Module	SEPR
Year	2019/20
Assessment	4
Team	Krojan Horse Expanding on NP Studios' Assessment 3
Members	Abel Kent, Toprak Onat Sen, Vinu Jey, Tom Emmerson, Diana Udrescu, Toby Popov, Jamie Todd
Deliverable	Implementation report

Implementation - Summary of changes

During this stage of the project, additional features were to be implemented that were not in the original product specification, we have created new requirements for each of these. According to the brief delivered to us, these features were as follows:

"- Implement five special power ups that Fire Engines can obtain on the journey"

UR_POWERUP
- We decided on the five power-ups to each have their own designated spot on the map they spawn at, each having different effects as follows
  - Instant health repair
  - Instant water refill
  - Damage buff (15 second duration)
  - Invincibility buff (15 second duration)
  - Teleport back to the fire station

  All these power-ups respawn in their designated positions after a short time.

- "Implement support for different levels of difficulty in the game (e.g. easy, normal, hard)"

UR_DIFFICULTY
- We chose on retaining these named difficulty settings with the differences between them being:
  - The projectile speed and damage increase the higher the difficulty.

- "Implement facilities that allow players to save the state of the game at any point and resume a saved game later" . **UR_SAVE**
- When pressing a hotkey 'K' this will save the game state and when 'L' is pressed the state is loaded back into the game.

Implementing these required significant additions to the existing architecture of the game. These have been detailed below alongside the relevant requirements they impacted.

Feature implemented	Change(s)	Requirement referencing	Notes
Save state	Implemented a save feature that keeps track of firetruck's health / water, alien patrols' positions and fortress healths	UR_SAVE_STATES	
Load state	Implemented a load feature that returns the firetruck's health / water, alien patrols' positions and fortress healths to the previously saved state.	UR_SAVE_STATES	All aliens will reload at the start of their pathfinding, however any killed aliens remain dead.
Difficulty menu screen	Implemented three buttons, 'easy', 'meh' and 'hard' to a new difficulty screen accessible from the game menu.	UR_DIFFICULTY	
Difficulty modes in-game	Implemented difficulty modes by altering damage and projectile speed of fortresses and alien patrols	UR_DIFFICULTY	

Power-ups	Implemented spawn locations, timers and hitboxes for power ups	UR_POWERUPS	5 different power ups that affect different properties of the fire trucks

Additional implemented features / bug fixes

At this stage the only other additional feature that we implemented was the implementation of a WASD control scheme on top of the existing arrow keys control scheme. This was done to make the game more intuitive to users, as most video games of a similar style use this control scheme for more experienced users, with arrow keys for more novice ones. This meets our user requirement of [UR_INTUITIVE].