

## ACE OF ACES

Ace of Aces is a tactical turn-based game of World War I aerial combat pitting the Allied against the German air forces.

### Requirements

- Coleco-Adam computer
- Disk or Digital Data Pack drive
- Color monitor

### Number of players

One human player versus a computer-controlled opponent.

### Starting the game

Insert the disk or DDP into the first drive and reset the computer. It will boot into CP/M 2.2 . Type **ACES** at the prompt and press <RETURN>. The game will launch, and you will be presented with a splash screen. Press any key to dismiss it.

### Game options

You will be presented with 3 game types at the start of the game:

#### 1. Solo Action

This option will give you a choice to play either the Allied or the German side as a solo pilot with no wingmen, facing off against a single fighter plane of the opposing nationality. You will get to select which of the 3 available airplanes for the selected nationality you want based on their displayed characteristics. Below is a table of all the available airplanes in the game.

Airplane	Nationality	Range [game turns]	Max Speed [km/h]	Stall Speed [km/h]	Climb/Descent Rate [m/s]	Ceiling [m]
Nieuport 17	Allied	18	165	64	4.8	5300
Sopwith Camel	Allied	32	182	77	5.5	5791
Spad XIII	Allied	16	211	80	4.1	6800
Albatros D.I	German	20	175	80	2.8	5000
Fokker DR-I	German	20	180	72	5.7	6100
Fokker DR-VII	German	17	189	80	4.4	6000

## 2. New Career

This option allows you to start a career game which can be loaded with each new game. You start your air force career as a Sergeant and move through the ranks up to General.

First select your nationality, then enter your name. Press <RETURN> and you will be assigned a cadet plane with limited capabilities. As you move through the ranks you will be assigned more capable airplanes. Press any key to save your dossier to disk, and it will be saved using the same name you entered (up to 8 letters) and a CAR extension. For example, if you entered SMITH as your name, then the career dossier will be named SMITH.CAR on the disk. The career details tracked are:

- Rank
- Assigned airplane type
- Total number of enemy kills to date. You will be promoted by one rank upwards for every 5 registered kills.
- Total number of cowardice events to date. A cowardice event will occur if you exit the battlefield while enemy airplanes are still present and you still have ammunition left, you have less than severe damage and you have more than 25% remaining fuel. Cowardice events will make it harder for you to get promoted.

## 3. Old Career

This option allows you to enter the name of a previously saved career dossier without the .CAR extension. Once loaded, your nationality, currently assigned airplane type and characteristics, total kills and total cowardice events will be displayed. Press any key to exit that screen.

### **The Situation Room**

This is where you are briefed on your assigned mission. You will be assigned any number of wingmen between 0 and 2 depending on your rank, with the lower ranks being assigned 1 or 2 wingmen and you will be informed of their respective randomly assigned airplane types. If you have selected the solo option, then no wingmen will be assigned. You will also be shown the number and airplane types of the enemy airplanes you will be facing. Once you have reviewed the information, press any key to start the battle.

### **The battlefield**

When you enter a battle, you will be shown an aerial view of a green field with some scattered buildings in red and ponds in blue. Your airplane and wingmen will always appear on the left edge of the field in white, while the enemy airplanes will appear on the

right edge facing you in magenta. Your airplane will have cyan wing tips to help differentiate it from the other airplanes as shown below:



## Your airplane dashboard



All the units for the various gauges and displays on the dashboard are in relative units.

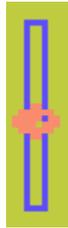
- **Altimeter**

The altimeter is labeled **ALT** and consists of 2 markers. The long marker which extends from the center of the gauge to the outer perimeter indicates the absolute altitude ceiling for your particular airplane type. You cannot exceed that altitude. The shorter marker indicates your current altitude, with 0 shown by the small mark at the top of the gauge. If your altitude goes to zero, then you will crash into the ground.

- **Speedometer**

The speedometer is labeled **SPD** and consists of 3 markers. The 2 long markers going from the center to the outer perimeter of the gauge indicate your particular airplane's maximum speed and stall speed respectively. If you exceed the maximum speed, then your airplane will break up in mid-air. If you go below the stall speed, then your airplane will stall, and it will take a 1000 unit drop in altitude before you can recover. If you do not have the requisite altitude, then you will crash into the ground, otherwise you will level off at just above stall speed. The shorter marker indicates your actual airspeed, with 0 shown by the small mark at the top of the gauge.

- **Throttle**



The throttle level is indicated by the light red knob on the blue track. There are 5 levels: 0, 25, 50, 75 and 100. The higher the throttle level the faster generally your airplane will go.

- **Fuel**

The fuel gauge is appropriately labeled **FUEL** with 2 markings: E for empty and F for full. You start a battle with full tanks and the gauge needle will progressively move from FULL to EMPTY as the game progresses, with each type of airplane having its own specific fuel capacity. Throttle levels greater than 50 will double fuel consumption.

- **Ammunition**

Your ammunition level is indicated by 5 green bullets below the fuel gauge.



Each time you fire, the number of bullet symbols will decrease by one. Therefore, you only have 5 opportunities to fire and so you need to be very careful about picking out your targets. Once you run out of ammunition, a red bullet symbol will be displayed, and you will lose the ability to fire. This would be a good time to get out of Dodge...

- **Maneuvers**

There are 5 maneuvers available to you.



From the left, they are **Straight, Sharp Right turn, Sharp Left turn, Shallow Right turn and Shallow Left turn**. They should be self-explanatory. The faster you go, the wider the turn. The red bar below any of the maneuver symbols indicates the currently selected maneuver.

- **Attitudes**

There are 5 airplane attitudes possible, with the currently selected one having a red bar below it.



From the left:

- **Climb**

This attitude attempts to put your airplane into a climb. Since a climb requires more engine power, any throttle level less than 75 will lead to a loss of speed and possibly a stall. A throttle of 75 will maintain current speed while a throttle of 100 will increase speed.

- **Descent**

This attitude will put your airplane into a nose-down attitude, and you will start losing altitude. Any throttle greater than 0 will cause an increase in speed which is proportional to the throttle level. There is a real risk of overspeed and breakup if you are not careful here. Also the faster you go, the greater the altitude loss will be.

- **Level**

Your airplane will maintain its current altitude with this setting.

- **Diving Immelmann**

Your airplane will do a split-S maneuver downwards, resulting in a 180-degree direction reversal with a substantial altitude loss which depends on your starting speed. Your speed will also dramatically increase, so you run the risk of both a crash into the ground or an airframe breakup.

- **Climbing Immelmann**

Your airplane will do a split-S maneuver upwards, resulting in a 180-degree direction reversal with a substantial altitude gain which depends on your starting speed. Your speed will also dramatically decrease, so you run the risk of stalling.

- **Relative altitude indicator**



This indicator gives you an idea of whether the selected airplane on the battlefield is higher than your airplane or lower. The blue pointer indicates the relative altitude difference: when it is directly pointing at the green line, then the selected airplane is at your level. If it moves toward the **HI** symbol, then the airplane is higher than you and if it moves towards the **LO** symbol then the airplane is lower than you. Each pointer movement represents a 500 units altitude difference. Note: the pointer will always point to the green bar when your own plane is selected.

- **Status box**

The blue box below the relative altitude indicator will display a variety of prompts or messages as well as the airplane type of any selected airplane.

## **Battle sequence**

The battle is played in turns, which each turn consisting of 5 phases.

1. **Review the battlefield**

The message **Review** will be briefly displayed accompanied by a long beep. Your airplane will be initially selected as indicated by a set of black brackets, and you can move the brackets from one airplane to the other in sequence using the right and left arrow keys. Each time you select a plane, the relative altitude indicator will show the relative altitude difference between the selected airplane and your own airplane, and the status bar will show the type of aircraft of the selected airplane. If the selected airplane has taken moderate damage, then a white smoke trail will appear behind it, whereas if the damage is severe the trail will be black. Note: Aside from the relative altitude indicator and the status bar, the dashboard will only reflect your own airplane's status regardless of which airplane is selected! Once you have completed your review, press the <RETURN> key.

## 2. **Set flight parameters**

At this phase you will be sequentially prompted to set your airplane's throttle, maneuver and attitude.

- **Throttle**

Use the up and down arrow keys to move the throttle knob on the dashboard up or down respectively. 0 is the lowest position and 100 is the highest position. Press <RETURN> when done.

- **Maneuver**

Use the right and left arrows to move the red indicator bar below the maneuver symbols to select the desired maneuver. Note: if you plan on selecting the Immelmann attitude, then the maneuver has to be **STRAIGHT**. Press <RETURN> when done.

- **Attitude**

Use the right and left arrows to move the red indicator bar below the attitude symbols to select the desired attitude. Press <RETURN> when done.

## 3. **Computer phase**

At this point the computer will evaluate the situation and set the appropriate flight parameters for each of the airplanes on the field regardless of nationality except yours. In other words, your wingmen, if any, will also be computer controlled. The computer is blind to your own flight choices. The black brackets will move from plane to plane as the computer assigns flight parameters to each, and if a firing opportunity occurs then the selected airplane will take the shot. If the targeted plane is hit, then an explosion sound will be heard, and a brief hit symbol will appear over it.

## 4. **Player fire phase**

Once the computer phase is done, a long beep will sound and the status bar will display **Select Target**. Use the right and left arrow keys to move the black brackets which appear around your airplane to select an enemy airplane you wish to target. You cannot target a friendly airplane. Press <F> to fire, and if the enemy airplane is hit, then an explosion sound will be heard, and a brief hit symbol will appear over it. If you do not have any valid targets or simply do not wish to fire at this time, just press <RETURN> to exit the fire phase.

## 5. Update phase

All the visible airplanes on the field will move to their updated position as the black brackets select each one along with a short beep for each.

Subsequently, 3 short beeps will sound and the status bar will show **Updating...** while your dashboard is updated based on the flight parameter settings you previously made. Once done, you will be returned to the review phase to start a new turn.

## Battle outcomes

- If your airplane is shot down, you crash either by running out of fuel or by going too low on altitude, or your airplane breaks up from overspeed, then you will die and the battle will end. An appropriate message will be shown.
- If your airplane goes beyond the edges of the battlefield, then it will return to base automatically and the battle will end. An appropriate message will be shown.
- If your airplane stalls, a long warning beep will sound and **STALLED!** will be displayed in the status window for a few seconds in red to grab your attention, then the battle will resume until the next update at which point the computer will determine whether you have properly recovered from the stall or you have crashed.
- Sometimes a wingman and/or an enemy airplane will go beyond the edges of the battlefield, but they will continue their flight as assigned by the computer and frequently eventually return to the battlefield. Don't count on it however!
- If a wingman or an enemy plane is shot down, crashes, runs out of fuel or break up from overspeed, then the appropriate message will be displayed in the status bar, the affected airplane will be bracketed, then the airplane will be removed from the battle.
- A wingman or enemy plane will attempt to bug out of the battle if it runs out of ammunition or fuel level is below 30%. It will not always be successful.
- The probability of hitting a target is dependent on both distance and altitude difference. The closer you are to your target, the better. These primitive airplanes were not renowned for their accuracy...

## Battle summary

Once a battle is over, you will be shown the number of kills for the mission, your total number of kills for your career if on a career track, the number of total cowardice events (career track only), and any promotion and aircraft upgrade if applicable (career track only).

Your career dossier, if applicable, will only be updated if you survive the battle, and this will be done automatically.

Finally, you will have the option to start another game. Press <Y> to do so or any other key to exit back to CP/M.

### **Game notes**

- This game is not an accurate flight simulator as major simplifications were applied to the flight model to minimize complexity and enhance gameplay. Nonetheless, the characteristics of the different airplanes in the game have been accurately incorporated and certainly do affect flight performance.
- Given the 4-sprite per scan line limitation of the Coleco Adam's video processor, some parts of the sprite graphics may not be visible all the time and will vary from position to position. This mostly affects the selection brackets, the damage-related smoke effects, the machine gun fire graphic and the explosion graphic as these are all sprites with a lower order of priority than the airplane sprites. Therefore, it might sometimes be difficult to tell the damage status of an airplane or which airplane was the target of fire. This does not interfere with gameplay much and should be viewed as "fog of war" 😊
- The game was programmed in Turbo Pascal 3.0 under CP/M with the Adam-specific graphics and sound extensions, and the source files were created using the Adamed 40 column text editor. The game graphics library was created with the CharDef character definition utility. The whole project was developed under the Virtual Adam emulator for reliability and speed of compilation then ported to real hardware.

**Walid Maalouli**  
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