Implementation Report

All features and requirement changes set in the fourth assessment were met, alongside some additional changes required by the project we had adopted, as parts of the brief had not been met. The additions and modifications are described in the table below along with their implementation and justification, and their respective requirement if so applicable. Only minor changes to the architecture were made, shown in the Implementation and Code References where applicable along with some changes for optimization and readability.

Updated Requirements Document: link
Code & Related Files: link

Changes Made	Implementation	Justification & Requirement	Relevant Code References
A Points System was added to the game.	A points variable was added to the Zepr Class with functions to add and get points. A points counter was added to the level class so points are displayed while playing. Points are gained from killing enemies, avoiding enemies, completing the safezone and completing the minigame. When the player gets a game over, points are reset to 0.	This was added to fulfil the original base requirements. This had been left unfulfilled by the previous team and so the project needed updating appropriately. This meets the new requirement: F11	In BonusLevel: ADDBONUSGAMEPOINTS In Constant: POINTSSYSTEM In GameOverScreen: GAMEOVERRESET In Level: POINTSCOUNTERLABEL AVOIDTIMERINIT UPDATEAVOIDTIMER POINTCOUNTERSET POINTCOUNTERDISPLAY SAFEPOINTGAIN In Zepr: POINTSINIT POINTFUNCS
A Safe Zone was added to the game.	A guard was added to prevent zombies from spawning in the Library level. The level is won after waiting a period of time. Points are awarded when the level is completed. After the safe area is completed, the difficulty of the entire game is increased.	This feature was added to fulfil the base requirements. As this had not been fulfilled by the previous team, the project needed updating appropriately. This meets the new requirement: F12	In Constant: SAFEAREADIFFICULTYRISE In FlamingZombie: SAFEAREADIFFICULTYRISE In Level: SAFEAREATIMER SAFEAREAENABLE SAFEPOINTGAIN In LibraryLevel: SAFEAREAWAVES In Zombie: SAFEAREADIFFICULTYRISE In ZombieFast: SAFEAREADIFFICULTYRISE
The Collision System was changed.	The existing collision systems were modified such that collisions are now managed by a single system that uses the concept of overlapping rectangles which is easy to resolve.	The previous system used distances from other objects, which caused zombies to get "caught" on their environment. This modification was made to smooth gameplay and stop players from purposefully luring the zombies to these areas for their advantage.	In Character: COLLISIONUPDATE In Constant: COLLISIONUPDATE In Level: COLLISIONUPDATE TILEDMAPOBSTACLES TILEDMAPOBSTACLESINIT MAPOBSTACLES LOADCOLLISIONOBSTACLES
A knockback system was added to the game.	This forces enemies to be moved in the opposite direction when hit by the player. As the zombies always move towards the player, it was a simple change.	This was added to make the game more interesting, while also making gameplay easier as test players found the difficulty too hard. It was additionally implemented as an	In Character: KNOCKBACK In Player: KNOCKBACK

		alternative strategy to the game than luring the zombies to areas the collision system would "capture" them.	
The mini-game was fixed and its graphics changed.	The movement of the geese was reversed each time the geese hit the edge of the screen. Geese now face in the direction they floating. All graphics for the minigame were changed. Targets and geese now have a circular hitbox, rather than rectangular.	This modification was made to fulfil the base requirements. The minigame was previously very difficult and boring to play; the geese would move towards the corner of the screen and be unable to be shot, the geese would also jump back across the screen. Graphics were changed to fit alongside gameplay changes and make them more in line with level graphics. Requirement: F5	In BonusGoose: BONUSGOOSEDIRECTIONFIX In BonusLevel: BONUSGAMENEWTEXTURES BONUSHITBOXFIX
The ability to become a zombie was added to the game.	A variable was added to the Zepr class, which is set when the player is killed in the human state. Once the player is zombified, the player will appear as a zombie and the enemies will appear as humans. The zombie player has no special abilities, but the highest stat from all player types. If the player dies as a zombie, the game is reset to the state it was at at the beginning of the game.	This was added to fulfil the new requirements put forward as of Assessment 4. This meets the new requirement: F13	In BossCentralHall: ZOMBIESTORYENEMIES In BossCourtyard: ZOMBIESTORYENEMIES In Constant: ZOMBIESTORYPLAYER In FlamingZombie: ZOMBIESTORYENEMIES In GameOverScreen: ZOMBIESTORYGAMEOVER In Level: ZOMBIESTORYGAMEOVER ZOMBIESTORYENEMIES ZOMBIESTORYUI In Player: ZOMBIESTORYPLAYER In PowerUpCure: CUREZOMBIESTORY In SelectLevelScreen: ZOMBIESTORYPLAYER In Zepr: ZOMBIESTORYBOOL CUREZOMBIESTORY ZOMBIESTORYCHECK ZOMBIESTORYSET
A zombie storyline was added to the game.	The text on the Select Level screen changes once the player becomes a zombie. The level names and level descriptions change to variations on "Brains". The enemies become human, with the aim to zombify as many as possible.	This was added to fulfil the new requirements put forward as of Assessment 4. The more subtle approach to the zombie change was favoured as a reference to the straight-mindedness of zombies. This meets the new requirement: F13	In SelectLevel: ZOMBIESTORY
A cure was added to reverse the zombification.	An additional powerup was implemented. Once used, nearby enemy zombies and the player (if a zombie) turn into humans. The cure sends enemies running and then ends the wave. The cure spawns at set intervals of points.	This was added to fulfil the new requirements put forward as of Assessment 4. This meets the new requirement: F14	In BossCentralHall: CUREEFFECT In BossCourtyard: CUREEFFECT In Character: CUREEFFECT In Level: CURESPAWNCONDITION PowerUpCure In PowerUpCure: CUREEFFECT CUREZOMBIESTORY In Zepr: CURESPAWNCONDITION CUREZOMBIESTORY