Project:	SUPER AWESOME SKATEBOARDERS (SAS)
Team No.:	Team 9
Class:	CSE 3310; Fall 2022
Module:	System Requirements Analysis (SRA)
Deliverable:	SRA Document

Version: [1.0] **Date: [10/27/2022]**

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Revision History

Version number	*Date*	*Originator*	*Reason for change*	*High level description of changes*
1.0	10/27/2022	Team #9	Initial draft	
2.0	12/6/2022	Team #9	Game changes update	Adjusted game controls and requirements analysis

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1. Introduction and Project Overview

To create mobile skating platformer game where the players get to explore a small city where they can perform tricks. The goal will be to get the highest score before the day is over (time limit). Tricks will be anything from kickflips to rail grinds. The player may also take on NPC requests challenges for bonus scores, which may have its own time limit.

- The game will start at the beginning of the level and will present a button prompt to tell if the player is ready to start the game, and to know when to start the game timer.
- There will be a button that will take the player to a previous high score screen.
- There will be a button to open the settings screen, which will allow the player to adjust the effect sounds, music sound volume, and overall volume. The player will also be able to customize button positioning. Finally, the player can change the display dimensions to fit his own device better
- There will be a button that takes the player to a character select screen. It will provide the information about the differences of each character abilities and will provide a sliding gallery of the characters idle animation appearance
- Levels will consist of various platforms. These will be represented through rooftops, halfpipes, sidewalks, roads, benches, stairs, and railing. Some obstacles may accelerate or bounce the player in a different direction. Additional score increasing collectibles will be spread across the level
- The player will be able to move left, right, or jump. There will be two additional buttons for various tricks. Which can be further combined with directional input to create additional tricks. Tricks can be performed both in the air and on the ground. Plays can also use the jump button to perform a wall jump, or to perform a grind. Grinds can also permit the use of the trick button to change position.
- Hitting a solid wall, landing while performing a trick, or falling from too great a height will result in a broken board. Players only have so many spare parts before they half to call it in for the day. Players can find additional parts throughout the level, but they tend to be in hard-to-reach places.
- NPC’s will be sporadically placed across the level, a dialogue box describing the quest will float above their heads. Usually this is some form of combinations of tricks, but it may be a series of collectables. The NPC can be interacted with via the trick button, which will promptly start the challenge. An additional timer for the challenge will appear on the UI, and a large score reward will be allotted on completion, or the NPC will announce disapproval upon failure.

- Upon time limit expiration, a score screen will appear describing the scores from tricks, quests, and collectables. At which point the environment will turn to night, and the player character will walk off screen, displaying some form of exhaustion and satisfaction based on the score.

2. Objectives

2.1 BUSINESS OBJECTIVES

The following is a list of business objectives:

Objective 1: Menu: The user has access to the menu which loads when game is first opened. It has the following options:

- Start: Loads game environment and starts game
- Settings: Opens settings page of menu
- Quit: Exits game

Objective 2: Settings: The user should be able to adjust the following via the settings menu

- Game Controls: Displays game controls for keyboard and mouse keys.
- Fullscreen: Option to toggle fullscreen
- Change resolution: Drop-down menu to change game resolution
- Change gameplay volume: Adjust gameplay volume

Objective 3: Player Movement: Movement should feel like riding a skateboard. The player should be able to do the following while still being able to move left or right:

- Jump: speed of skateboarder and length of time the button is held down determines jump height.
- Grind: jump when near railing allows skateboarder to grind on railing
- Tricks: skateboarder can do tricks while idle, moving, in the air, or grinding; uses keyboard trick buttons [Q / E].

Objective 4: Game Environment: The game includes various obstacles that either can cost a player board or to increase the score. It would also include various collectibles to both improve score and to recover boards. Finally, there should be various checkpoints across the level in case the player loses a board.

Objective 5: User Interface: The game should properly display the correct time of how the player has been playing the stage, and also accurately display the player's score and speed.

Objective 6: End Gameplay: The game should allow the player to exit whenever the player pauses the game or dies.

2.2 SYSTEM OBJECTIVES

The following is a list of system objectives:

Objective 1: The game will be a Unity Desktop game

Objective 2: Game will utilize C# with visual studio

Objective 3: Game will utilize the UnityEngine library of C#

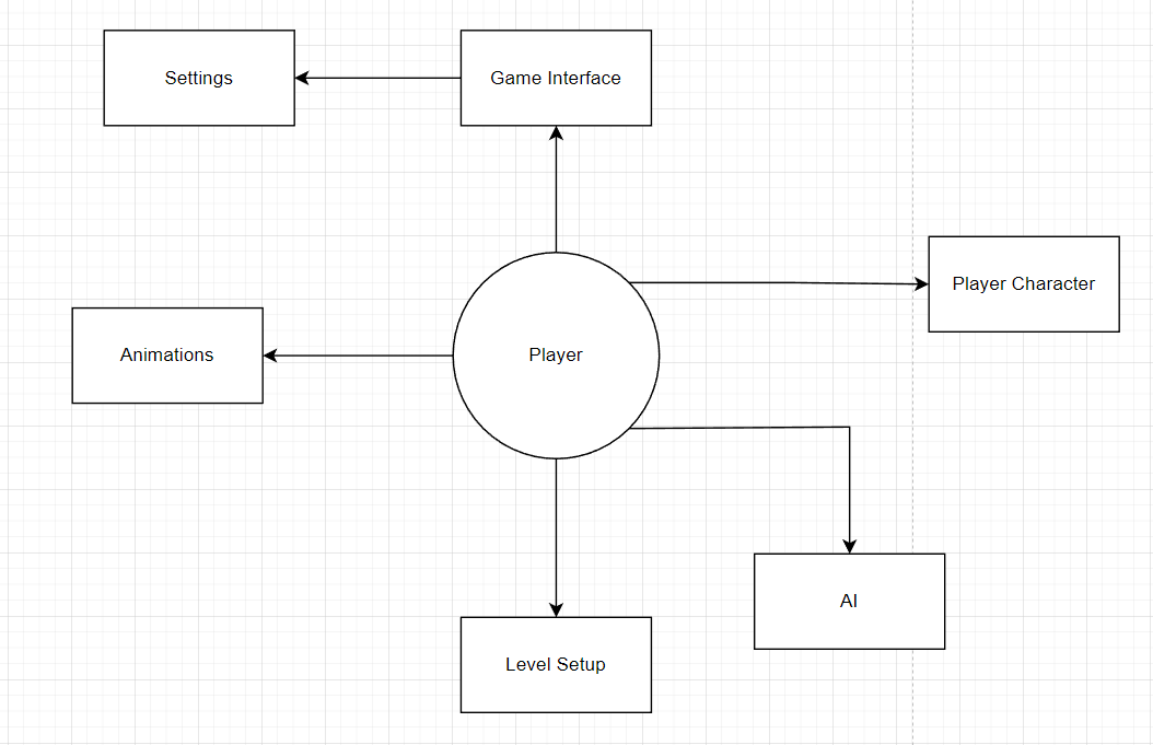
Objective 4: Use Asset Library for editor embedded tools

Objective 5: Utilize the Unity Standard Asset Pack

Objective 6: All art will be custom made using Clip Studio and SAI2

Objective 7: All music used will be non-copyright from YouTube

3. Project Context Diagram



4. Systems Requirements

4.1 "MENU" REQUIREMENTS

Requirement Title:	Menu
Sequence No:	001
Short description:	Main menu displayed on screen
Description:	Displays the initial menu to navigate throughout the rest of the application. Contains: - Start - Multiplayer (Optional) - Settings - Quit
Pre-Conditions	Successful Application Launch
Post Conditions:	- User starts gameplay loop after clicking on 'Start' - User navigates to Multiplayer mode after clicking on 'Multiplayer' - User navigates to settings page after clicking on 'Settings' - User exits application after clicking on 'Quit'
Other attributes:	-None

4.2 "SETTINGS" REQUIREMENTS

Requirement Title:	Settings
Sequence No:	001
Short description:	Settings menu with adjustable settings
Description:	Settings page will be a subsection of the menu that will allow the player to: - Adjust master volume - Toggle fullscreen - Change display resolution
Pre-Conditions	Click on 'Settings' from the Main Menu

Post Conditions:	- Adjust master volume using a slider - Toggle fullscreen using a checkbox - Change display resolution using options ion the drop-down menu
Other attributes:	-None

4.3 "PLAYER MOVEMENT" REQUIREMENTS

Requirement Title:	Player Movement
Sequence No:	001
Short description:	Define player movement patterns and animations
Description:	The player will have the following attributes: - Acceleration - Top speed - Trick List - Score Table - Jump height - AnimationTable A player will be able to do the follwing in-game: - Jump: Jump after clicking the spacebar key - Accelerate left/right: using A/D or right and left arrow keys - Tricks: Do tricks by clicking the trick button and a directional key (arrow / WASD) - Wall Jump: Jump when touching a wall to perform a wall jump - Rail Grind: Jump onto a railing to perform a rail grind - Ground Dash: Press ground dash key to perform ground dash - Brake: Press brake key to stop player's ground movement
Pre-Conditions	- Player Control Must be enabled via game manager - Gameplay loaded - Player alive and in game
Post Conditions:	- After a cutscene, control must be transferred back to the game manager
Other attributes:	-None

4.4 "GAME ENVIRONMENT" REQUIREMENTS

Requirement Title:	Game Environment
Sequence No:	001
Short description:	Load and display game environment
Description:	Load the Hazards: - Spikes - Cars - Oil Load Obstacles: - Ramps - Rails - Boost pads Load Collectables: - CDs (contributes to the score)
Pre-Conditions	- Have the available assets and scripts in the game environment directory so the game environment may be setup - Player must be in game and alive
Post Conditions:	- Assets and Scripts are loaded in - Game environment interacts when player encounters a hazard, obstacle, or collectable (ie. increase score, increase speed, decrease friction, etc.)
Other attributes:	-None

4.5 "USER INTERFACE" REQUIREMENTS

Requirement Title:	User Interface
Sequence No:	001
Short description:	Display user interface
Description:	Displays the following user statistics onto game interface: - Speed - Score - Time: Displays how long the user has been playing the level
Pre-Conditions	- Game environment correctly loaded and set up

Post Conditions:	- The user interface updates the score and speed of every frame
Other attributes:	-None

4.6 "END GAMEPLAY" REQUIREMENTS

Requirement Title:	End Gameplay
Sequence No:	001
Short description:	Display the end of level screen
Description:	- If the player dies they may choose to exit to menu or restart the level from the last checkpoint. - If player gets to the end of the level they may choose to exit to menu or restart game User can press: ● Restart: Restarts to the last checkpoint or to the beginning ● Exit: Returns to the main menu
Pre-Conditions	● Player must reach end of level or die before reaching a checkpoint ● Level must be loaded already
Post Conditions:	● Save best achieved time and/or score
Other attributes:	-None

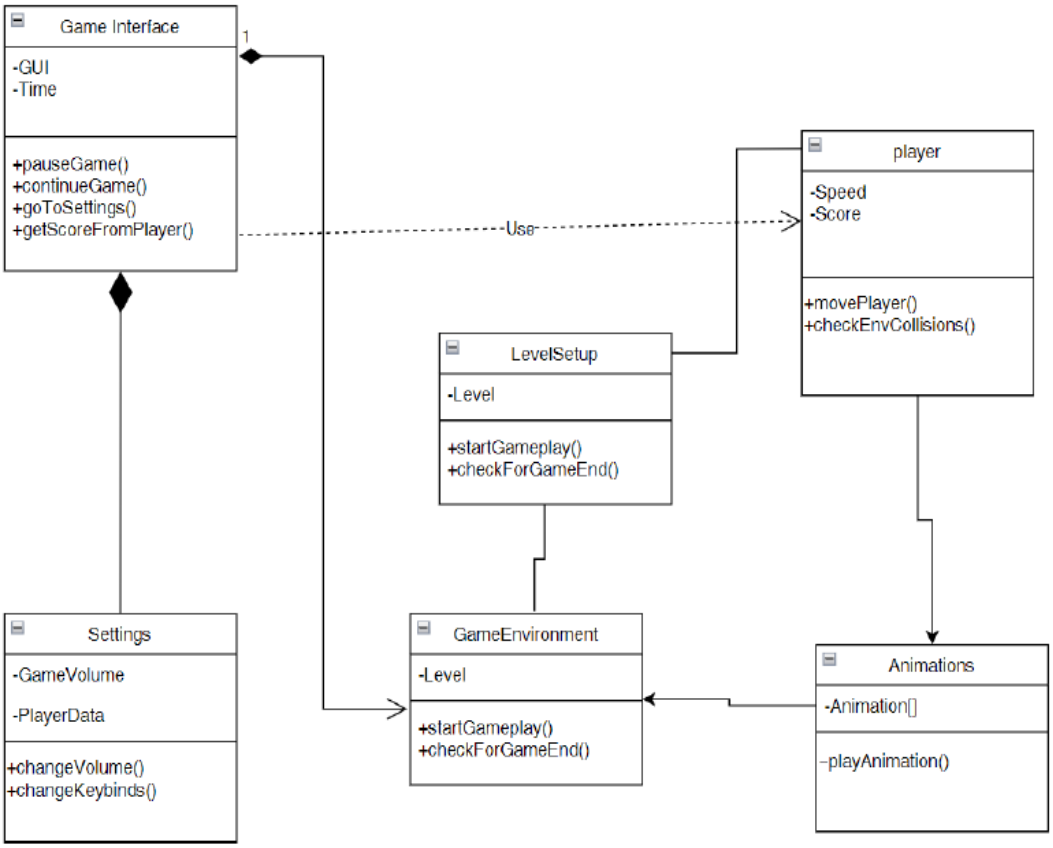
5. Software Processes and Infrastructure

5.1 HARDWARE AND INFRASTRUCTURE

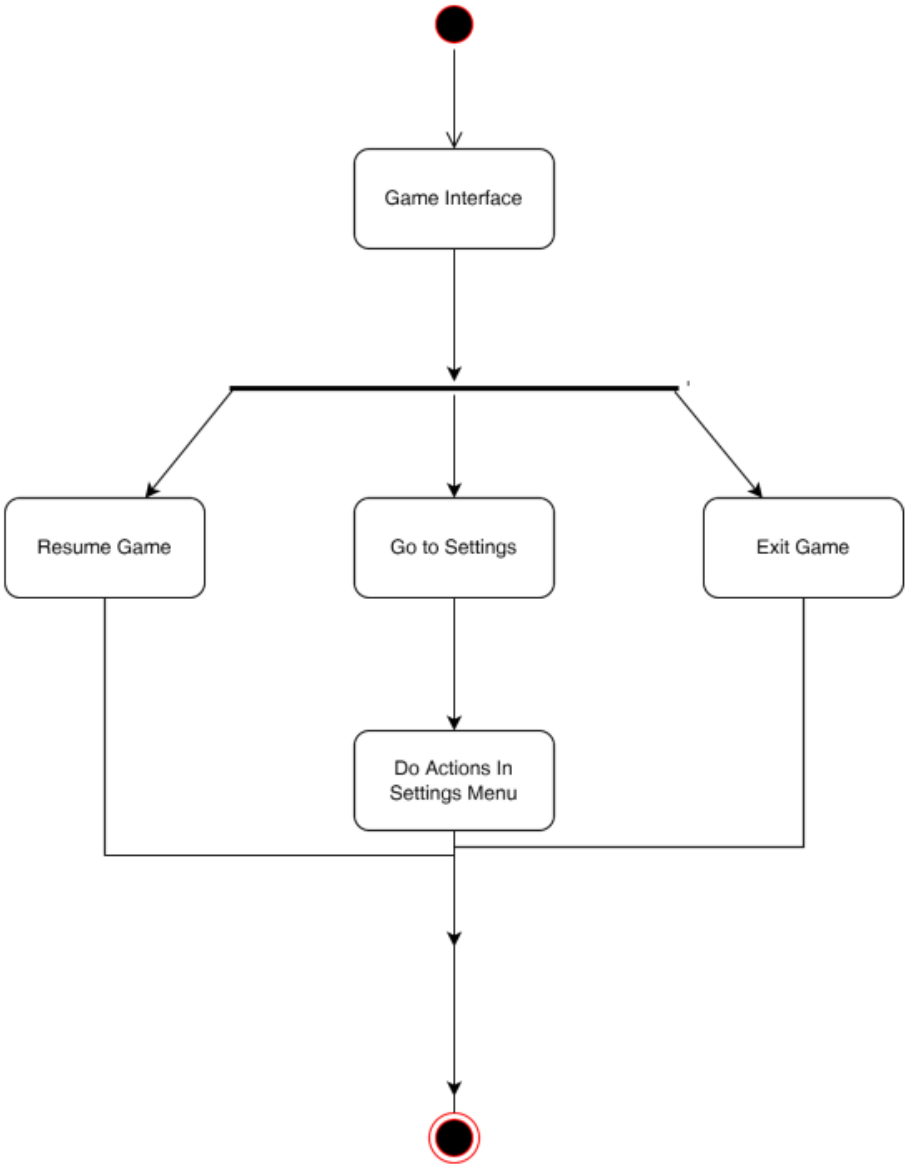
Desktop Application Game

5.2 UML DIAGRAMS

UML – CLASS DIAGRAM – SYSTEM

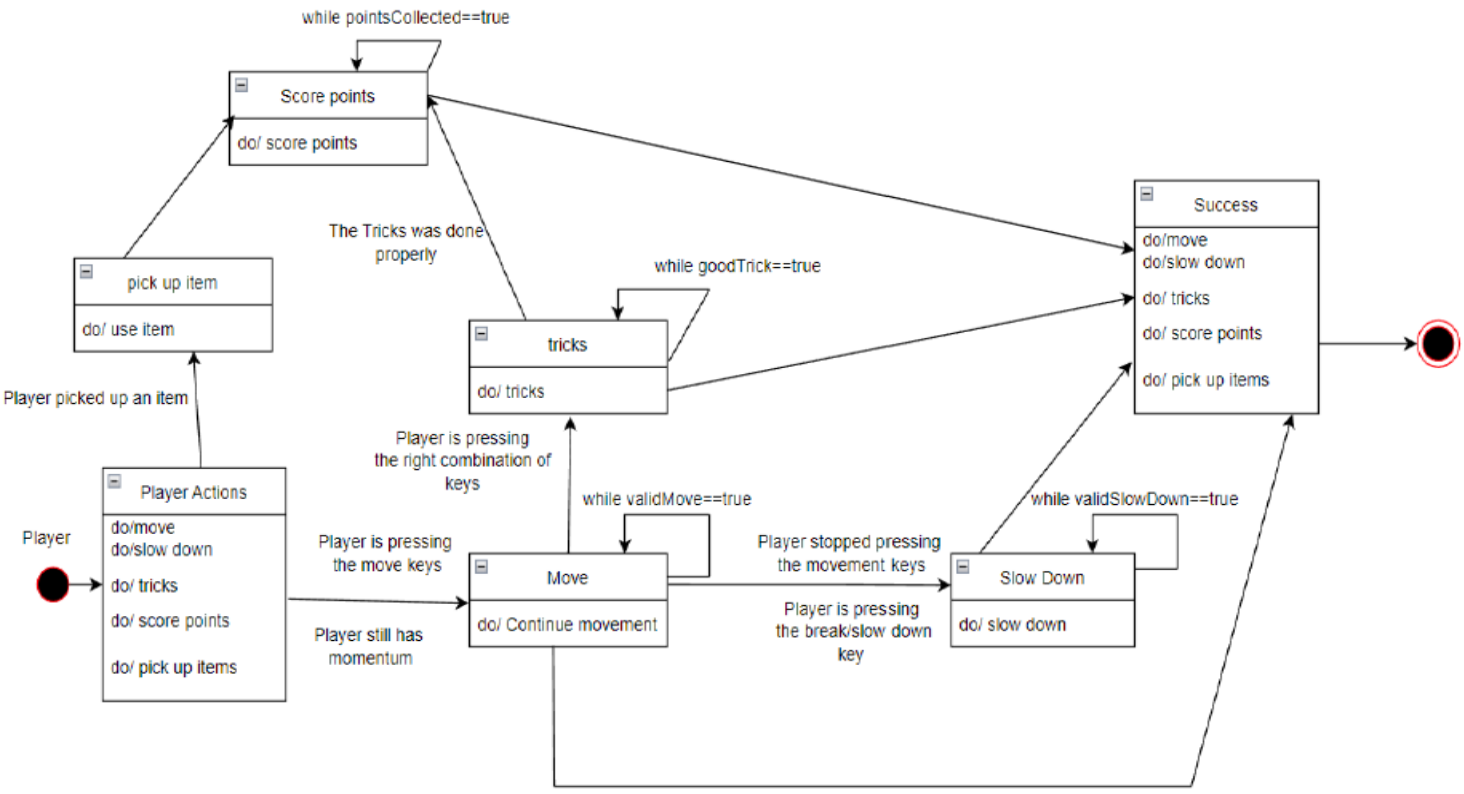


UML – Activity Diagram – GAME INTERFACE

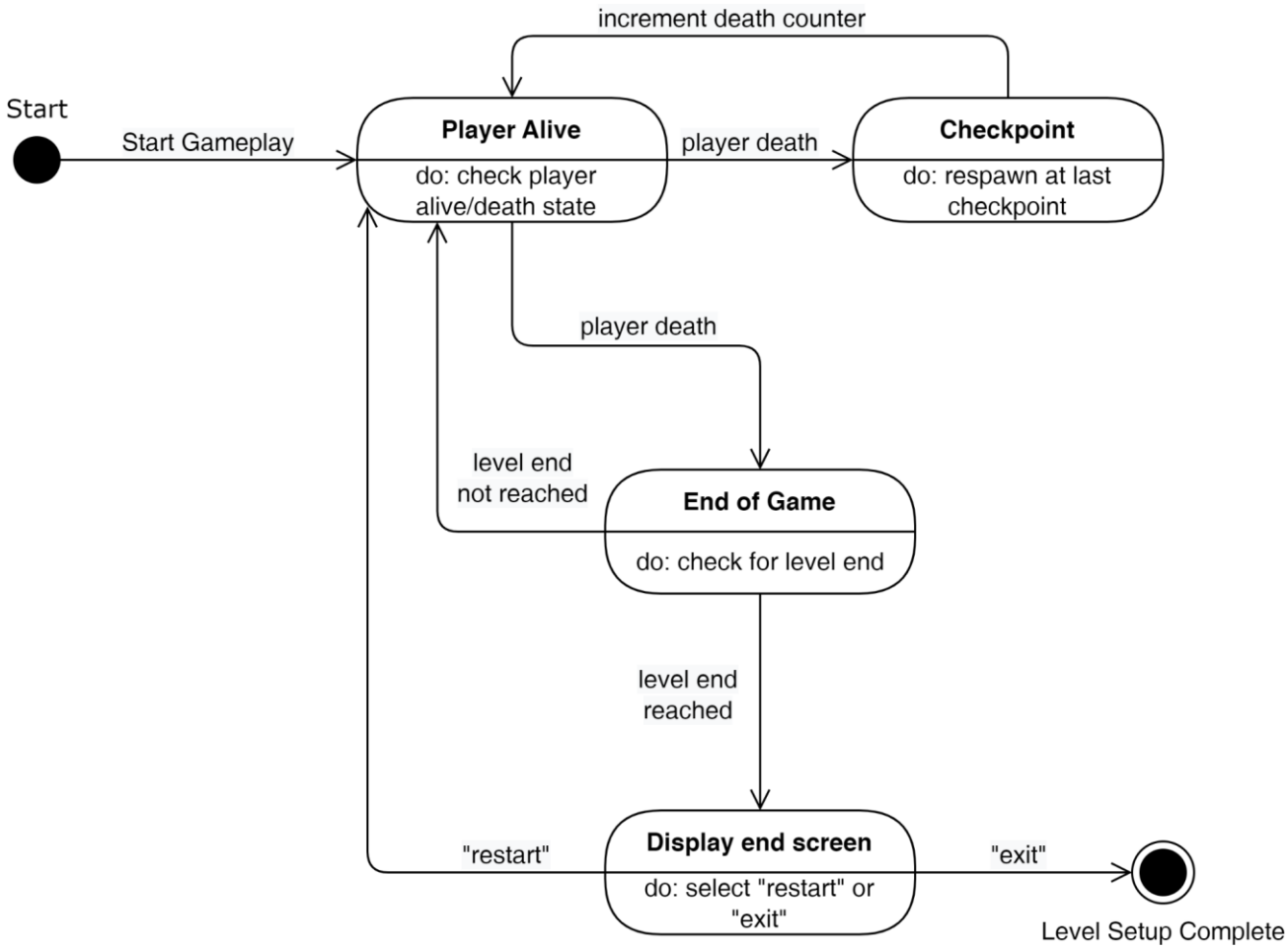


UML – Activity Diagram – SETTINGS

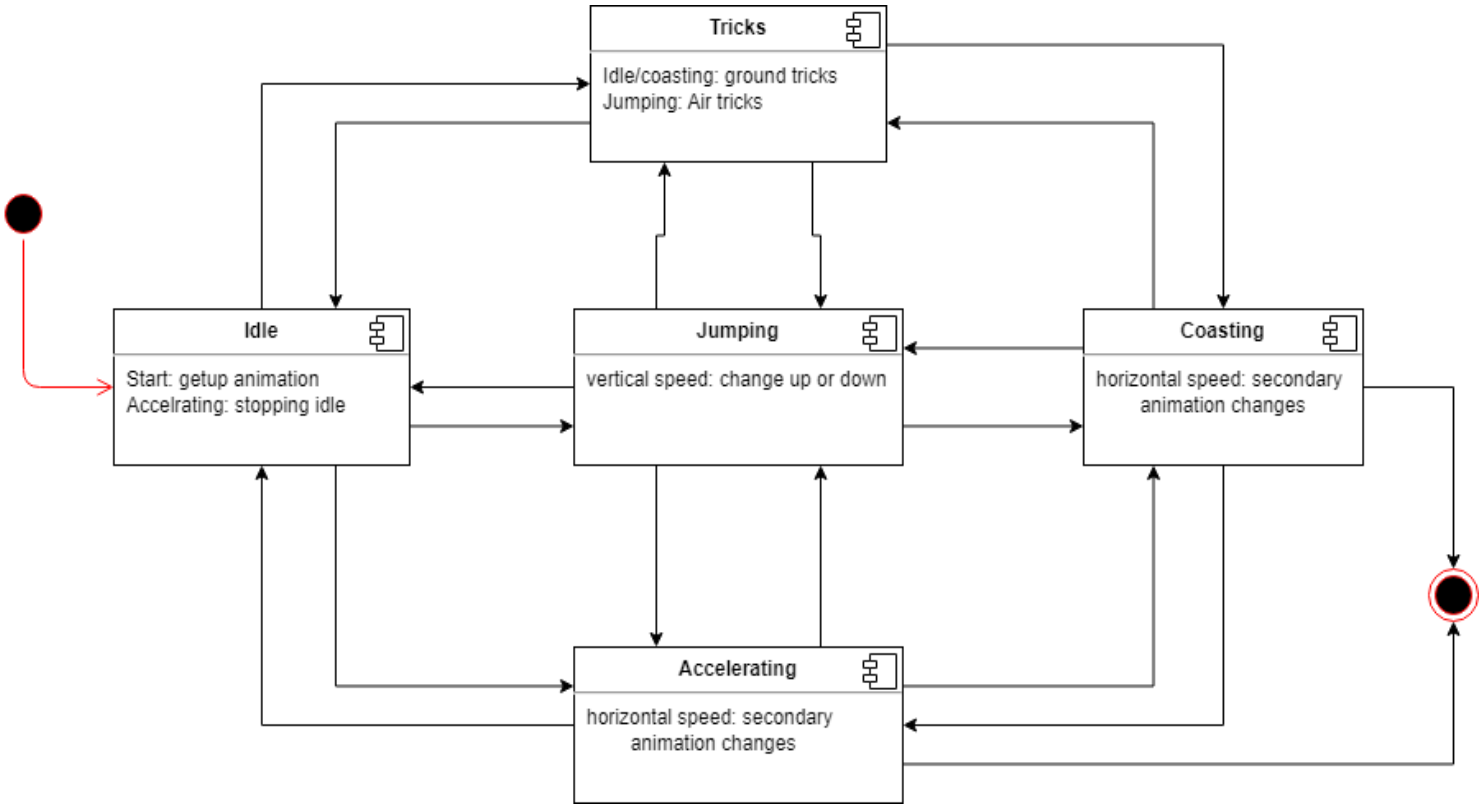
UML – STD – PLAYER CHARACTER



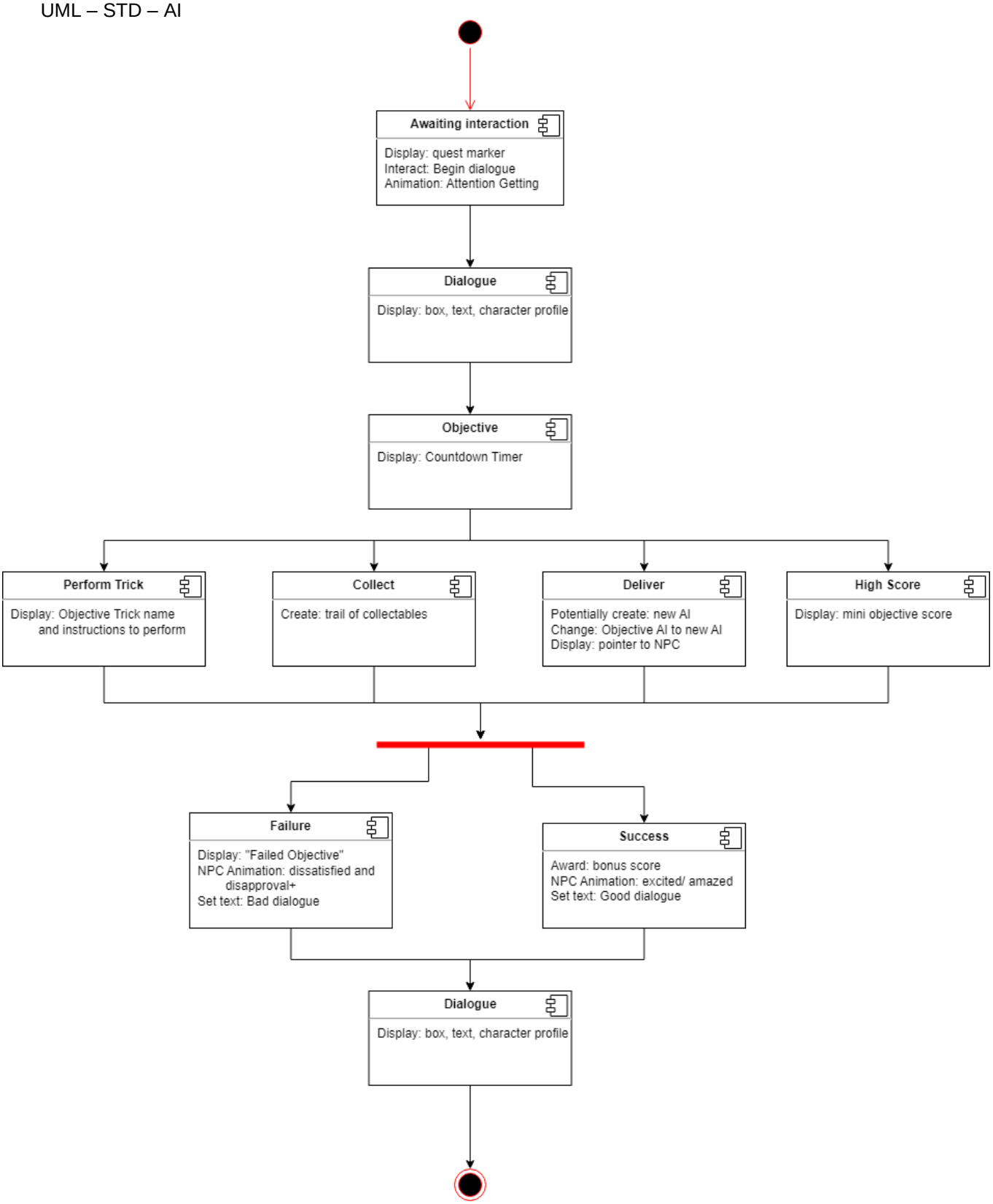
UML – STD – LEVEL SETUP



UML – STD – ANIMATIONS



UML – STD – AI


Awaiting interaction
Display: quest marker
Interact: Begin dialogue
Animation: Attention Getting
Dialogue
Display: box, text, character profile
Objective
Display: Countdown Timer
Perform Trick
Display: Objective Trick name and instructions to perform
Collect
Create: trail of collectables
Deliver
Potentially create: new AI
Change: Objective AI to new AI
Display: pointer to NPC
High Score
Display: mini objective score
Failure
Display: "Failed Objective"
NPC Animation: dissatisfied and disapproval+
Set text: Bad dialogue
Success
Award: bonus score
NPC Animation: excited/ amazed
Set text: Good dialogue
Dialogue
Display: box, text, character profile

5.3 SCREEN SHOTS

None available at this time

5.4 TEST PLAN

A test plan is provided along with this document.

6. Assumptions and Constraints

6.1 ASSUMPTIONS

The following is a list of assumptions:

- Assume that any device (that is, a device in a desktop environment) that can run unity ("That is, the unity development environment) can also play the game at (minimum) 24 fps
- Assume that the user is operating a keyboard and mouse setup

6.2 CONSTRAINTS

The following is a list of constraints:

- Members of the team lacks Unity-related OOP experience
- Moderately aggressive scheduling in conflict with external course materials

6.3 OUT OF SCOPE MATERIAL

The following is a list of "out of scope" material:

- The game will not continue to be maintained post-project.
- The game will be constructed with no intent of monetization or monetary gain in mind.
- The Extent of In-game Content will be limited to only the first level.
- The game will not have an overarching or branching narrative or connecting story.

7. Delivery and Schedule

{List all tasks/milestones from start of the project to the end with specific dates for both Anticipated Start & End Dates

Task/Milestone Description	Anticipated Start Date	Anticipated End Date	Status	Comments
Prepare Requirements and UML diagram	9/12/2022	9/28/2022	Complete	Deliverable UML document. Increment 1 Deliverable (Brendan)
SRA document (Includes project objectives, Requirements and UML diagrams)	9/29/2022	10/27/2022	In Progress	Deliverable will be the SRA document. All stakeholders agree on the content of the SRA by signing in section 8. Increment 2 Deliverable (Gabriel)
Home screen design and implementation	10/27/2022	11/08/2022	To Be Completed (TBC)	Design layout and options on the home screen (Raed)
Implementation of version control	10/27/2022	10/29/2022	TBC	Implement successful versioning with the team with high compatibility between Github and Unity. (Gabriel)
Implement Basic animation and art	10/27/2022	11/11/2022	TBC	Designing basic animation and art (Gabriel)
Create a basic test first level	10/27/2022	10/31/2022	TBC	Includes platforms, and a basic player object, Start and end of level (Raed)
Design and implementation of basic the movement system	10/27/2022	11/04/2022	TBC	Players can now do basic movement, move left and right and be able to jump. (Raed)
Design and Implement Hazards	10/31/2022	11/14/2022	TBC	Create springs, spikes, rails, moving platforms, cars, ramps/ half pipe assets. (Muawiz)
Design and implementation of an advanced movement system (tricks)	10/31/2022	11/23/2022	TBC	Tricks: jumping off walls, doing grinds, falling off the board, kick-flips (Raed)

Compile first Demo with assets	11/14/2022	11/17/2022	TBC	Compilation of first demo along with assets (Gabriel)
Test case design	10/28/2022	11/17/2022	TBC	Increment 3 Deliverable (Raed)
Implement collectables and checkpoints	11/17/2022	11/30/2022	TBC	Implementation of collectibles and checkpoints into the level (Muawiz)
Implement advanced animations	11/17/2022	11/30/2022	TBC	Implementation of advanced animation and tile-art designs (Gabriel)
Implement NPC and objectives	11/17/2022	11/27/2022	TBC	Implementation of NPC(s) and objectives (Gabriel)
Finalize and touch-ups	11/30/2022	12/6/2022	TBC	Completing and touching level (Brendan)
External Documentation	12/4/2022	12/6/2022	TBC	Completing Presentation Slides, Final overview of SRA Revision (Brendan) Create ReadMe and index pages, compile documents and set up project binder (Muawiz)
Project presentation		12/6/2022	TBC	
Final Milestone: project delivery		12/6/2022	TBC	Increment 4 Deliverable (Muawiz)

8. Stakeholder Approval Form

Stakeholder Name	Stakeholder Role	Stakeholder Comments	Stakeholder Approval Signature and Date
Bahram Khalili	Development Mgr		
Aidan Gennuso	Assistant Mgr		
Gabriel Majors	Developer/ Animator		Gabriel Majors 12/6/2022
Muhammad Muawiz Farooqi	Developer		Muhammad Muawiz Farooqi 12/6/2022
Raed Ali	Developer		Raed Ali 12/6/2022
Brendan Sophabmixay	Developer		Brendan Sophabmixay 12/6/2022

Appendix:

None