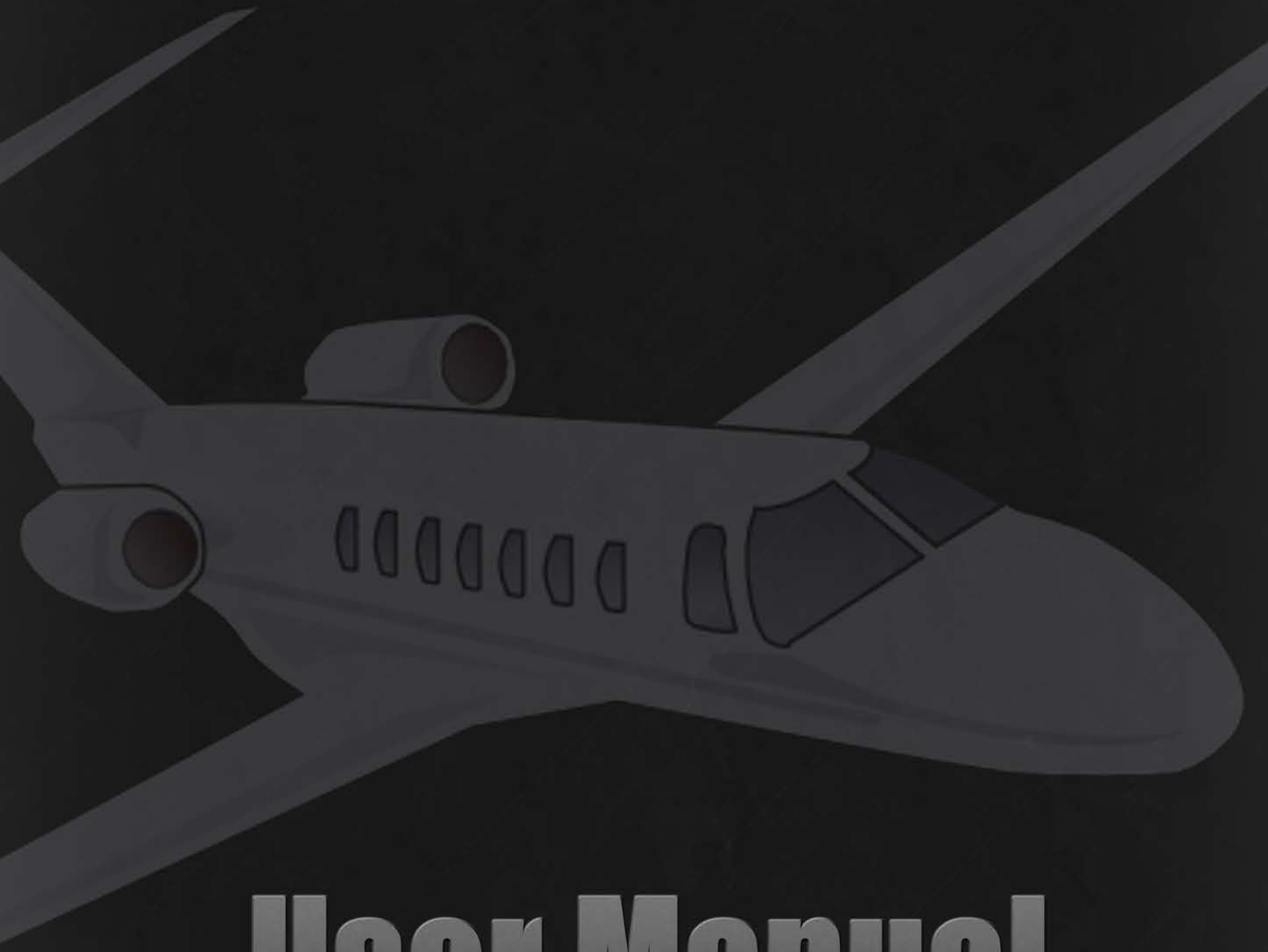
turbulence

AIRTRAFFIC CONTROLLER GAME



User Manual

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Contents

Set-Up

Recommended System Requirements:
Operating System: Windows 7
Processor: 1.6 GHz Dual Core
Memory: 2GB
Input: Keyboard, Mouse

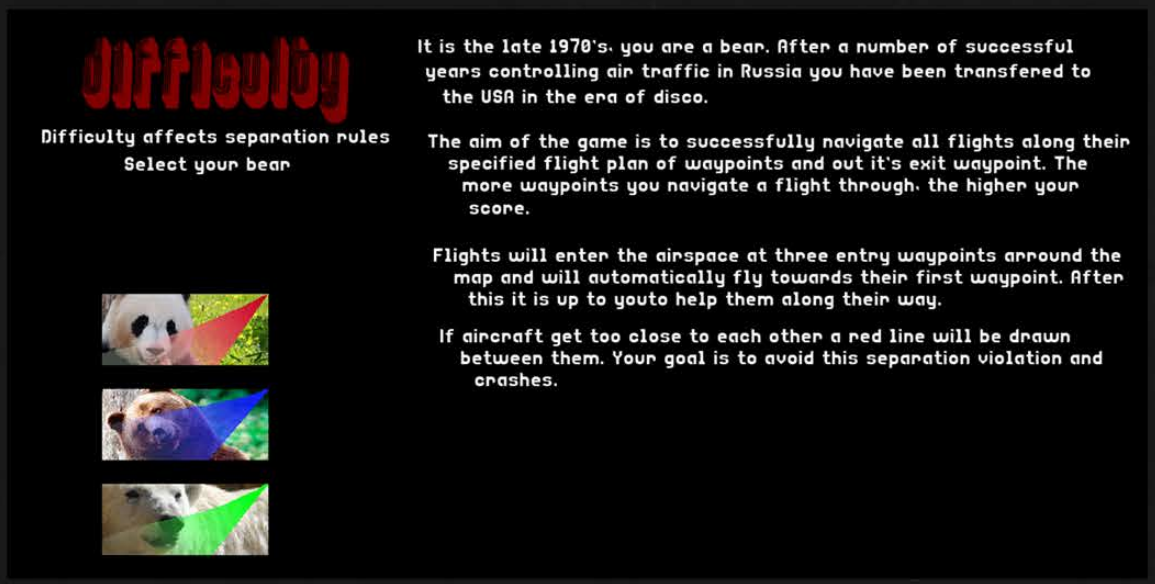
Software Installation:
1) Install the latest Java Runtime Environment
    Avaliable from java.com/download
2) Download the Turbearlence executable
    Avaliable from as1481.github.io/Turbearlence/
Please note: if you are running the game on a CS Lab PC make sure you are running the game from the 'M' drive.

Installation from source code:
1) Install the Eclipse IDE on Windows 7
    Avaliable from www.eclipse.org
2) Download the Turbearlence source code
    Avaliable from as1481.github.io/Turbearlence/
3) Load the Eclipse project into the program
4) Open the 'game.java' class located in the stateContainer package
5) From the top tool bar select Run -> Run As -> Java Aplication

Menu Navigation

Main Menu:

Difficulty Select Screen:



Interface Guide

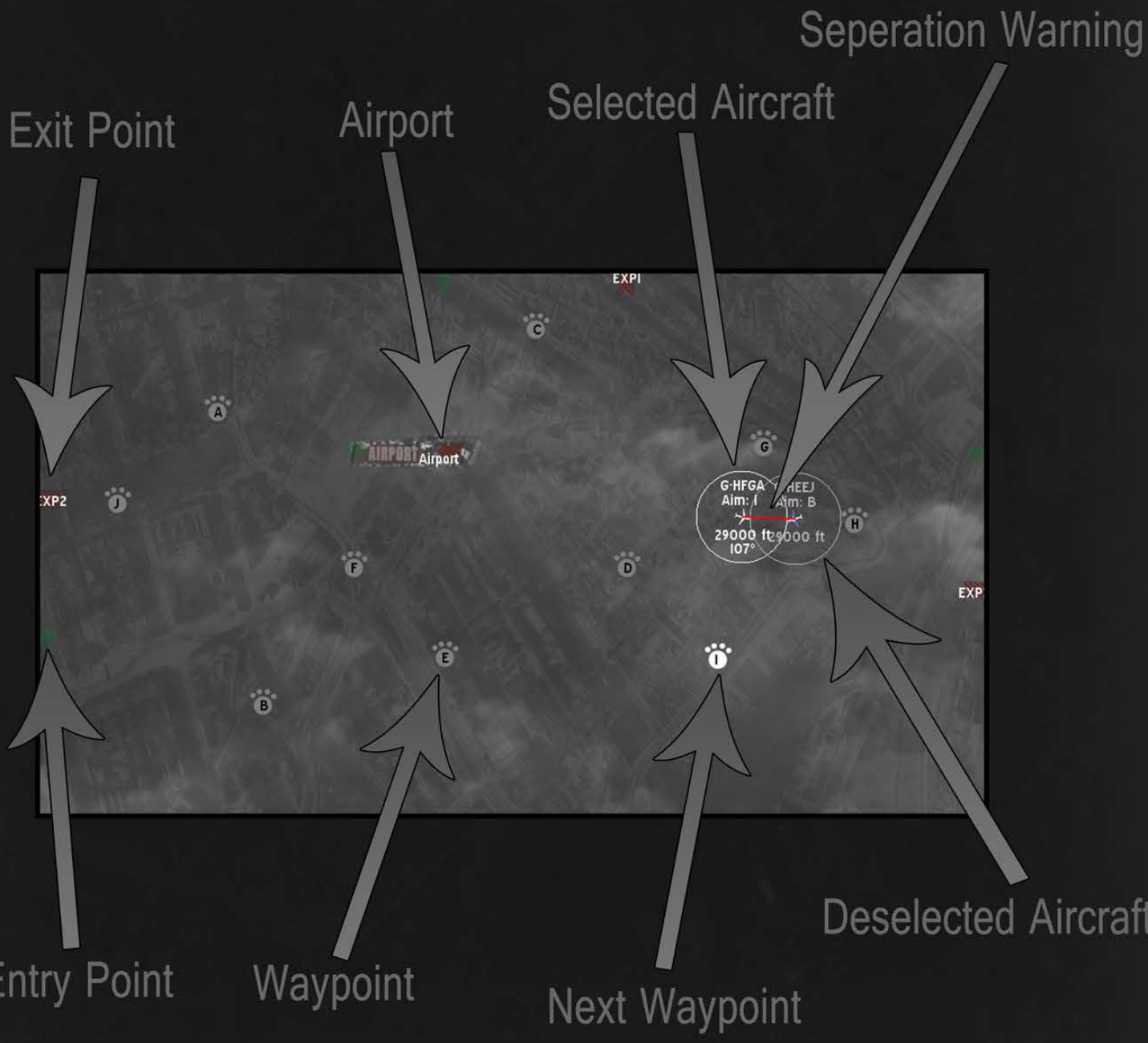
The main game screen is divided into two primary sections, the **airspace overview** and the **control hub.** The airspace overview provides you with a top down perspective of all the aircraft, waypoints and exit points you will need to keep track of. The control panel allows you to land planes and get them to take-off, it also gives a quick reference for various flight parameters such as heading and altitude.

Main Game Screen:

Airspace Overview

Navigator Mode:

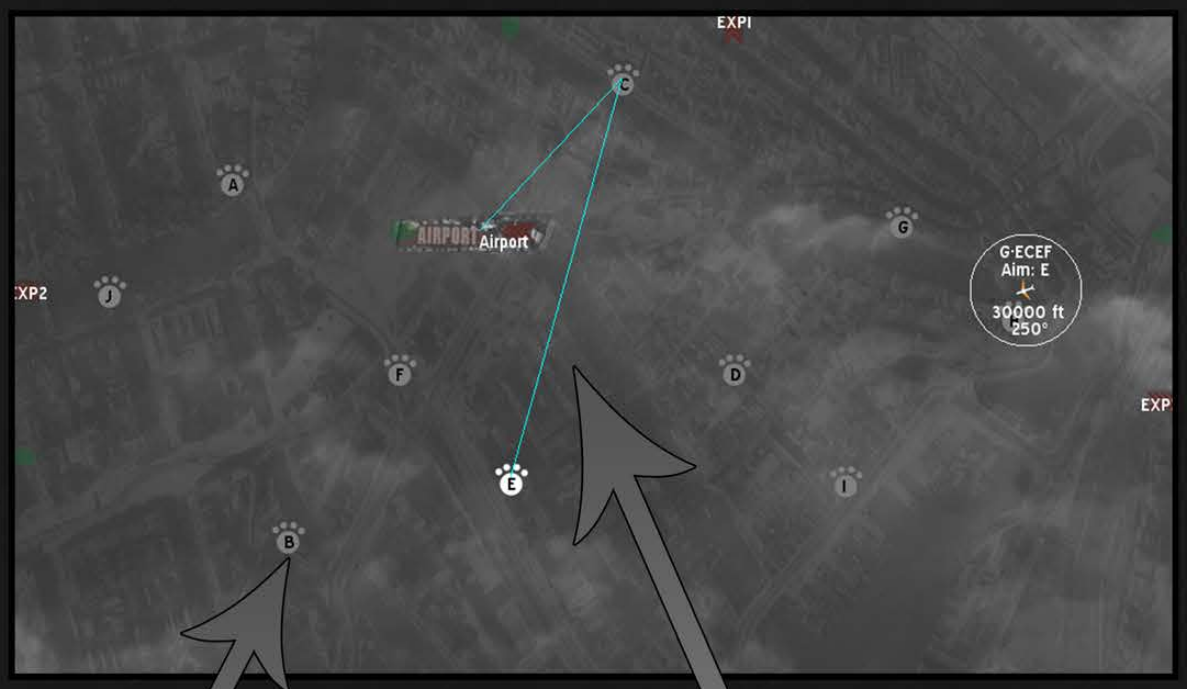
The navigator mode is used for giving comands to flights in your airspace. Click on an unselected flight to select it, and then click and drag in its control circle to give a new heading.



Airspace Overview

Plan Mode:

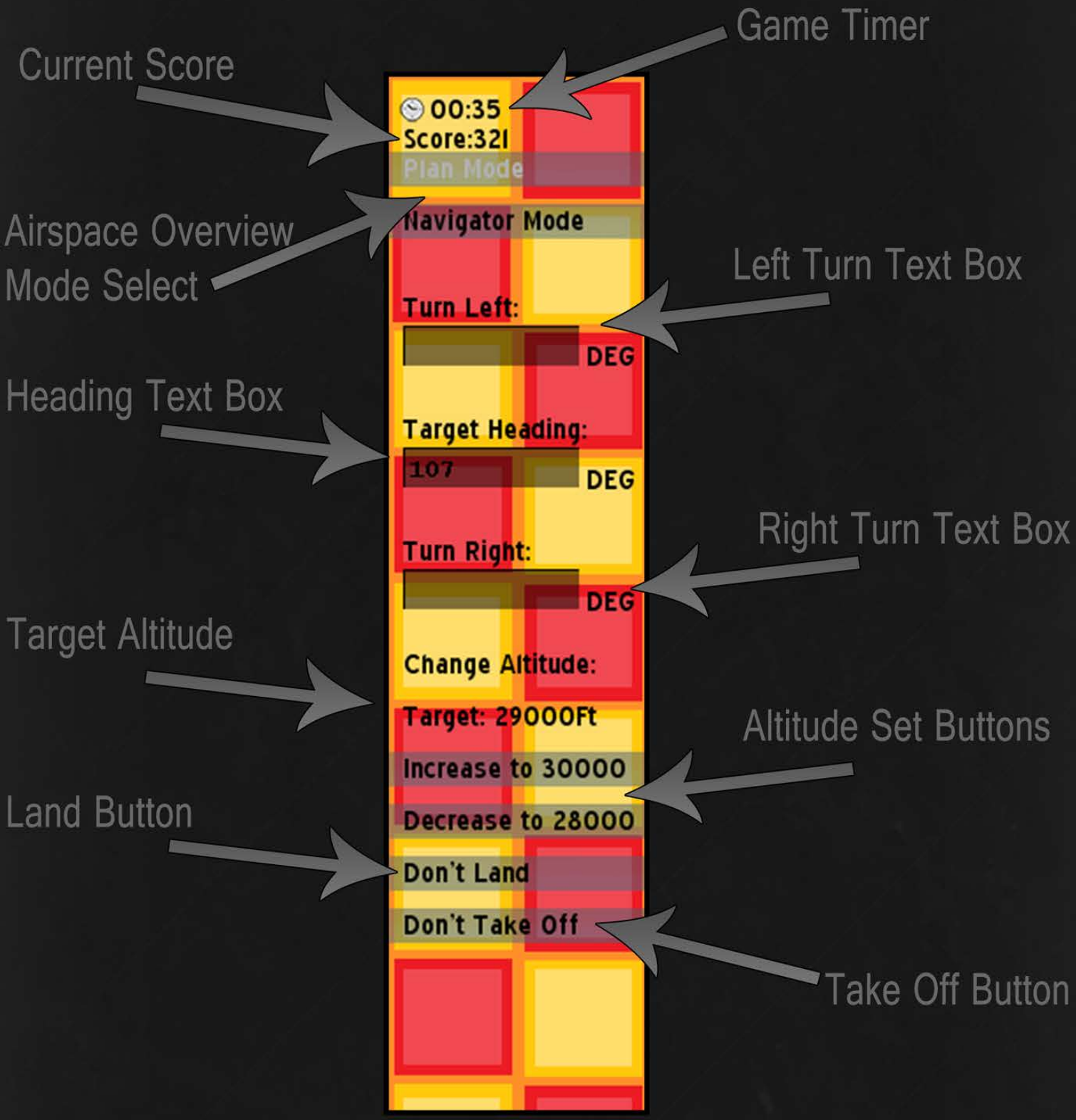
Plan mode is used for re-assigning waypoints to the selected flight. You can click and drag on a waypoint to move the waypoint connection line to another waypoint. You can re-assign any waypoint to any other waypoint but you cannot change the total number of waypoints for a flight.



Waypoint Connection Line

Waypoint

Control Hub


Game Timer
Current Score
00:35
Score:321
Plan Mode
Airspace Overview
Mode Select
Navigator Mode
Left Turn Text Box
Turn Left:
DEG
Heading Text Box
Target Heading:
107
DEG
Right Turn Text Box
Turn Right:
DEG
Target Altitude
Change Altitude:
Target: 29000Ft
Altitude Set Buttons
Increase to 30000
Land Button
Decrease to 28000
Don't Land
Don't Take Off
Take Off Button

Controls

Mouse:

Mouse 1 selects an on screen element, such as a flight, textbox or waypoint.

Clicking and dragging with mouse one allows you to move an element around the screen. When clicking on a selected flight this allows you to order a new heading to be flown. When clicking on a waypoint it allows you to re-allocate a new waypoint.

Keyboard:

Up Arrow - Increase Altitude
Down Arrow: Decrease Altitude
P - Pause
Escape - Quit the game and return to the main menu

Landing

Due to one of the plane's possible destinations being the airport within the airspace you are controlling, the player must give planes permission to land. When a plane that wishes to land at the airport has visited all of its waypoints, it will request permission from the player to be able to land. The player must then select the flight and give it permission to land by pressing the permit to land button. The plane will then descend in altitude slowly until it is at an appropriate landing altitude before landing on the runway.

However sometimes you may have multiple planes attempting to land, or a plane may already be on the runway attempting to take off. For this reason the player is also able to abort a plane landing by pressing the abort landing button when the plane is selected. This will cause the plane to begin ascending back to a cruising altitude until it is again given permission to land by the player.

Landing

Requesting to Land:

Permit to Land button

Requesting to Land

Landing:

Abort Landing button

Taking Off

Occasionally a plane will not enter from the entry points but will instead start on the airport runway and will want to take off. When this happens, you will see a plane on the runway and will be informed that it is currently requesting permission to take off. The player must then select the plane and give it permission to take off by pressing the permit to take off button.
The plane will then slowly ascend to a cruising altitiude and will begin to follow its flight path as expected.

Requesting to Take Off:

Requesting to take off

Permit to Take Off button

Score

While playing the game you will be gaining a score, the score is updated according to a number of factors. The time you have been playing will increase your score, as will each succesful flight you manage to guide through the airspace. However, when two planes are violating the seperation rules you will begin to lose score. You will also lose score while you are manually controlling planes, so be sure to only use it to maneuver planes that are on a collision course. At the game over screen you will be able to view the score for the lost game, and your three highest scores.

Game over screen:

Top three high scores

Most recent score

Glossary

Airspace Overview - Primary View to the right of the game screen
Altitude - Distance the flight is above the ground
Control Circle - Circle around a currently selected flight
Control Hub - Panel on the left of the main game screen
Entry Point - A point where flights will enter the airspace
Exit Point - The final objective of a selected flight
Flight - Any aircraft in the players airspace
Flight Plan - The route through the airspace, includes waypoints and exit points
Heading - Bearing between 0 and 360 that the flight is flying
Nav Mode - Used for controlling aircraft
Plan Mode - Used for adjusting a flights waypoints
Text Box - A control where you can precisely enter new values
Waypoint - A static point on the map, used for navigation

Acknowledgements

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