, press the **M** key to take a look at the map.

Use the map

It may not be suitable for framing, but it'll get you where you want to go. Fighter Ace uses two different maps: the Tactical and new Strategic map.

The Tactical Map

To use the Tactical Map, press the **M** key at any time to access a map of the Arena you're flying in. Your aircraft appears as an "X" and has a white line in front of it that indicates your direction of travel. The length of the line reflects your plane's horizontal movement. Climb or dive, and the line will shorten. Other aircraft are represented by "+" symbols, color-coded by camp.

The top of the map is north. Use the map to determine a heading, then use your compass to steer you in the right direction. To increase map detail, press **CTRL+PLUS SIGN (+)** on the numeric keypad. Decrease detail by pressing **CTRL+MINUS SIGN (-)** on the numeric keypad. Quickly maximize the map by pressing **CTRL+*** (ASTERISK) on the numeric keypad). Looking at the map at different levels of detail is especially useful as you approach and engage in a dogfight—it's an easy way to keep track of the enemy's whereabouts.

The Strategic Map

This map gives you a vital tool for keeping abreast of the fast moving action of Fighter Ace II. The map shows factories, airfields, a railroad stations, which will be shown as icons if you zoom in on the map by pressing **CTRL+PLUS SIGN (+)** on the numeric keypad. It also shows other interesting terrain features, such as rolling hills, mountains and lakes, which help you navigate. The fields are spread out further, allowing players to gain altitude, which changes the performance dynamics of many of the planes. The strategic map also shows attacking and defending tank groups—their routes are represented by colored lines. Players can shift from one runway to another by selecting a map and pressing the **TAB** key.

Use your radar

In Full view, press **CTRL+R** to turn your radar on. The display appears as a small window at the lower-right of the screen. Keep the radar display on at all times to help you keep track of other planes during a dogfight, and to avoid the embarrassment of running into your teammates.

The radar screen is oriented so that the area above the white dot is the airspace in front of you and the area below the white dot is the airspace behind you. Other planes are represented by dots, color-coded by country. Airfields show up as colored lines. At the top of the radar screen is your magnetic heading.

Note: Radar is only available in Full view.

Chapter 5 Communication

In Fighter Ace, you can communicate with your enemies, your teammates, or everyone at once. You can taunt your opponents, conspire with your friends, or ask the universe what's going on. There are two different communication commands: "Radio" lets you type in exactly what you want to say, and "Message" allows you to save time by choosing from a list of pre-created messages. Press **L** to see the Communications Log - a list of all the communication that has occurred since you entered the game.

In the Fighter Ace arenas, your communications range is limited. This range can vary between the different arenas (it can be set by the server), but the usual range is about 8 map squares (on your tactical map). Imagine a bubble surrounding your plane. Whenever another plane, enemy or friendly, flies into that bubble, they will be in communication range. For example: If the pilot named "Rapier" flies within your bubble, you will see a message that says, "Rapier is joining game". Keep in mind that it means that he is joining YOUR bubble (game), not that he is joining the game in general. He could be entering your bubble from any angle; in other words, he could be at 20,000ft and diving down on you!

Radio - To send a message to everyone, press **Enter** on the keyboard (not the numeric keypad). "Message to All:" will appear on the screen. Type your message, and press **Enter** again to send it to everyone (remember, only pilots within your 'bubble' will see it. To send a message to your teammates, press **8** (on the keyboard, not the numeric keypad). "Message to Teammate:" will appear. (**8** only works in Team Combat. In Free for All, everyone's an enemy.) Type your message and press **Enter**. Press **7** to talk to your enemies. "Message to Enemy:" will appear. Press **Enter** to send the message. (**8** only works in Team Combat. In Free for All, everyone's an enemy.)

Channels - In the upper right corner of your in-flight view, you will see *ETS 1234567890*. This represents your radio and what it is currently tuned to. The letters represent "Enemy, Team, and Squad", and the numbers are friendly radio channels. To toggle each one of them on or off, hold down the **C** key and press the desired key that corresponds with the channel you want to use. If a character in this display is white, it is on, if gray, it is off. For example; If you want to be able to see enemy transmissions, hold down **C** and then press **E**. The letter **E** will turn white, indicating that it is on.

Pre-Created Message - To send a pre-created message to everyone, press **ALT+Enter** on the keyboard (not the numeric keypad). A list of messages will appear on the left-hand side of the screen. Tab through the list to select the message you want to send (or simply type the number of the message), then press **Enter**. Press **ALT+8** (on the keyboard, not the numeric keypad) for a list of messages to send just to teammates, and **ALT 7** for messages only to enemies. (**ALT 8** only works in Team Combat. In Free for All, everyone's an enemy). Predefined messages can be altered to suit you by opening the Messages.txt file located in the Fighter Ace folder.

Chapter 6 Combat

Air Combat Maneuvers

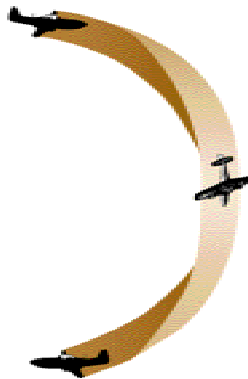
While all of the possible air combat maneuvers cannot be covered here, these few basic moves will form a solid foundation for you to work from. These are actual air combat maneuvers used throughout history, and can be applied in Fighter Ace.

Split-S

The Split-S is designed to head you in the direction opposite your initial line of travel. This maneuver has an advantage over the level turn in that it radically redistributes your energy, either potential in the form of altitude, or kinetic in the form of speed. The key is where and when to use them.

To perform the Split-S, follow the steps below:

- Push your stick over to one side, causing your plane to roll over until you are upside down.
- Pull back on your stick, which will cause you to perform a half loop.



If you perform the maneuver properly, you'll be traveling in the direction opposite your original line of travel, but at a lower altitude. You'll also be traveling faster, as you will have converted some of your altitude to speed.

Immelmann

The Immelmann (named for the WWI German ace Max Immelmann, who is credited with its invention) is the exact opposite of the Split-S. It is also designed to reverse your direction, but caution should be exercised not to try this maneuver when the enemy is close behind you. Start in level flight and pull back on the stick, performing the first (upward) half of a loop. At the top, roll until you are upright.

Follow the steps below to perform an Immelmann:

- From level flight, pull back on the stick and climb until you are upside down (inverted).
- At the top of the loop, roll until you are right side up.

You are now traveling in the opposite direction, at a slower speed but higher altitude.



It's best to extend well away from any possible shooters and then use the Immelmann to reverse back into the fight while putting some of your speed into the "energy bank" by converting it to altitude. The Immelmann is a handy tool for those fighter planes that climb well. By extending the climb portion of the half loop, one these fighters can cause an attacker to futilely chase them up; then when the enemy falls away, they loop over onto the enemy's tail.

High Yo Yo

The classic air combat problem is, to shoot the other guy and not get shot yourself. This is far more difficult than it seems at first. A new Fighter Ace flyer often thinks that the only way to get a good shot is to fall in on someone's six and fly around behind them until they're lined up. Beginners in slow-turning planes may find themselves entering a series of nose-to-nose head-ons, as neither side is able to get on the other's six. But there is another, better way.

The objective here is to pull up out of gun range and begin a series of slow speed turns, follow the steps below:

- Pull back on the stick and turn in the direction that your opponent is turning.
- As you pull up, roll slightly into the target so you can look down your wing at him, making sure that he is continuing his turn. As you are slowing and climbing, you are gaining altitude, which can be transferred into speed (the Virtual Energy Bank).
- At the top, when your speed has dropped to just above stall speed, roll until you can look at your opponent through the top of your canopy.
- Pull back on the stick and begin dropping back down, aiming your crosshairs at the point in space where your opponent is about to fly through.
- As the enemy plane gets crosses your view, you will be able to fire off a short burst at him (this type of shot can be lethal since his entire canopy is exposed to your gunfire).
- Repeat as necessary until your opponent is dead.



Using this tactic, you can kill any tighter-turning opponent. It helps to have a steady eye and excellent shooting abilities. If you don't kill them on the first pass, set up and repeat until you get the bandit!

Lo Yo Yo

You are in trouble. You're slow and the enemy is moving faster and closer to the corner rate, passing through more degrees of arc per second than you are. Your opponent might even be a little above you. Within three or four turns, they will be on your six with guns blazing. By the time you accelerate in level-turning flight, you'll be pushing up virtual daisies. If you don't move quickly, Ace, this flight is going to be over. What do you do?

- Accelerate by going nose-low until you read your best turning speed (corner speed, usually between 160 and 210 mph).
- Once there, try to turn until you have generated enough lead to point well ahead of the enemy's present position.
- Pull back up for a shot as needed.

You trade altitude (potential energy) for speed (kinetic energy) and then trade it back for position. Though it may not be immediately apparent, it is a fact that airplanes turn better at different speeds. You have no doubt encountered the situation where you have gotten too slow (like at the top of a climb) and found that you couldn't maneuver very well. The speed that airplanes turn best at is their "corner" speed. Below that, they don't turn as well, and above that, G limits come into play (particularly in realism). There are other variations on the Low Yo-Yo. You can go nose-low to gain speed, start turning, pull till you are in pure pursuit, then pull up and turn hard. As you slow, your turn radius will tighten. If you have timed everything correctly, you'll have a shot.

The main challenge of the Low Yo-Yo is resisting your own greed. If you try to gain too much ground too fast, you may find yourself in the lead, lining yourself up for your enemy's shot. Remember that you are generating lateral and vertical separation, and that can cut both ways—the same separation you want to use on your enemy can be used on you. So as you make this maneuver, keep a close eye on your opponents. If they start down after you, you'll have to start doing pilot stuff real fast. It is far better to make up your distance in a series of smaller moves than in one large one, because it's not as apparent to your opponent what is happening and you preclude a counter move. Also, you are less likely to overshoot and you have time to judge whether the move is working or whether more radical surgery is advised. As in all things Fighter Ace, moment-by-moment judgment and decision are critical to your continued virtual existence.

So keep the Low Yo-Yo in mind. It's a small but valuable tool in your Fighter Ace arsenal.

Lead Turn

We've all been there. You're tooling along through the beautiful virtual blue sky and you spot an enemy plane at the same time he spots you. You turn toward each other, heading for the classic merge. Now what? Typically both adversaries head straight for each other in a head-on, recklessly exchanging fire and risking collision. But the safest place from which to make an attack is the rear, as fighters have no guns there. The question is: how do you get to the six o'clock position when the enemy continually turns into you?

As you approach head-on, wait until the opponent is nearly in firing range, start a hard break turn, and then pull slightly up to confuse their aim. If your opponent doesn't recognize what has happened and flies straight for a while, you'll be able to turn onto his six.

A better variation of the Lead Turn is to turn slightly off of your opponent's flight path as you close head-on and then turn back onto his tail. For instance, as you close, turn slightly to the left to displace your flight path to his right. Then just before being in range, turn hard right to come around to his tail. Displacing yourself has a couple of benefits:

- It makes you harder to track as a head-on target.
- You set yourself up to arrive more directly behind your opponent when you make the hard turn.

A second improvement of this tactic is the Lead Chandelle. In this version, you turn off to the side in a climb as you approach. Your plane will be gradually slowing and putting altitude back into the bank. When you make your turn, your plane will have slowed, which tightens your turn radius. As you turn onto your opponent's tail, you'll get a gravity-assist in accelerating your plane.

If, on your approach, you are traveling slowly (you may have just come off an energy-depleting fight), you can also dive to one side to accelerate your fighter to its best corner speed. This way the gravity-assist will increase your turn rate. This one takes a finer sense of timing, because if you wait too long you may not be able to close to gun range.

The final and, in many ways, best variation of the Lead Turn is a Lead Loop. It has the advantage of putting more energy back into the energy bank. This maneuver makes it possible to keep watch on the enemy as you go vertical (by looking overhead), so that you can see if they make any radical changes in direction. Should the enemy try to counter your move, you can choose to disengage simply by rolling to meet them nearly head-on and putting the nose down and accelerating away. By the time he gets turned around, you should have an excellent head start. You also get the maximum gravity-assist on your dive back to his six. Like the offset Lead Turn, you can make the Lead Loop even more effective if you dive slightly before you merge. This will make you harder to hit in a head-on and reduce the likelihood of a collision, and you will pass under the enemy, making you invisible to them for a short but critical period of time. They may not even recognize that you have looped on them. That is, until it's too late.

The Lead Turn is unlikely to win the fight by itself, but it can give you a tremendous advantage in the initial engagement, which you can then exploit and expand upon as the fight continues. Keep that in mind as you continue to play and learn in Fighter Ace. Unlike standalone flight sims, where discovering a single technique can make you invulnerable, Fighter Ace is an ongoing real-time fight against a living, breathing, *thinking* opponent, who is unlikely to give up the ghost because you pull out your favorite move. An air-to-air fight can be compared to a long equation in which each move you make has a positive or negative value of varying intensity. The pilots who win are those who make fewer mistakes and whose totals come out higher than those of their adversaries.

Problems with the Lead Turn occur if you get too greedy and make your turn or loop too soon. If you are far too early, you'll end up turning your tail toward the opponent's guns. If you are only slightly early, you run the risk of tipping your hand and letting them know what you're doing. Ideally, the move comes as a surprise so that they have little or no time to counter it. The Lead Turn is the simplest of a series of opening moves that you can use to gain an advantage at the merge. This advantage can be squandered by subsequent maneuvering, so be ready to adjust your plan.

Gunnery

Air-to-air combat is the most difficult skill of any air combat game. While there is not room here to go into the strategies in depth (whole books have been written on the subject) we can give you a few pointers.

To get a lethal tracking shot, there are several factors you have to control as much as possible. First, keep in mind your target is moving. You don't want to aim for where it is, but where it will be! You have to anticipate where the other plane will be when you come into range and aim for that spot. Second, you must be in the target's plane of maneuver. The easiest way to do that, and the best measure of it, is to match the target's bank angle. (Match his wings; make your wings parallel to his wings.) When you do, you'll be in his plane of maneuver (in a position to be able to match his moves).

Steps for successful gunnery:

- Select your target while out of range. When approaching a furball (a tightly turning mass of fighting planes, also known as a bogey cloud), try to anticipate which one will have its

tail turned towards you when you come in range. Often this is the one who is opposite from you when you're about 5000–6000 feet away, depending on your closure rate.

- Aim your plane at the point in space where the plane should be when you come into range. Failure to do this will have consequences. If you are in the Arcade arena, your plane may not be able to turn hard enough to get a shot. In the Realism Arenas, you may have to pull so many Gs that you black out and cannot see your target. It's better to pull low Gs early than to have to make massive corrections just before you pull the trigger.
- Just before coming into gun range, match the target's bank angle (match the plane of maneuver). Pull what you estimate is sufficient lead to hit. It's better to have too much lead and have to relax the stick than to have not enough and have to pull too hard, too late. Start firing, and note the tracer stream. Is it going through his position? If not, adjust it by pulling fore and aft on the stick. Adjustments to the side are made with the rudder pedals.
- As you move to his six position, note your closure speed. To maintain a tracking shot you may have to slow radically to stay behind him. This must be balanced against the presence of other enemy fighters in the vicinity. If you slow to maintain your shot, you too may become a target. Getting hits doesn't do much good if you're dead!
- If you elect to maintain your speed and closure rate, you will eventually pass him. Keep firing as you close; the closer you are, the more telling the shots are. Also as you close, you need less and less lead to hit your target. Maneuver to avoid collision! As you pass, maneuver so that you don't become a target; that is, get out of his plane of maneuver! What worked for you before is now working for him. If you have the speed and no enemy plane is on your six, the safest thing to do is to use that speed to gain altitude and get out of his gun range.
- Repeat and set up your next shot. Try to select the same target over and over again.

By following this simplified gunnery technique, you should see your percentage of hits and kills increase. Just don't forget that you, too can become a target! And being a target can ruin your whole flight.

Air to Ground Attack

Dive-bombing and rockets

Next to air-to-air or fighter-to-fighter battles, ground attack is one of the most difficult skills to learn.

“Ground attack” refers to attacking buildings, tanks, trucks and trains with your aircraft. With all ground attacks awareness of the ground is paramount. Running into the ground at high speed is bad for your airplane.

In planning a ground attack mission it is essential to consider the target and choose your ordnance accordingly. If you are attacking buildings or trains, bombs are your weapon of choice. If you are attacking tanks or trains, rocket and cannon-armed planes have a definite advantage. Indeed, machine guns will not even harm most tanks.

If you are using bombs you will generally want to come in high so that you can dive on your target. The steeper you dive angle (closer to vertical) the closer the bomb will land to your gunsight cross hairs. On the other hand, the steeper the dive, the more quickly your plane accelerates which makes your problems in pulling out a bit tougher. You can reduce acceleration by throttling back as you begin your dive.

Release your bombs at 1500-2000 feet (500-700 meters). Your bombs will not release if you are inverted or pulling negative G's. Watch the bomb indicator in the upper left corner to insure that your bombs have released and begin your pull out immediately. Slam the throttle forward and

egress away in level flight or a slight climb for safety. Use your rear view (2 key) to watch behind for your bomb explosions.

On the other hand if you are making a rocket or strafing attack a fairly shallow approach is better with your plane in a slight dive from relatively low altitude. Watch your altitude closely!! It is always tempting to hold your guns on target for a bit longer, but running into the ground will shorten your trip considerably.

In both cases, egressing very low (under 200 feet, and hopefully under 100 feet) will make you less of a target for ground gunners and AAA.

When attacking tanks, resist the urge to saw back and forth on the rudders. Tanks are very small targets and they must be hit by cannon shells a number of times to be destroyed. The best technique is to get lined up early and do a minimum of maneuvering during your firing pass.

As in most things, ground attack is a skill that must be practiced to be mastered. With diligent practice you will find ground attack rewarding and fun!

Level Bombing

Level bombing rewards a different set of skills that what is normally utilized in air-to-air combat. Being successful in level bombing attacks requires great skill, patience and daring, as well as the ability to fly on instruments.

The first consideration in a level bombing attack is the target. Are you trying to knock out an enemy factory? Then pinpoint accuracy with a few bombs may be your choice. Or crater an enemy runway to prevent their planes from taking off? Lots of bombs from high altitude could be the hot ticket here. Different missions have different ordnance loads and may call for different types of planes. The medium bombers are faster and often have forward firing armament but they carry relatively small bomb loads. The heavy bombers carry much more bombs but they are much slower and may have other handicaps. Heavy bombs have a larger blast radius and do more damage to buildings, but light bombs are perfectly adequate for cratering a runway to make it difficult to take off. Choosing wisely can save you a lot of time and disappointment when the results don't match your expectations.

The second consideration is the mission profile, which is the route you take to the target. A successful mission profile should be designed around your skills and your aircraft. If you have difficulty being accurate from high altitude then you probably shouldn't choose this route. But all things being equal it is generally safer to take a high altitude route, as this will get you away from most of the fighters.

Third consideration is fighter escort. It is ALWAYS a good idea to have an escort if you can. Get on your team's radio and outline your mission and target and ask for escort. Fighter Ace is a very cooperative game and the more help players can give each other, the more successful their teams will be.

The final part is the bomb drop. Get lined up visually with your target as early as possible. Your bombs will continue to travel forward at the speed of your plane as long as they are falling. If you are dropping from high altitude they can travel for miles before they hit the ground. Switch to your bombsight by pressing Backspace. The intersection of the crosshairs shows where your bombs will hit if released right now (assuming that your plane is in level flight). This means your plane must remain level during the bomb run, no climbing or banking when the bombs are released.

Usually you will need to correct your flight path to stay on target. Use your instruments, particularly the turn and bank indicator, speedometer, altimeter and the VSI (vertical speed indicator) to insure that your plane is not departing from level flight too much. To correct to the left or right, gently bank the plane (not more than 10-15 degrees) and keep the nose level by watching the VSI. When it is pointed at the target again, return to level flight by banking to wings level, again watching the VSI.

When you are ready to release bombs hit ALT BACKSPACE to release the bombs in pairs. Check the bomb indicator in the upper left of your screen to insure that the bombs have dropped. Keep pressing these keys until all the bombs you want to release are away.

Your bombs will not drop if your plane is not essentially level, or pulling negative gees, or if the racks have been damaged by enemy fire.

Again practice will determine your skills in this demanding area. Have fun!

Chapter 7 The Online Arenas

Arenas are where the combat takes place. Each Arena is slightly different in that there may be different terrain, flight characteristics, and planes available to fly.

Arcade

The Arcade arenas have relaxed realism settings. The planes are easier to fly and are not subject to G-forces and spinning. There are various themes to the rooms, but the flight difficulty remains consistent.

Territorial Combat

Territorial Combat, or TC, is about taking ground, and therefore increasing your country's area of control. In addition to conflicts with enemy air targets, players will trigger ground forces in the form of tanks and supply trains by attacking ground targets as well. The AI will create tank units for both attack and defense based on these triggers. Victory is achieved when one of the countries gains a certain amount of territory (this setting is always subject to change). TC rooms and generally set to an intermediate setting, and there is also an advanced TC room that includes the highest difficulty settings.

Private Arenas

Private arenas enable you to host your own game! You can set up passwords so only you and your friends can play, or you may leave it open for anyone to enjoy. Two to 32 players can play in a private game

To host a Private game

1. Go to the Fighter Ace Game Rooms page and click the name of a game room under the **Private Arenas** heading.
2. Click one of the available game slots.
3. Name the game, and set the maximum number of players (2 to 32). If you want to limit access to the game, check **Private game** and enter a password. (You may want to toggle over to the Game Rooms page and use ZoneMessage to call friends to the game and to give them a password.)
4. Click **OK**.
5. Click **Launch** to enter the arena and start flying.

To join a Private game

1. Go to the Fighter Ace Game Rooms page and click the name of a game room under the **Private Arenas** heading.
2. Click the propeller for the game you want to enter. Gray dots represent the available spaces.
3. Click **Join**.

If the display says "Waiting," you'll be launched when the host launches the game. If the display says, "In Progress," click **Launch** to join the game.

Special Events Arenas

The Fighter Ace staff is always running online events for all to enjoy. These can range from historical re-enactments to purely fictional events. You can see what events are being planned by going to www.zone.com, navigating to the Fighter Ace page and clicking on News on the left hand side. Check this frequently as there are always new events being created!

Chapter 8 Tips and Strategy

Weapons and Ordnance

It is essential that you choose ordinance compatible with your mission. While bombs and rockets are great for ground pounding and mud moving, they impose a performance hit on your aircraft by their extra drag and weight. Additionally they make your plane more vulnerable to enemy fire.

Rockets are perfect for moving targets like trains and tanks but less effective against buildings.

Some fighter aircraft may have no or only small bombs available to them while others may have quite heavy bomb loads. Bombs pack a big wallop so make sure to drop with sufficient altitude to escape the blast or you may become a victim of your own weapons.

Gun fire Focus - During WWII this was known as "harmonization". This means that your guns will have their maximum hitting power at this distance. Beyond this distance your bullets will disperse and be less effective. Below this distance the bullets will still be in a wider pattern but their hitting power will still be good due to kinetic energy (the energy of their movement). There are many philosophies on how to set this, but conventional wisdom suggests that you set it for a range at which you usually will be getting solid hits and not at your maximum gun range.

Fuel is a key component in your aircraft's overall weight and has a profound effect on your ability to maneuver. All things being equal, a heavy plane will not climb as fast, accelerate as quickly, or turn as well as a lighter plane. You should never carry more fuel than you need (plus a safety margin) to complete your mission.

Advanced Flight

So you've been around the Arcade block and you find that the kills are coming much easier. While it's still a lot of fun, the keen-edged challenge that used to be there has lost a little of its edge. What do you do to bring it back?

Or perhaps you are new to Fighter Ace, and from the get go you want the ultimate challenge in multiplayer air combat? Where do you go?

The High Ground

Go Advanced, young flyer; go Advanced. Advanced flight is the ultimate high ground of Fighter Ace combat. A top ace in Advanced not only can think in three dimensions and shoot accurately but also can pilot his plane on the ragged edge of the flight envelope. This requires skills and talents that Arcade just doesn't call for.

Additionally, more maneuvers from real combat pilots work in Advanced, as they depend on real plane behaviors and actual pilot physiology. For instance, you may have found it difficult to evade a pilot once he has latched onto your six in Arcade, because he basically has no limitations. Both he and his plane can pull maximum Gs at any time. But in Advanced, you can pull right to 5.5 Gs on the edge of the blackout; if he wants to shoot, he has to pull more than 5.5 Gs to pull lead to hit you. Once he does, you change direction, and he won't be able to see it, because he has blacked out. Voila! You're free!

Advanced flight is about discipline and control at a level that Arcade cannot approach. The Arcade flight model is forgiving of exuberant control styles. Get sloppy in Advanced and you'll find yourself spiraling into the ground without a shot even being fired. Advanced physics gives no quarter and no allowance for good behavior. You either fly your plane within the limits or find your plane departing from controlled flight at the drop of your virtual hat.

Sounds daunting, doesn't it? Well, it can be if you enter the Advanced arenas expecting that "Advanced is like Arcade, only different." By adjusting your expectations toward the reality of Advanced, you can eliminate the unpleasantness associated with making the switch. Instead, you can become a rompin', stompin', keen-and-mean Advanced killing machine.

So What's Different?

Advanced flight introduces several flight phenomena that Arcade flyers don't encounter. The key to staying alive in Advanced is to recognize what these phenomena are, and what conditions induce them. If you have blundered over the line, understanding what they are and what you've done can help you to recover in a minimum of time.

Stalls

Low-Speed Stalls

Stalls come in two basic flavors: low-speed stalls and accelerated stalls. Both are the result of airflow being discontinued over the wing of your airplane. In Arcade you are familiar with a form of the low-speed stall, which occurs when you go nose up for prolonged periods or in some other way slow your plane down to the point where it stalls, and the nose gently drops through. This type of stall characteristic has much more in common with a Cessna 172 than it does with high-performance WWII aircraft. World War II fighter aircraft represented the ultimate development of piston-engine aircraft, and as such, they are fire-breathers!

Accelerated Stalls

The accelerated stall occurs when your plane is in an accelerated state. The cause of it is over-enthusiastic yanking on the stick. When you haul back on the stick hard, it yanks the aircraft into a nose-high (to the relative wind) position until the air can no longer follow the wing's surface. Then it starts to burble, and as the burble increases, your lift decreases. Finally, the plane stalls in a nose-high attitude and at a high rate of speed. This is bad.

With this type of Arcade stall, recovery is simple. In any simple stall, just push the stick forward until you regain flying speed, and you're back in business. Advanced physics more truly models the behavior of high-performance piston-engine fighters. These fighters were, compared to the Cessna, highly unstable airplanes with huge, 1000-2000-horsepower, engines. The torque of one of these engines alone at full throttle would attempt to leverage the plane's tail off of the ground. This can have disastrous effects in low-speed flight. Added to this is an additional fact. It is very rare that all the control surfaces of an airplane stall evenly, that is, the wings stall before the tail plane, the tail plane before the rudder, which means that usually your wings don't stall together. Usually one stalls before the other. This sets you up for the next phenomena of Advanced flight.

The Spin

(Or, Why Is the Ground Going in Circles)

When one wing stalls before the other one, it means that one wing is still flying while the other is dropping. This is a bad thing. This is also true of accelerated stalls, so the results are pretty much the same. When one wing drops, it snaps downward, rotating the airplane. The other wing stalls and the whole plane falls, still rotating. (This is a simplified explanation but will work for purposes of our discussion.) It is not spinning around the nose as it would in an aileron roll, but rotating about a point just forward of your wings. You will discover, as did early aviators, that if you pull back on the stick to get the nose up, the spin will just accelerate. Keep pulling on the stick, and eventually you will smack into the ground. So how do we get out of this?

Spin Recovery

Well, the first and most obvious solution is to avoid conditions that result in a spin. That is, avoid getting too slow in a climb or when pulling over in a loop, and don't yank on the stick at speed.

Unfortunately, a lot of the fighter pilot's craft involves maneuvers that are right on the edge of the flight envelope, so it is nearly impossible to avoid stalls all the time. So once in the spin, what do we do?

In answer to this, think of what causes the spin. The spin starts with a stall, which is loss of air traveling over the wings. So the key is to get air traveling over the wings again. But isn't the plane falling? you ask. Isn't the air traveling over the wings? Close, but no cigar! Remember that the plane is rotating around a point just forward of the wings, which means the airflow is really approaching the wings from below and not flowing over them the way it does in flight. So how do we get the air flowing over the wings properly again?

- Point the nose down to the ground (this will get the air flowing properly over the wings).
- Apply opposite rudder, that is, if you are spinning to the right, then apply left rudder.
- As the your spinning slows, re-center your rudder. If you keep applying rudder, you will just start spinning in the other direction!

Remember this: For the standard upright spin, it's stick forward, opposite rudder.

Inverted Spins

Fighter Ace also models the most deadly type of spin known to man, the inverted spin. In this case, everything is the same except your plane is spinning upside down. Not much fun. We want to do the same thing to recover, but because we are upside down, everything is reversed.

Here are some tips for living through an inverted spin:

- For inverted spins, it's stick back and rudder in the direction of the spin.
- Since sometimes it's hard to gauge the upright/inverted state accurately, it's a good idea to try the first recovery procedure and then try the second if it doesn't work. Another good rule of thumb is:
- Initiate the recovery at the earliest moment you recognize the spin.

Since the spin commonly happens while turning, the first thing you are likely to notice is that the turn rate will look like it's suddenly increasing.

Blackouts and Redouts

(or, Why Does My Screen Keep Changing Colors?)

If you pull more than about 5.5 Gs, the blood drains completely from your head and you lose consciousness, or black out. In Fighter Ace, if the situation continues long enough, "brain damage" occurs and your virtual pilot dies.

So how do you stay out of it?

- First, recognize the first signs of blackout, the gradual graying of the screen. As soon as that occurs, back off of the control input gently.
- You can ride the gray successfully and this will mean that you are getting the maximum turn rate out of your fighter.
- Recognize the blackout and ride the gray by easing off on your control input.
- If you have blacked out, then immediately relax the stick until your vision returns.

In some cases when your plane is headed down and you are close to the ground, you have no choice but to maintain some stick pressure. Here, you must estimate when the nose would be above the horizon and then relax the stick gently. Releasing it too quickly would make your plane travel in a straight line, which will make your opponent, who is trying to get a shot on you, very happy.

Redouts Are No Fun

Redout is the opposite condition, where you have pushed the stick forward, creating negative Gs, and blood is flowing to your head. In this case, blood is engorging the vessels of the eyes and they can eventually burst, causing a redout (the screen will start turning red). In any case, when you encounter the redout, just relax the control input.

When you redout, just relax the forward stick control input.

Appendix A Territorial Combat Arena Tactics

Although Fighter Ace is primarily about flying and dogfights, the Territorial Combat Arenas (TC) are full of other opportunities to apply your skills. In TC, you have the opportunity to use your fighting and bombing skills to accomplish other missions; after all, there is more to a war than just flying around and shooting at other aircraft. The overall objective of TC play is to capture enemy territory while defending your own territory. Fighters, bombers, and tanks engage the enemy while planes, trains, and factories keep your bases supplied.

TC is a dynamic arena where your actions can initiate AI (computer controlled) reactions, such as a ground attack being launched. Your bombing runs can cripple the enemy's supply lines and deprive them of much-needed fuel for planes or ammo for tanks. Your expert flying and gunnery may keep an enemy from destroying your only remaining factory.

But before you can be effective in any of these missions, you will need to know what is in the arena and how it all ties together.

Taking Enemy Territory in 6 Easy Steps

The winning conditions for TC games may vary; however, all TC games involve taking enemy territory (known in the game as Scenes). Here is a summary of the main steps involved in taking an area away from your enemy. More detailed descriptions of the building, units, and workings of the TC arena are listed below.

1. Pick your target: Select the intended target from your map view. Use the Strategic Map (**CTRL+M**) to get a good look at the status of different Scenes.
2. Choose your plane: Pick the right plane for the mission. You will want an aircraft that will carry bombs and/or rockets.
3. Arm your plane: Once again, bombs or rockets, depending on your target.
4. Attack the target: Each Scene (group of buildings or structures) must be damaged before your tanks will attack. Usually about 40% overall is enough to get them rolling. Headquarters (small building with a flag on top) and barracks (gray two story building with peaked rooftop) are a major source of points in a Scene. If a Scene has headquarters or barracks, hitting them will virtually assure that your tanks will be triggered to attack.
5. Protect the tanks: Ground support duty! When an attack is initiated, the defending country will try to dispatch tanks to oppose yours (see Supply below). To ensure that your tanks win this battle, provide support by preventing aerial attacks on them and by taking opposing tanks.
6. Capture the Scene: Capture is as easy as 1, 2, 3. One, at least one friendly tank must be present. Two, no enemy tanks may be in the Scene. Three, damage to the Scene must be 30% or more for capture to occur. (If the first two criteria are met, but damage to the Scene is not sufficient, any remaining tanks will go to work on the Scene until it reaches 30%.) When the Scene changes hands, you will see a message that will inform you that the Scene has been captured. The color on the map will also change to your country's color. Note that the base will retain any damage you dealt while taking it, so it would be a good idea to resupply it and keep it protected until the repairs are completed. Either that or just try not to pulverize the whole scene into oblivion while you're taking it.

Scenes

A Scene is defined as a collection of buildings that acts as one unit. There are four types of Scenes, and each country has its Scenes laid out a bit differently.

- **Airfield** Produces your aircraft. Also stores fuel and ammo. Usually heavily defended by Anti Aircraft guns (AA).
- **Rail Station** Stores supplies carried by trains and will re-supply nearby Scenes. Can produce a small number of tanks.
- **Factory** Creates fuel, ammo, planes, and tanks. These supplies are then carried by train to nearby rail stations, which distribute supplies to other Scenes. Factory Scenes can also spawn tanks that are ready to go.
- **Village** At present, villages are just extra Scenes. The supply buildings in them can help supply a field or rail station if they're close enough (about one map grid square away). Otherwise they are just territory to be won or lost.

Structures

- **Headquarters** Located at airfields, this building can be identified by the flag on top. Destroying this structure can cause your friendly forces to attack.
- **Hangars** Located at airfields, these structures store the airplanes. They also produce a small number of them.
- **Fuel Tanks** Located at airfields, these structures come in two types: normal and hardened. The normal fuel tanks are easily identifiable because they are white and cylindrical. The hardened fuel tanks are harder to see, because they are gray in color. They are also cylindrical but stand on their ends, as opposed to the standard fuel tanks that lie on their sides. As the name implies, these structures store your field's fuel. If all of them are destroyed, the maximum fuel you can get at that airfield is 20%.
- **Ammunition Bunkers** Located at airfields, these buildings are rectangular and low to the ground. These structures come in three varieties: at most fields, you will find four large, two regular, and two hardened ammo bunkers. Large ammo bunkers are easily-spotted rectangular gray structures. Regular ammo bunkers are red. Hardened ammo bunkers are gray, very low to the ground, and very hard to spot.
- **Anti Aircraft (AA)** Located at just about any Scene. AA has a repair time of about 5 minutes. These guns come in three types.
 - **Low AA** Appear as miniature towers. These small machine gun nests can hit you up to 40 feet in altitude.
 - **Med AA** Appear on the ground as small guns. They have a range of up to about 2,500 feet and can really tear you apart.
 - **High AA (flak)** Appear as large guns in a crater or pit. These weapons have a minimum range of 2,500 feet and can reach just about as high as any plane in Fighter Ace can fly; however, the higher they fire, the less accurate they get, so you are pretty safe above 20,000 feet.
- **Factories** Located primarily within Factory Scenes and some Airfield Scenes. Any weapon smaller than a 30mm cannon cannot harm a factory building. Factories have a general repair time of 20 to 30 minutes. These structures come in four types:
 - **Tank Factory** Long building with a smokestack at one end.
 - **Ammo Factory** A low, red, rectangular structure.
 - **Fuel Factory** Appears as four cylindrical structures all connected together. (It's rumored that you can fly through the middle of them.)
 - **Aircraft Factory** A two-level square building with a smokestack in the middle.

- **Runways** Always located at airfields, runways can be damaged by bombs and rockets. A runway riddled with craters is virtually useless. Ground crews can repair 10 craters per map square every 5 minutes.
- **Barracks** Two-level brown buildings.

Vehicles

- **Tanks** Ground units that are needed to capture enemy Scenes. Tanks will engage any enemy tanks they encounter. To produce a tank, you must have enough fuel and ammo. Tanks can be “triggered” to attack an enemy Scene up to about 8 grid squares away; the actual distance can vary according to arena setting. For more information on taking territories, see Appendix A.
- **Trains** Haul large amounts of fuel, ammo, tanks, and planes to the Scenes along their routes. An average round trip for a train is about 25 minutes. Trains carry their own Anti Aircraft capability (medium and low) and have a repair time of about 5 minutes.

Supply

The objective of all these structures is not only to give you something to shoot at, but also to keep you equipped with what you need to fly. They provide your country what it needs to attack others and defend itself. It is possible to be completely cut off from your supplies, but fortunately there are many ways to get those supplies where they need to be.

Each storage building has the ability to produce a small amount of its own resources, thus keeping a small trickle of supplies coming in to a Scene. However, a heavily used airfield will quickly run out of supplies if not supplied from the outside.

The main way that a Scene is resupplied is by rail. The trains in Fighter Ace constantly carry a large amount of supplies from the factories. Flying very high over a given area, you will be able to see the entire route that a given rail line will follow, and thus be able to determine what area you will cripple by taking out the trains.

Another way to resupply a damaged airfield is to do it by air. When you land at an airfield and then either leave the game or move to a different field, your plane and its supplies are left at the field where you touched down. It's important that you actually move to a different field or exit the game at this point; if you just land and then take off again, nothing will have happened. A large aircraft such as a bomber, fully loaded, will carry more supplies to a field than a fighter.

Rail stations are important because they can resupply nearby Scenes on their own. Rail stations also store the supplies needed for tanks. Take out a rail station, and you will cut down on the amount of tanks the enemy can rally for attacks or defense.

Capturing Territory

Most important when planning your attack is your Strategic Map (**CTRL+M**) and its zoom function (**CTRL+PLUS SIGN** and **CTRL+MINUS SIGN** on the numeric keypad). When you select this map and zoom in, you see icons representing the different Scenes and the status of your country's forces. If you have tanks en route to attack, you will see an attack icon and a line showing their destination. Changing to the Tactical map (**SHIFT+M**) will show you a more detailed view of what is going on around you. Use this map for more immediate concerns such as enemy aircraft or tank movement.

To capture a given Scene, you must first “trigger” an attack by nearby ground forces (tanks). To accomplish this, you need to conduct an air attack on the Scene that you want your tanks to go to. Tanks have a range of about 8 grid squares, so make sure they are in range before you risk

life and limb. Generally, you can trigger your tanks to attack by doing 40% damage to the Scene. However if the Scene contains barracks or an HQ, hitting those buildings is usually sufficient (and easier) to initiate an attack.

If you are successful, you will see a message indicating whether an attack is being initiated at the Scene by each of the available tank groups. (These messages will use references to the grid numbers that appear on the upper and left side of the tactical map, so its important to know how to read the map.) Another message you may see is that there are no forces available to attack the Scene you are hitting. This means that you were successful in triggering the attack (you did your part), but for some reason (usually supply constraints) the tanks cannot be allocated. You can attempt to re-trigger the attack in 5 minutes, after the barracks and HQ have been repaired.

It will take some time for your tanks to arrive on location. Watch your map to monitor their progress, and by all means protect them! This is a good time to contact any other friendly fighters in the area to help. Either have them defend the tank columns from enemy fighters or have them attack the enemy's defensive tanks. In order for your tanks to actually capture a Scene, they must eliminate all opposition from it. To complete a capture, the following must take place:

- One friendly tank must be present.
- No enemy tanks may be in the Scene.
- Damage to the Scene must be 30% or more. (If the first two criteria are met, but damage to the Scene is not sufficient, any remaining tanks will go to work on the Scene until it reaches 30%).

Once a Scene is captured, the map changes to your country's color and a notification message is sent for all to see.

As you now can see, there is a lot happening in the Territorial Combat arenas. Armed with this knowledge, you should be able to organize and execute effective air and ground attacks on your adversaries.

Appendix B Improving Frame Rates

Try the following ideas to improve your frame rate—the number of times the screen is redrawn each second.

Adjust Your Game Settings

If you are having performance problems when you are running Fighter Ace, like a slow or choppy feel to the way the game runs, you may need to make some adjustments to the settings within the game. All of the items on the list below can be found on the Settings screen and adjusted to help improve performance. Try going in order down the list until you are comfortable with the way the game runs.

- **Screen Resolution** Set it to 640x480
- **Rendering choices**
 - Glide is fastest (but only *slightly*, and you must have a 3dfx card)
 - D3D requires a D3D-compliant 3-D accelerator card
 - Software is the slowest, but doesn't require a 3-D card
- **Low Quality Terrain Textures** On
- **Propeller Visible from Cockpit** Off
- **Ground Object textures** Off
- **Smoke Length slider** Minimum, or one notch above minimum
- **Terrain Details slider** Minimum
- **Save to File** (on the Other Settings screen) None (this may help slightly, in a crowded airspace)

Adjust Your Computer Settings

If you still feel that the game's performance is lacking, there are a few things you can check on your computer.

- Make sure that you aren't running any programs in the background while running the game.
- Close Outlook and any newsreaders, any extra lobbies or chat windows you might have open, etc. One way to find out what is running on your computer is to press **CTRL+ALT+DELETE** together ONE TIME ONLY (do it twice and your computer will reboot). This will bring up a window that will list everything that is running. If you see something running and you know you want to shut it down, select it and click **End Task**.
- Let Windows manage your virtual memory. You can check this by following the steps below for Windows 95 or 98.
 1. Click the **Start** button on the Windows toolbar.
 2. Point to **Settings**.
 3. Click **Control Panel**.
 4. Double-click the **System** icon.

5. Select the **Performance** tab.
6. Click **Virtual Memory**.
7. Make sure that **Let Windows manage my virtual memory settings** is selected.

Defragment your hard drive.

1. Click the **Start** button on the Windows toolbar.
2. Point to **Programs**.
3. Point to **Accessories**.
4. Point to **System Tools**.
5. Click **Disk Defragmenter**.

Improve your Internet connection

Check to make sure your modem is set up properly. Even though it may be dialing and connecting you to the Internet, it may not be set to perform at its best. The best thing to do is to check either with your modem manufacturer or your Internet Service Provider for the best settings for your particular modem. The following setting is a good place to start with most modems, as it forces the modem to its factory default setting.

1. Click the **Start** button on the Windows toolbar.
2. Point to **Settings**.
3. Click **Control Panel**.
4. Double-click **Modems**.
5. Click **Properties**.
6. Click the **Connection** tab.
7. Click **Advanced**.
8. For **Extra Settings**, type the following: AT&F
9. Click **OK** until you are back to your Windows desktop.
10. Reboot your computer and reconnect.

Note: This setting will not work with every modem, and for some modems you may see no difference. It's always best to consult your modem manufacturer or your Internet Service Provider for the proper settings for your particular modem.