Lecturer: Dr. Oisín Cawley

Continuous Assessment 1
Value: 15% of overall mark
Due Date: 12th Jan 2018

Space Station Rescue

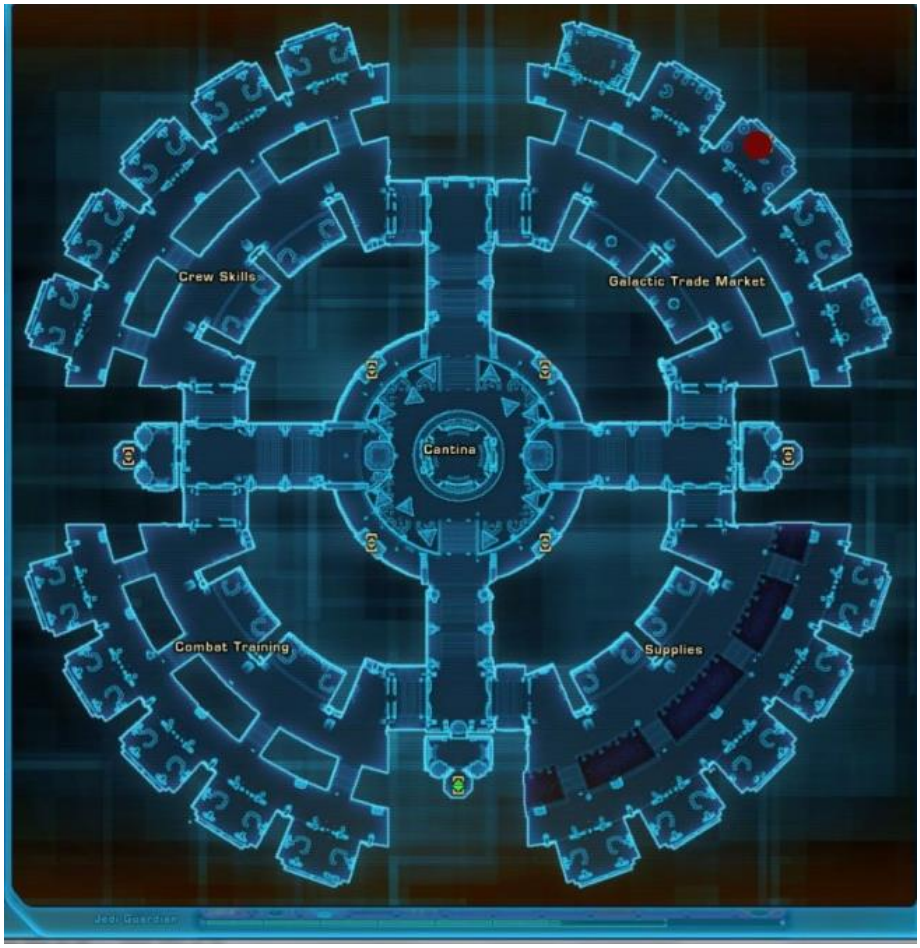
You must produce the game "Space Station Rescue". This is a single player shoot 'em up. The aim of the game is to rescue all the workers in the space station by flying around, locating the workers and rescuing them.

The player's ship is controlled using the left, right and up arrows. Left and right arrows cause the ship to turn anticlockwise and clockwise respectively. The up arrow applies thrust to the ship in the direction it is pointing. The space bar fires a bullet.

Enemy entities come in different guises and display differing behaviours as described below.

The Game World

The game is set in a large 2D space station. It comprises space docks/hangars where different game objects and workers may be located. These docks are connected by wide navigable corridors which may also split off in multiple directions. The game space therefore resembles a maze and you must navigate the space in search of the workers. Think about how you will design the game world and how you will plan paths through it. Way point navigation would be suitable for path planning.
To stimulate your imagination the image below might represent the entire world:



The screen should scroll so that the player's ship is always in the centre of the screen (some leeway is allowed at the edges of the world). The game space total area of play should be 9 times that of a single screen. Full world radar should be provided for the player so they can see where to go.

Workers

These are small NPCs (people) which should be placed as you wish around the game world and who should slowly wander. There should be lots of them, spread out, in order to make the game interesting. When the player ship touches a worker they are considered rescued and are removed from the game.

Alien Nests

These are alien manufacturing objects which produce predators (up to a maximum). They should be randomly positioned in the game space. Don't make too many of them (2 or 3 perhaps?). They can survive four hits from the player. When the player's ship is within range they will fire interceptor guided missiles at the player. Interceptor missiles have the

same maximum speed as the player and will explode if they do not reach the player within 5 seconds. A nest can only have 1 interceptor missile "live" at a time. Think about how the missile will follow the player, especially if the player flees down corridors and around corners.

Predator Ships
These seek out the player (perform a path find) and intelligently engage them. They have the same firepower and speed as the player ship. When in proximity of other Predators, they move together in a coordinated fashion. When they approach the player they implement an attack plan. There should be a limit to the number of Predator ships alive at any one time.

Sweeper Boids
These wander the station looking for workers. If they are in line of sight of a worker they will plot an intercept course and abduct the worker. If they are within sight of the ship they plot an escape route and flee. A Single shot from the player will kill a Sweeper Boid and transfer any abducted workers to the player.

Power-ups
To be decided by individual game designers, e.g. shield.

Collision Detection
Nothing is allowed to pass through the walls of the station, or another entity, therefore you will need to implement a collision detection and avoidance system for all entities.

Project Details
Game to be produced in **C++** with **SFML** and documented using Doxygen. Please use an environment variable **$SFML-SDK** to point to your SFML install location. I will be annoyed if I have to edit your project properties ☺.
You might check out the following link for some sprites:
http://opengameart.org/

Marks for each component specified above, a range of intelligent behaviours, smooth movement, playability and efficiency of algorithms.

5% bonus available for extras (once cleared with me first). Note the 5 points for enjoyability (you know it when you see it).

Player	Workers	Nests	Sweeper Boids	Predators	Collision Detecion	Power ups	Radar	Doxygen	Code Quality	Enjoyability	Extra
10	10	10	10	15	10	5	10	5	5	5	5

This is a team (of 2) project. Team submission must include the % of each component that each student contributed to. The team must therefore agree on these %s. Ensure that any specific technical requirements of the game are submitted in an accompanying Readme.txt.