CSC2045 – Software Engineering

Tsuchinoko - Team 56

Anna-Lise Keenan (40204451)

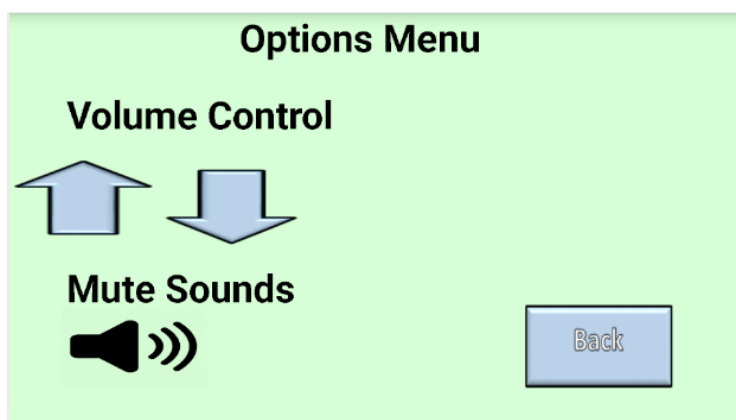Nathan Gilpin (40205452)

Robbie Connor (40203330)

Patrick McClintock (40199625)

Christopher Logan (40199554)

1. Interface Design

The initial main menu screen will present the user with five options to choose from in the form of buttons. Each button will being the user to a new page to allow them to view the rules, options credits or begin the game.

The **Options Menu** is accessible through the **options button** on the **Main Menu** screen or through the icon on the **Board Game** screen. This screen will allow the user to alter the volume controls of the music that plays in the background, with the inclusive option of automatically muting the sound. It is equipped with a functioning back button which will return the user to the previous page.

The **Credits** page is essentially an animation screen which allows the user to view the names of those who created the game. There is also a functioning back button to leave the screen. This can be accessed through the **Credits button** on the **Main Menu** screen.
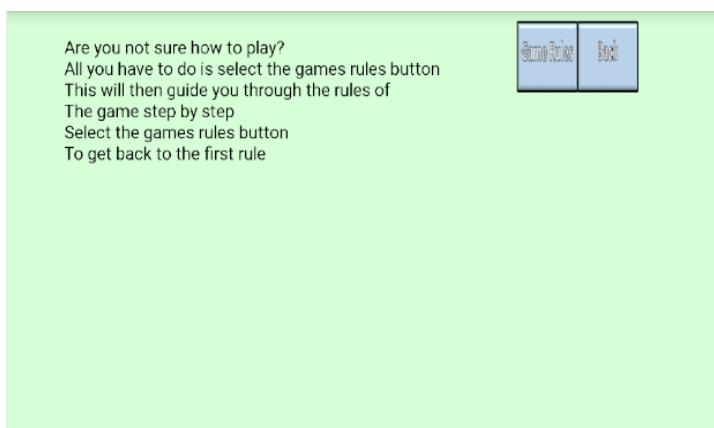
This is the beginning of the **Game Rules** section of the app. It allows the user to view the rules of the game, as shown below. The user can navigate through the rules screen with the arrows provided and can leave at any time through clicking the functioning **back button**. This screen can be accessed by clicking the **Game Rules** button on the **Main Menu** screen.

Object of the Game
At the start of the game, each player selects a starting location. Each player then receives a Unit to place on their starting location as well as the Tech Card associated with that starting location.

Tech Cards
Tech Cards are cards that are proof of ownership. Each Tech Card is associated with a Territory and an overall Technology. If you gather all the Tech Cards for a Technology, you gain a bonus depending on the Technology gathered. These bonuses can benefit you in battle, hinder your opponent or give you better movement options.

Moving a Unit
To move a Unit, place the Units you want to move to an adjacent allied Territory. Each Unit can only move once per turn.
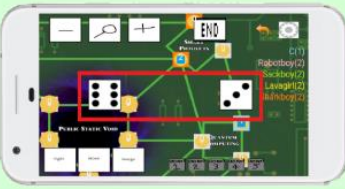

Taking Territories
To take over an empty Territory, the player rolls a dice against the Territory. If the attacker's roll exceeds the defending roll, they take over the Territory and gain a Unit + the associated the Tech Card. If they do not exceed the roll, nothing happens. To attack an enemy Territory, you must have Units adjacent to the Territory you want to attack. Each of your Units attempts to battle the defending Units. If the attacker defeats every single one of the defending Units, that player gains the territory, a Unit and the associated Tech Card for that Territory.

Performing Battles
To perform a battle, each player rolls a dice (typically a six-sided dice) and compares the rolls. The attacking player must exceed the dice roll of the defending player to defeat the defending Unit. A defeated Unit is removed from the game board and is not recoverable. If the results are equal or the defend Unit's roll is greater, the attacking Unit is defeated and removed from the game board.

Upgrading Units
Players can replace 3 Units on a single tile with a Large Unit. Large Units can roll 3 dice in an attempt to win a battle. If any of the three dice exceed the defending Unit's roll, the Large Unit wins. If the Large Unit does not exceed the dice roll however, the Large Unit is defeated.

Eliminating a Player/Winning the Game
A player is eliminated when all of their Units are removed from the game OR they have no remaining territories. An eliminated player as no more turns. The winner of the game is the last player standing, having all other players

Please enter your name:

a b c d e f g h i j
k l m n o p q r s t
u v w x y z 1 2 3 4
5 6 7 8 9 0 — ← Back
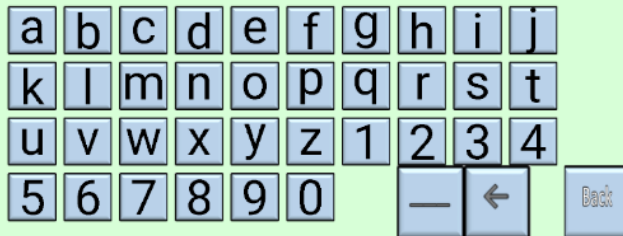
This is the **Name Screen** which the user will be presented with upon selecting the **Start Game** button on the **Main Menu** screen. They will be prompted to use the on screen keyboard to enter in their username and this name will be carried throughout the game to ensure it is a unique experience for all players.

Please enter your name:
player

a b c d e f g h i j
k l m n o p q r s t Next
u v w x y z 1 2 3 4
5 6 7 8 9 0 — ← Back

As shown, the name entered by the user will display on screen as they type. As a form of validation the Next button will only appear when the user has entered a value into the keyboard.

Welcome to the Game: PLAYER
Please select your starting territory

Territory 1   Territory 2   Territory 3

Territory 4   Territory 5

Back   Begin
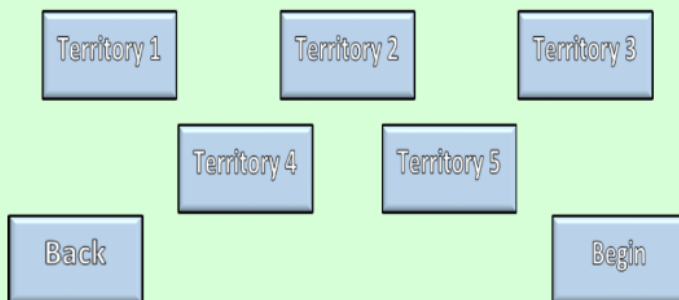
Upon submitting their name the user will be presented with the **Start Screen** which will prompt them to select their starting territory before beginning the game. This screen will display the **player name** and should also be equipped with a functioning **back and begin button**.

The player territory should be highlighted a different colour so that the user can clearly see which territory they have selected.
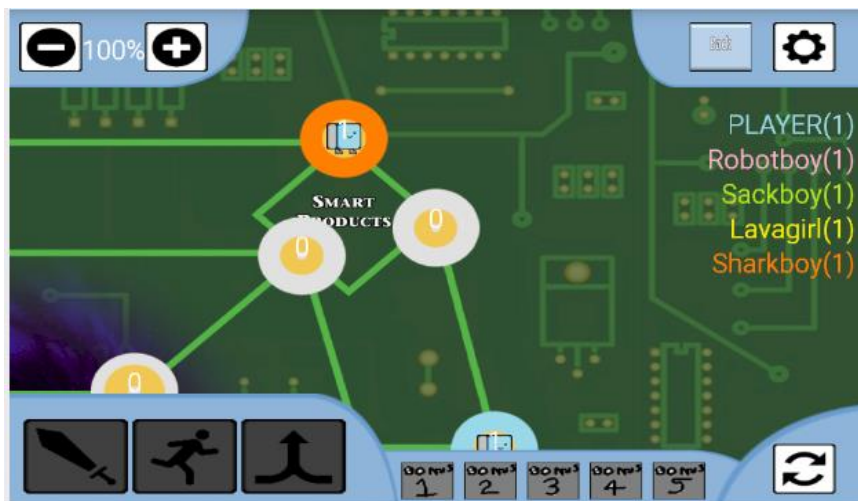
This is the **Board Game** screen which will be used to play the entire game. It will be equipped with a **zoom** functionality and an **options button** alongside **bonus**, **attack**, and an **end turn** button. The user can go **back** to the previous screen from this page and begin the game again.

On this page they will be able to select territories to take over and all usernames will be displayed on the right hand side of the screen.

The final page is an **End Screen** page, on which the writing and animations change accordingly with how the user performed throughout the game. On this page the user name should be displayed alongside a **Home** button which will bring the user back to the **Main Menu** screen. This screen can only be accessed upon completion of the game.

1. b) Class Relationship Model

DemoGame
+onCreate(Bundle)
+onCreateView(LayoutInflater, ViewGroup, Bundle): View
+onBackPressed(): boolean

Splash Screen
+background: Rect
+assetManager: AssetManager
-count: int
-loadingBar: Sprite

+changeToScreen()
+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
-loadAssets()

Key
-keyCharacter: String
-keyDesign: Paint
-mLinkedStringBuffer: StringBuffer

+setLinkedbUffer(StringBuffer)
+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)

AnimationDemo
+explosionState: enum
+explosionFacing: enum
-mStateTransition: Map<explosionState, float>
-mCurrentState: explosionState
-mCurrentfacing: explosionFacing
mAnimationManager: AnimationManager

+setFacing(explosionFacing)
+changeDirection()
+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
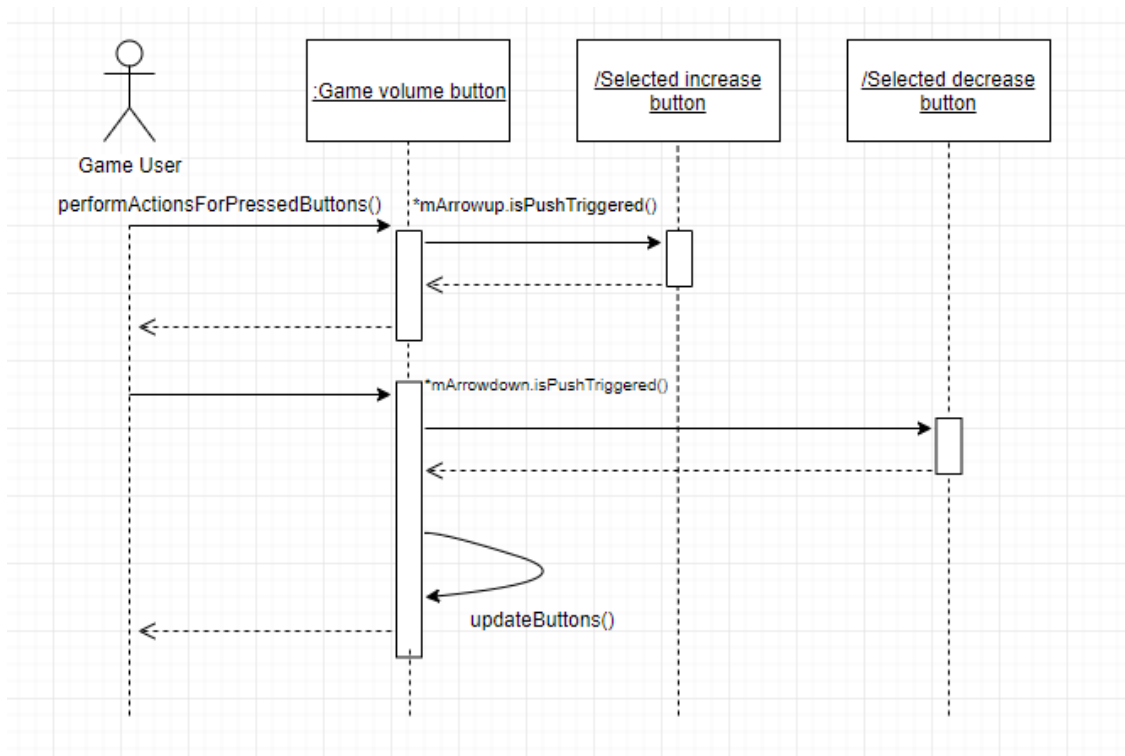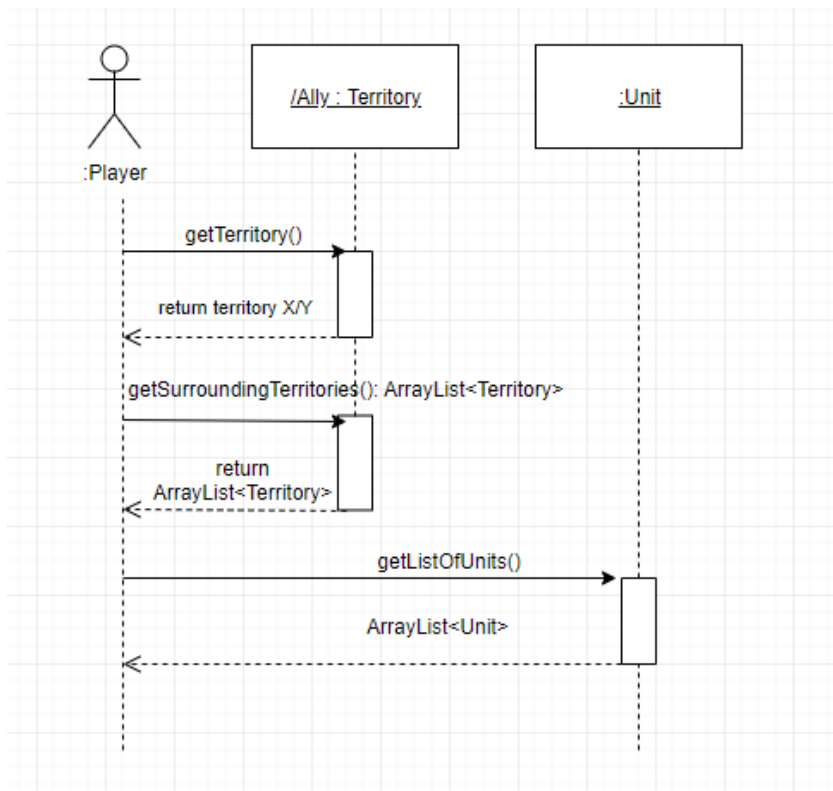
CreditScreen
-mLine1: String
-mLine2: String
-mLine3: String
-mLine4: String
-mLine5: String
-mLine6: String
-mTextPaint: Paint
-mCount: int
-mCredits: Sprite
-mBackButton: PushButton
-mNUM_ROWS: int
-mNUM_IN_ROW: int

+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
+changeToScreen(GameScreen)
-loadAssets()

MainMenu
-StartGameButton: PushButton
-OptionsButton: PushButton
-GameRulesButton: PushButton
-ExitButton: PushButton
-CreditsButton: PushButton
-info: String
-infos: String

+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)

NameScreen
-name: String
-playerName: StringBuffer
-NextButton: PushButton
-BackButton: PushButton

+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
-createAndPositionKeys()

OptionsDemoScreen
-musicPlayedOnThisScreen: Music
-mArrowup: PushButton
-mArrowdown: PushButton
-mBackButton: PushButton
-mToggleMusicButton: PushButton
-mWelcome: String
-mVolume: String
-mMute: String

+setupViewports()
+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
+changeToScreen(GameScreen)
-updateButtons(ElapsedTime)
-performActionsForButtonsPressed()

StartScreen
-Territory1Button: PushButton
-Territory2Button: PushButton
-Territory3Button: PushButton
-Territory4Button: PushButton
-Territory5Button: PushButton
-BackButton: PushButton
-BeginButton: PushButton
-startingTerritoryNum: int
+pName: String
+welcome: String
+select: String

+draw(ElapsedTime, IGraphics2D)
+update(ElapsedTime)-performActionsForPressedBu

Rules Screen
+mTheRules: PushButton
+mBackButton: PushButton
+mArrowForward: PushButton
+mArrowBack: PushButton
+mSpacingX: int
+mSpacingY: int
+mBoardImageCounter: int
+mRules: boolean
+mArrowPressed: boolean
-mRules1: Sprite
-mRules2: Sprite
-mRules3: Sprite
-mRules4: Sprite
-mRules5: Sprite
-mRules6: Sprite

+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
+changeToScreen(GameScreen)

BoardDemoGame
-LEVEL_WIDTH: float=1800.0f
-LEVEL_HEIGHT: float=1000.0f
-attackerTripleDice1: Dice
-bonus1Button: PushButton
-bonus1OwningPlayer: Player
-bonus1Active: boolean
-bonus1OnCooldown: boolean
-moveSpeed: float=0.5f
-cameraMagnefication: float=1

-generateTerritories(): ArrayList<Territory>
-setUpPlayers()
-setUpCards(): ArrayList<Card>
-createUI()
-removeAUnitFromTerritory(Territory, Unit)
-moveUnit(Territory, Territory, int)
-checkForDeadUnits()
-checkForBonuses(Player)
+endTurn()
+declareAttack(Territory, Territory)
+addNewUnitToTerritory(Territory, boolean, boolean)
+takeOverTerritory(Territory, Territory)
+bonus2Takeover(Territory)
+update(ElapsedTime)
+draw(ElpasedTime, IGraphics2D)

Card

EndScreen
-WinBackground: GameObject
-LoseBackground: GameObject
-EndScreenLayerViewPort: LayeViewPort
-HomeButton: PushButton
-pName: String
-confetti: Sprite
-confetti2: Sprite
-confetti3: Sprite
-confetti4: Sprite
-confetti5: Sprite
-confetti6: Sprite
-confetti7: Sprite
-Sad: Sprite
-Sad2: Sprite
-Sad3: Sprite
-Sad4: Sprite
-Sad5: Sprite
-Sad6: Sprite
-Sad7: Sprite
-count: int
-playerWonTheGame: boolean

+update(ElapsedTime)
+draw(ElapsedTime, IGraphics2D)
-setupViewports()

Territory
-listOfUnits: ArrayList<Unit>
-surroundingTerritories: ArrayList<Territories>
-relatedCard: Card
-territoryX: float
-territoryY: float
-owner: Player
-numOfSmallUnits: int
-numOfBigUnits: int

+getNumOfSmallUnits(): int
+setNumOfSmallUnits();
+getNumOfBigUnits(): int
+setNumOfBigUnits();
+getListOfUnits(): ArrayList<Unit>
+getSurroundingTerritories(): ArrayList<Territory>
+getTerritoryX(): float
+getTerritoryY(): float
+getOwner(): Player
+setOwner()
+getRelatedCard(): Card
+setRelatedCard()

Player
- listOfTerritories: ArrayList<Territory>
- name: String
-isHuman: boolean

+getListOfTerritories: ArrayList<Territories>
+getName(): String
+setName()

1

0..*

Unit
- isBigUnit: boolean
- isExhausted: boolean

+ isBigUnit(): boolean
+ isExhausted(): boolean
+ setExhausted();

-Extends>

BoardEntity
#bound: BoundingBox
+startXPos: float
+startYPos: float
-selected: boolean

-setTarget(float, float)

Dice
+ generateDiceRoll(): int
+visuallyRollDice(int)
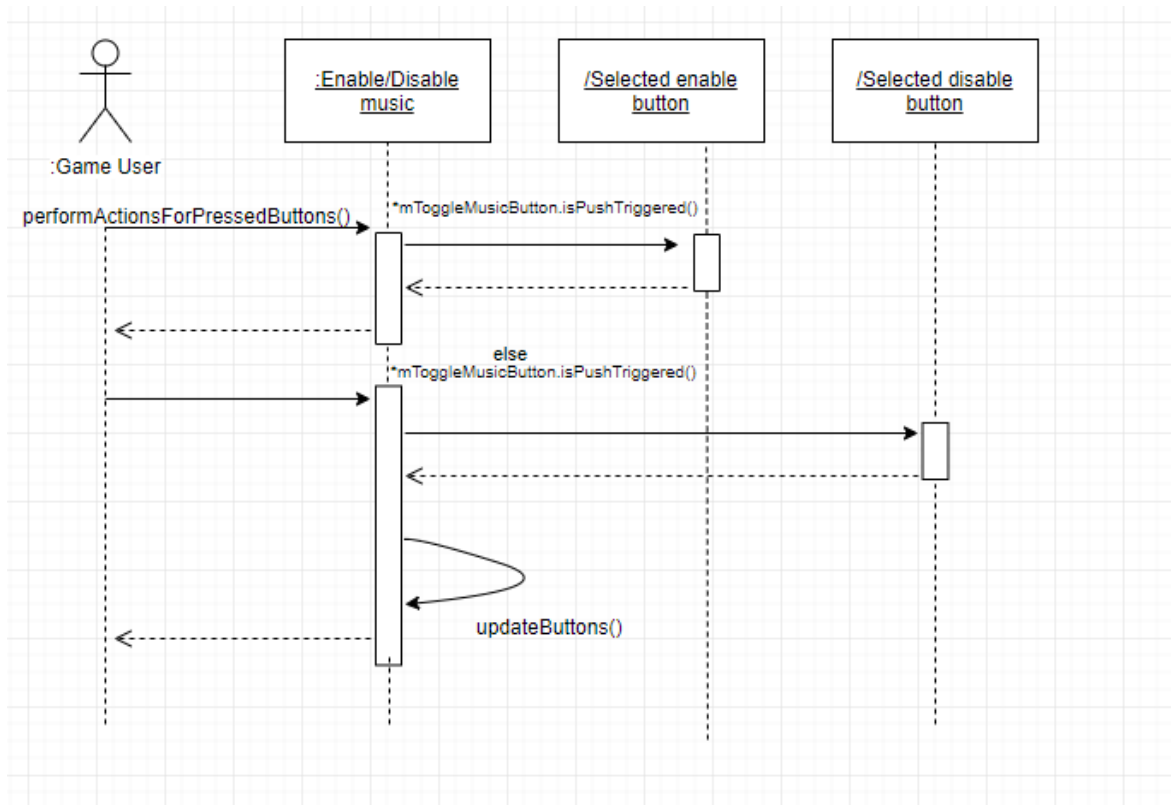
-Extends-

Sequence Diagrams
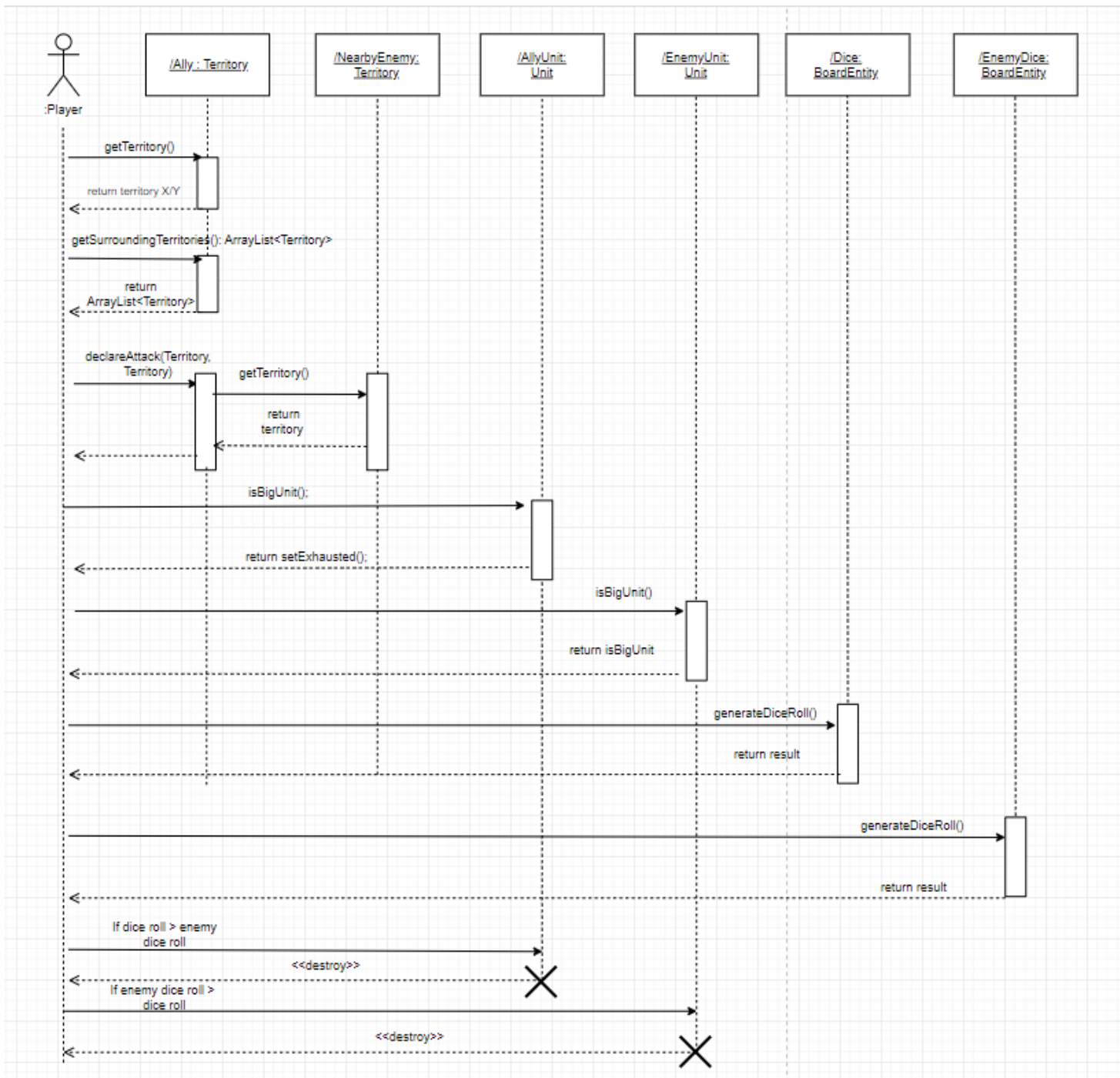
Change volume

Move unit

Mute music

Attack Territory

2. Test Plan

Testing documents

ID	Use case ref	Description of test	Test initialisation	Test inputs	Test procedure	Expected results	Passed?
1	Main Menu	Testing "Start Game" button on main menu	Select Button	Select Button	Select Button	Will load the Name Screen	Yes
2		Testing "Game rules" button on main menu	Select Button	Select Button	Select Button	Will load the Game Rules screen	Yes
3		Testing "Options" button on main menu	Select Button	Select Button	Select Button	Will load the options menu Screen	Yes
4		Testing "Credits" button on main menu	Select Button	Select Button	Select Button	Will load the Credits Screen	Yes
5		Testing "Exit" button on main menu	Select Button	Select Button	Select Button	Will exit the game	Yes
6	Credits	Testing "Credit" animation loads	Load Credit screen	Select Credit button	Select Credit button on main menu	The credit animation will start	Yes
7		Testing "Explosion" animations on the credit screen	Load Credit screen	Select Credit button	Select Credit button on main menu	The credit animation will start	Yes
8		Testing "Back" Button on the credit screen	Select Button	Select Button	Select Button	Will load the Main menu	Yes
9	Options	Testing "Un-mute" button on options menu	Select Button	Select Button	Select Button	Music will start to play	Yes
10		Testing "Mute" button on options menu	Select Button	Select Button	Select Button	Music will stop playing	Yes
11		Testing "Increase volume" button on options menu	Select Button	Select Button	Select Button	Music volume will increase	Yes
12		Testing "Decrease Volume" button on options menu	Select Button	Select Button	Select Button	Music volume will decrease	Yes
13		Testing "Back" button on options menu	Select Button	Select Button	Select Button	Will load the Main menu	Yes
14	Game Rules	Testing "Game Rules" button on Game Rules Screen	Select Button	Select Button	Select Button	Will load the rules and the selection arrows	Yes
15		Testing "Right Arrow" button on Game Rules Screen	Select Button	Select Button	Select Button	Will load the next set of instructions	Yes
16		Testing "Left Arrow" button on Game Rules Screen	Select Button	Select Button	Select Button	Will load the previous set of instructions	Yes
17		Testing "Back" button on Game Rules Screen	Select Button	Select Button	Select Button	Will load the Main menu	Yes

18	Name	Testing a letter key on the keyboard	Select a letter key on the keyboard	"a" key	Select "a" key	The letter "a" should be printed out on the top of the screen	Yes
19		Testing a number key on the keyboard	Select a Number key on the keyboard	"1" key	Select "1" key	The Number "1" should be printed out on the top of the screen	Yes
20		Testing the space key on the keyboard	Select the space key	Select the space key	Select the space key	There should be a space from the 1 created	Yes
21		Testing the delete key on the keyboard	Select the delete key	Select the delete key	Select the delete key	The space from the 1 should be deleted	Yes
22		Testing the next button loads	Enter a character on the keyboard	Select a character on the keyboard	Select a character on the keyboard	The next button should appear above the back button	Yes
23		Testing the back button	Select the back button	Select Button	Select Button	Will load the main menu	Yes
24		Testing the next button	Select the next button	Select Button	Select Button	Will load the start game screen	Yes
25		Test the name is carried from the name screen to the Start game screen	Enter a name on the name screen, when you select the next button it should be on the start game screen	1-Enter a name 2-Select the next button	Enter a name and select the next button	The name should have been brought forward to the next screen	Yes
26	Start game screen	Testing Territory 1 button on start game screen	Select territory 1 button	Select button	Select button	Territory 1 should change to grey to show that it is selected	Yes
27		Testing Territory 2 button on start game screen	Select territory 2 button	Select button	Select button	Territory 2 should change to grey to show that it is selected	Yes
28		Testing Territory 3 button on start game screen	Select territory 3 button	Select button	Select button	Territory 3 should change to grey to show that it is selected	Yes
29		Testing Territory 4 button on start game screen	Select territory 4 button	Select button	Select button	Territory 4 should change to grey to show that it is selected	Yes

30		Testing Territory 5 button on start game screen	Select territory 5 button	Select button	Select button	Territory 5 should change to grey to show that it is selected	Yes
31		Testing Back button on start game screen	Select back button	Select button	Select button	Should load the name screen	Yes
32		Testing Begin button on start game screen	Select begin game button	Select button	Select button	Nothing, since no territory is loaded	Yes
33		Testing Begin button on after selecting a territory start game screen	Select begin game button	Select territory 1 Select begin button	Select territory 1 Select begin button	The game should load	Yes
34		Testing Territory 1 button loads you to territory 1 in the game	Selecting buttons	Select territory 1 Select begin button	Select territory 1 Select begin button	You should start in territory 1	Yes
35		Testing Territory 2 button loads you to territory 2 in the game	Selecting buttons	Select territory 2 Select begin button	Select territory 2 Select begin button	You should start in territory 2	Yes
36		Testing Territory 3 button loads you to territory 3 in the game	Selecting buttons	Select territory 3 Select begin button	Select territory 3 Select begin button	You should start in territory 3	Yes
37		Testing Territory 4 button loads you to territory 4 in the game	Selecting buttons	Select territory 4 Select begin button	Select territory 4 Select begin button	You should start in territory 4	Yes
38		Testing Territory 5 button loads you to territory 5 in the game	Selecting buttons	Select territory 5 Select begin button	Select territory 5 Select begin button	You should start in territory 5	Yes
39		Test that the name is passed through to the game screen	Selecting buttons	Select territory 1 Select begin button	Select territory 1 Select begin button	The game should load and the name should have passed through	Yes
40	Game	Select zoom in button	Selecting buttons	Select Zoom in Button	Select Zoom in Button	The game should zoom in	Yes
41		Select zoom out button	Selecting buttons	Select Zoom out Button	Select Zoom out Button	The game should zoom out	Yes
42		Select options button	Selecting buttons	Select Options Button	Select Options Button	The options menu should appear	Yes
43		Select back button	Selecting buttons	Select Back Button	Select Back Button	The start screen should appear	Yes
44		Select end turn	Selecting buttons	Select end turn Button	Select end turn Button	The AI should take their turn	Yes

45		Controls aren't usable until a selection on the map is made	Select the controls	Select controls without selecting a territory	Select controls button	They should appear greyed out and if you select them nothing will happen	Yes
46		Controls become active when you make a selection on the map	Select a territory Select a control button	Select a territory Select a control button	Select a territory Select a control button	After selecting a territory, the controls should become active allowing you to select one	Yes
47		Bonus 1 loads after you take the respective three territories	Take over the three respective territories	Attack and win the three territories	Select attack and end turn	After you take over the three respective territories the bonus should become active	Yes
48		Bonus 2 loads after you take the respective three territories	Take over the three respective territories	Attack and win the three territories	Select attack and end turn	After you take over the three respective territories the bonus should become active	Yes
49		Bonus 3 loads after you take the respective three territories	Take over the three respective territories	Attack and win the three territories	Select attack and end turn	After you take over the three respective territories the bonus should become active	Yes
50		Bonus 4 loads after you take the respective three territories	Take over the three respective territories	Attack and win the three territories	Select attack and end turn	After you take over the three respective territories the bonus should become active	Yes
51		Bonus 5 loads after you take the respective three territories	Take over the three respective territories	Attack and win the three territories	Select attack and end turn	After you take over the three respective territories the bonus should become active	Yes
52		When you select a territory you own it allows you to attack another	Attack button	Select a territory you own	Select a territory you own	Once you select your territory is the button will become active allowing you to attack another territory	Yes
53		When you select a territory you own it allows you to move you units to another one you own	Move button	Select a territory you own	Select a territory you own	Once you select your territory is the button will become active allowing you to	Yes

						move units to another territory	
54		When you select a territory you own it allows you to merge your units	Merge button	Select a territory you own	Select a territory you own	Once you select your territory is the button will become active allowing you to merge units to a big unit, as long as you have at least 3 units	Yes
55		It doesn't allow you to merge your units if you haven't enough	Merge button	Select a territory you own	Select a territory you own	Once you select your territory is the button will become active allowing you to merge units. However if you do not have over 3 units it will not allow you to merge them	Yes
56		Allows you to use bonus 1	bonus 1	Select bonus 1	Select bonus 1	As long as you have collected the respective three territories you should be allowed to select the bonus button and it will allow you to use the bonus	Yes
57		Allows you to use bonus 2	bonus 2	Select bonus 2	Select bonus 2	As long as you have collected the respective three territories you should be allowed to select the bonus button and it will allow you to use the bonus	Yes
58		Allows you to use bonus 3	bonus 3	Select bonus 3	Select bonus 3	As long as you have collected the respective three territories you	Yes

						should be allowed to select the bonus button and it will allow you to use the bonus	
59		Allows you to use bonus 4	bonus 4	Select bonus 4	Select bonus 4	As long as you have collected the respective three territories you should be allowed to select the bonus button and it will allow you to use the bonus	Yes
60		Allows you to use bonus 5	bonus 5	Select bonus 5	Select bonus 5	As long as you have collected the respective three territories you should be allowed to select the bonus button and it will allow you to use the bonus	Yes
61		When you take a territory it adds to your score	Score	Select a territory you own. Select the attack button. Select another territory you would like to take over	Select a territory you own. Select the attack button. Select another territory you would like to take over	When you take over a territory it will add to your score on the right hand side beside your name	Yes
62		It doesn't allow you to attack your own territory	Attacking	Select a territory you own. Select the attack button. Select another territory you own	Select a territory you own. Select the attack button. Select another territory you own	After you select your second territory it will assume that you are looking to send units from this territory instead and want you to select the attack button again and	Yes

						select a new territory	
63		When you hit end turn the AI takes it turn	AI	Select end turn	Select end turn	After you hit the end turn button all of the AI will take their turns and attempt to attack the territories around them	Yes
64		When you take a territory you gain a unit	Units	Select a territory you own. Select the attack button. Select another territory you would like to take over	Select a territory you own. Select the attack button. Select another territory you would like to take over	After you take over a territory your unit count should increase by one	Yes
65		At the start of a round you respawn a unit for every territory you own	Units	Select end turn	Select end turn	After selecting end turn, you will regain a unit for each territory you own, compensating for any you may have lost	Yes
66		Once you enter the public static void you can't get out	Public static void	Enter the public static void by taking over a territory	Enter the public static void by taking over a territory	Any units that you send into the public static void to take over a territory will not be able to leave again via the move or attack button	Yes
67		If you own every territory in the pubic static void for an entire round you win	Winning-public static void	Take over every territory in the Public static void, select end turn	Take over every territory in the Public static void, select end turn	Take over the public static void by attacking and winning over every territory in there and after 1 round you will automatically win the game	Yes
68		When you own every territory you win	winning	Take over every territory around the board	Take over every territory	Go around the board taking over and attacking every	Yes

					around the board	territory outside of the public static void and once you own them all you win.	
69		If the AI takes the public static void for a round it wins	Losing- public static void	The AI needs to enter the Public static void and take over every territory in there, after one round they will automatically win	The AI needs to enter the Public static void and take over every territory in there, after one round they will automatically win	After the AI owns it for a whole round you will automatically lose	Yes
70		If the AI owns every territory it wins	Losing	The AI needs to take over every territory outside of the public static void, after they take over the last one they win	The AI needs to take over every territory outside of the public static void, after they take over the last one they win	After the AI takes over the last territory they will automatically win	Yes
71		You can't use a unit when its exhausted	Exhausted units	Attempt to attack with an exhausted unit	Attempt to attack with an exhausted unit	If the unit is exhausted you will not be able to attack or move the unit, until you select end turn and refresh them	Yes
72	End screen	Testing win end screen	Win end screen	Win the game	Win the game	After you win the game the win end screen should load	Yes
73		Testing lose end screen	Lose end screen	Lose the game	Lose the game	After you lose the lose screen should load	Yes

5. Peer Assessment

Evaluation	Group Number:56	Group Name: Tsuchinoko		
Name	Contribution of time and effort[1]	Contribution to team-working and motivation[1]	Contributions to this deliverable [1,2]	Peer Score (Range 85 – 115)
Patrick McClintock	5	5	5	110
Robbie Connor	5	5	5	115
Nathan Gilpin	5	5	5	110
Christopher Logan	5	5	5	110
Anna Keenan	5	5	5	110

[1]Values: 1 = Less than average; 2 = Slightly less than average; 3 = Average; 4 = Slightly more than average; 5 = More than average

[2]This value should consider contributions in the round – direct contributions to required deliverables, and contributions that have made the deliverables possible.

Declaration		
"I declare that I have read the Queen's University regulations on plagiarism, and that any contribution I have made to the attached submission is my own original work, except for any elements that I have clearly attributed to third parties. I understand that this submission will be subject to an electronic test for plagiarism and will also be subject to the University's regulations concerning late submission if it is received after the deadline."		
Name	Date	Confirmation *(use the words shown in the example below!)*
Patrick McClintock	28/03/2019	I agree to the terms of the declaration
Robbie Connor	28/03/2019	I agree to the terms of the declaration
Nathan Gilpin	28/03/2019	I agree to the terms of the declaration
Christopher Logan	28/03/2019	I agree to the terms of the declaration
Anna Keenan	28/03/2019	I agree to the terms of the declaration