Software Requirements and Design Document

For

Group - Killer Among Us

Version 3.0

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1. Overview (5 points)

We are proposing to create a mobile app platform-based game with a storyline integrated in it. The storyline is about a boy who takes matters into his own hands to find the killer of his mother. During the levels, he faces obstacles and is given clues on the journey towards the killers from ghosts who have passed due to the mysterious incident. At the end of the game, the player will find out the true identity of the killer.

2. Functional Requirements (10 points)

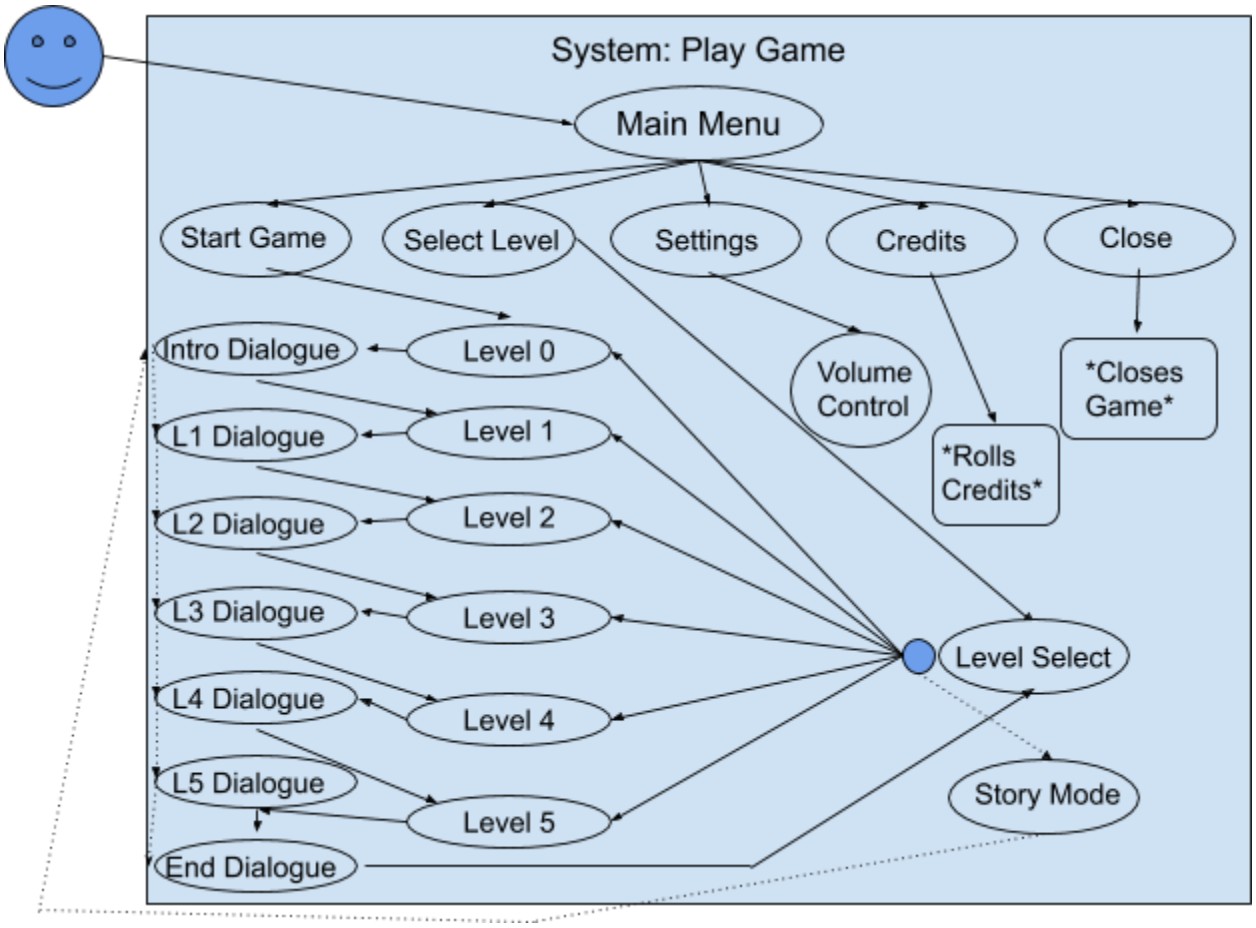
1. Player presses left, right, or jump button -> Character should move to the left, right, or jump (High)
2. When the character hits enemy characters, weapons, or falls off platforms -> Character should respawn to beginning of level/back to checkpoint (Medium)
3. Player approaches floating background ghost -> dialogue should pop up if the player is in range and disappear otherwise, text should float with ghost (Medium)
4. Player reaches end of platform level by traveling through the door at the end of the level ->Takes player to dialogue portion of the game (High)
5. Player chooses to start game/choose level selection -> Takes player to the specific game level (Medium)
6. Player presses options menu -> Player can adjust the volume (Low)
7. Player reaches a checkpoint -> Flag should change colors from red to green (Low)
8. Player collides with an item -> item should be “picked up” and disappear from the screen, should be saved into a variable or trigger an action based on object tag (Medium)
9. Player has or does not have item -> triggers or fails to trigger an action based on item possession (Medium)
10. Player presses a pause menu input button -> Player can choose to select resume, restart, main menu, settings, or quit (Medium)
11. Pause Menu Resume button -> Player can resume the game. Unfreezing player and enemy movements, and allow user input to go through again. (Medium)
12. Pause Menu Restart button -> Level should restart with character being in beginning position for the level. (Medium)
13. Player reaches a dialogue scene -> Player should be able to choose options for which dialogue they want to respond with (High)
14. Player reaches falling hazard portion -> player should die if hit by falling hazard (Medium)
15. Player encounters enemy -> player should die if touching enemy (Medium)

16. Player collides with ladder -> player should be able to move up and down ladder (High)
17. Player encounters moving platform -> player should be able to jump on platform and move with it to next designated spot(High)
18. Player collides with falling platform -> platform falls -> platform respawns shortly after in case player fails and must start over again (Medium)
19. Player collides with hazard -> deduction to lives counter (High)
20. Player opens up menu or level -> background music should play for the levels and there should be sound effects for the UI elements on the menu (Medium)
21. Player completes platform or dialogue level -> should go to next respective level (High)
22. Player completes level and loads Level Select -> next level should “open up” and the button should also show up (High)
23. Player clicks certain button in dialogue scene -> should change camera to change background graphics (Medium)

3. Non-functional Requirements (10 points)

1. To implement responsive user input, we have to tune things like run, jump, and speed, or how fast gravity affects the player object.
2. To avoid collisions between the player and the platform, individual tiles which make up a map had to be treated as one large tile in the foreground. This is necessary because otherwise the player can clip into each individual tile in the scene.
3. UI & Controls needs to be iOS compatible, Standard Assets - CrossPlatformInput is essential.
4. Minimal frame rate needs to be at least 30 fps in order to guarantee a positive game experience.
5. Needs to be small enough to not take up too much RAM on an iOS mobile device.

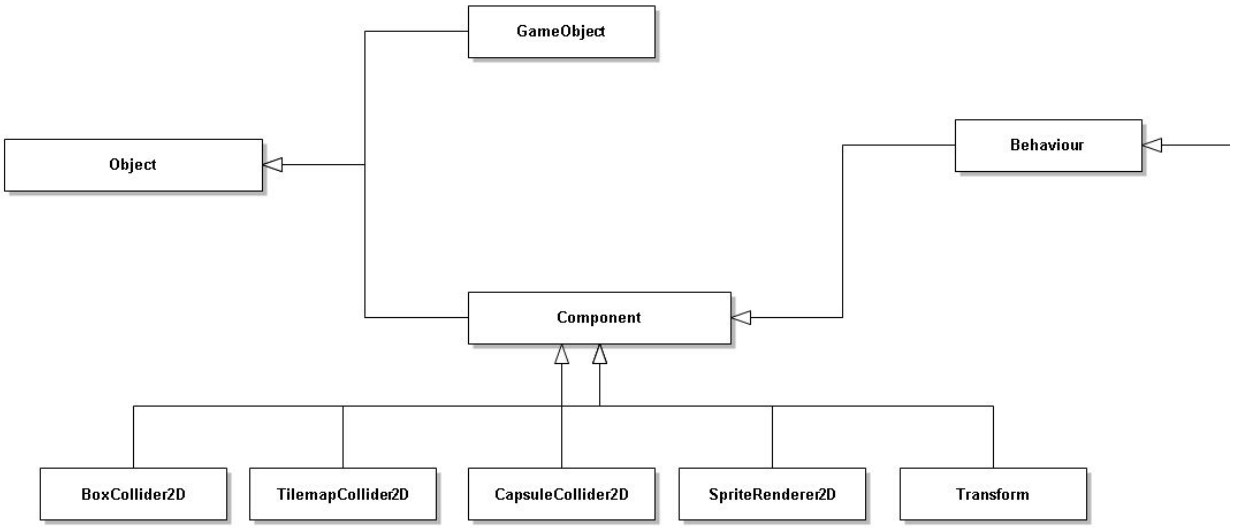
4. Use Case Diagram (10 points)

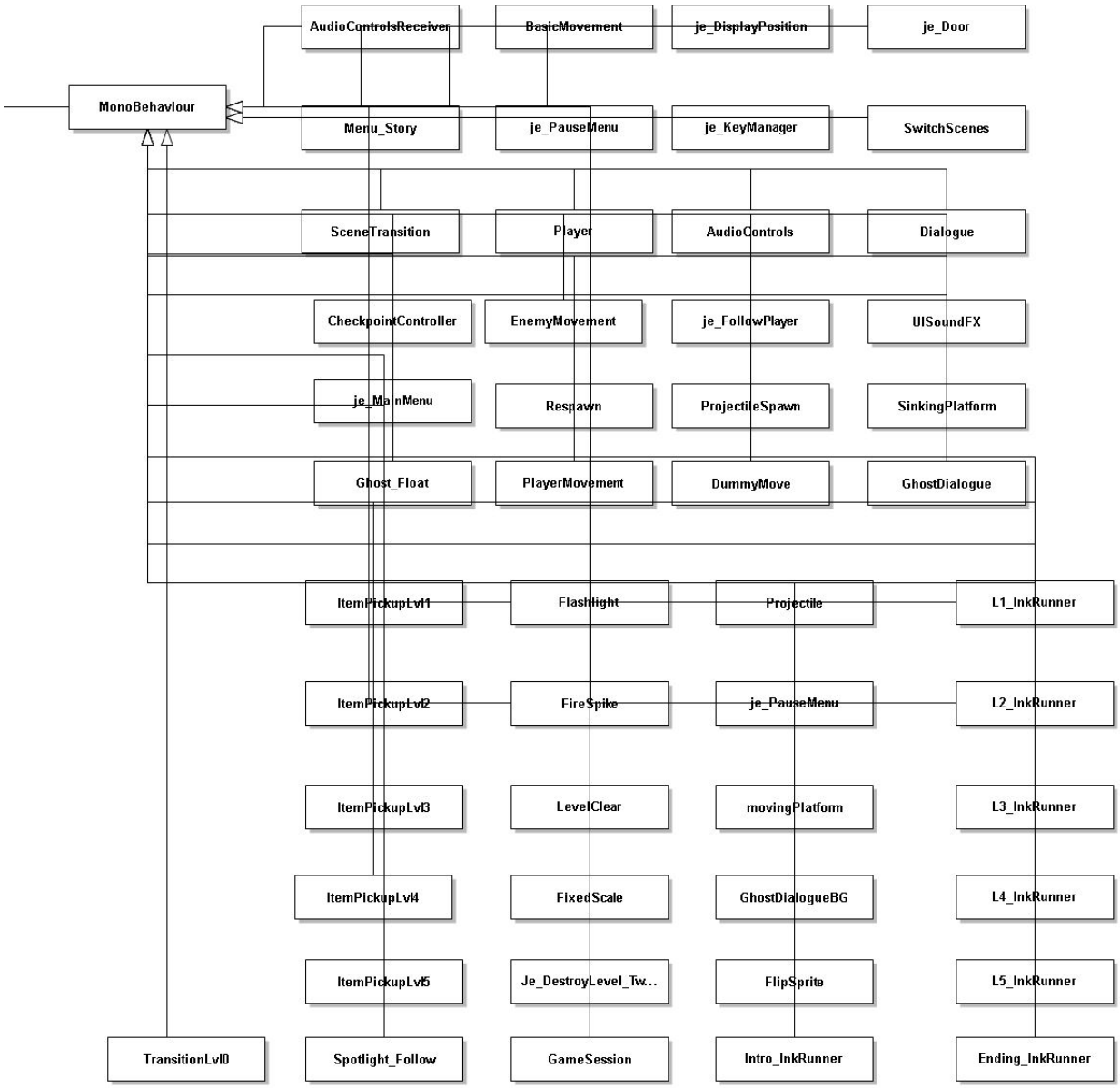


Textual Description of Use Case for “Play Game”	
Actors	Player
Preconditions	The Player must be able to successfully open/load the game.
Normal Flow/Path	The Player goes through levels linearly and completing levels unlocks them on the Level Select. After completing Level 5, the Story Mode option is available on the Level Select.
Postconditions	When the Player closes the game, the amount of levels completed should be remembered in order to populate the Level Select correctly upon opening the game again.

5. Class Diagram and/or Sequence Diagrams (15 points): Class Diagram below

** MonoBehaviour inherits from Behaviour




AudioControlsReceiver
BasicMovement
je_DisplayPosition
je_Door
MonoBehaviour
Menu_Story
je_PauseMenu
je_KeyManager
SwitchScenes
SceneTransition
Player
AudioControls
Dialogue
CheckpointController
EnemyMovement
je_FollowPlayer
UISoundFX
je_MainMenu
Respawn
ProjectileSpawn
SinkingPlatform
Ghost_Float
PlayerMovement
DummyMove
GhostDialogue
ItemPickupLvl1
Flashlight
Projectile
L1_InkRunner
ItemPickupLvl2
FireSpike
je_PauseMenu
L2_InkRunner
ItemPickupLvl3
LevelClear
movingPlatform
L3_InkRunner
ItemPickupLvl4
FixedScale
GhostDialogueBG
L4_InkRunner
ItemPickupLvl5
Je_DestroyLevel_Tw...
FlipSprite
L5_InkRunner
TransitionLvl0
Spotlight_Follow
GameSession
Intro_InkRunner
Ending_InkRunner

6. Operating Environment (5 points)

The operating environment will be iOS on a mobile platform. It will be working with the Unity 2019.3.15f version and the current iOS version 13.5.1, as the build of the game will be on the latest iOS version, therefore it must be a version of Unity that is compatible with iOS and keeps up compatibility if the iOS system is to be updated. Alternatively, the iOS version must be compatible with the version of Unity being used.

7. Assumptions and Dependencies (5 points)

There are online assets that are being used in the game, so for future development purposes, if those resources were no longer available or licensing permissions were changed, then it would affect the animation portion. The software will be dependent on Unity working properly with iOS, due to this dependency, updates within the iOS system and Unity versions must be taken into account for compatibility with one another. An assumed factor is a technology based assumption that we will be able to implement all our features such as dialogue box interaction, enemy and obstacles, etc. with the tech available with Unity; and if our assumptions are wrong we may have to change some plans. Another assumption is time based, that we would be able to make a base level for this increment so we have an example to go off of in future increments, and if this is not done, it could set us back time wise because we would lack a visual and basic components/scripts to proceed to make additional levels and need more time to add them. Additionally, we had certain design based assumptions that we would decide upon now in order to proceed with the building process, such as the storyline and level setup, and if those aspects were not decided upon, we would have been behind with no set idea of how we would want to proceed. An assumption around technology was also that we would have Unity and the GitHub extention’s cooperation and it would be smooth running for the most part, however we ran into plenty of challenges on both ends that were not anticipated and affected timing of some plans.