

# CSC2045

## Group 51

# Black Hat Hackers Report

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# Interface Design

## The Menu Screen

This is the menu screen that loads after the splash screen. The icon and button layout are used to navigate to the different screens; the main game screen, the risk rules, the settings and the credits screen, by clicking on the button corresponding to the icon. The front icon is always loaded as the start game icon(Fig.1), when its button is clicked this loads the game screen. Clicking on the icon to the right will rotate the icons to the left bringing the risk rules icon to the front(Fig.2), when its button is clicked this loads the rules screen. Clicking the icon to the right again will bring the settings icon to the front(Fig.3), when its button is clicked it loads the settings screen. Clicking the icon to the left of the start icon will rotate the icons to the right bringing the credits icon to the front(Fig.4), when its button is clicked it loads the credits screen.

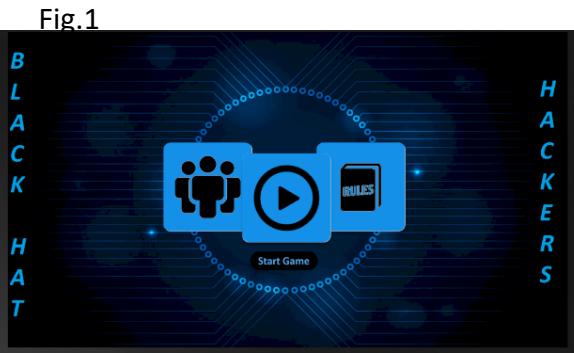


Fig.2

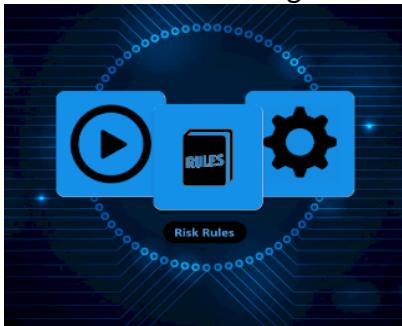
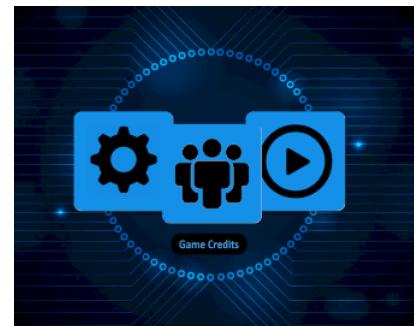


Fig.3



Fig.4



## Risk Settings Screen (Daniel Nelis)

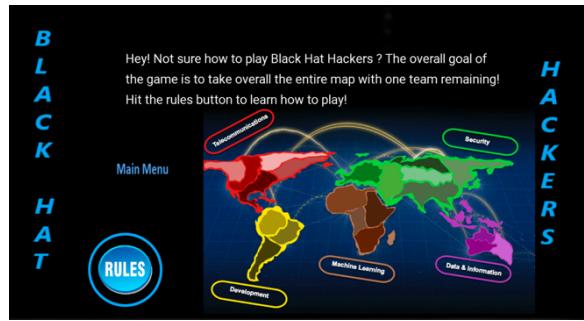
Within the “Risk Settings Screen” there are four features that are available to the user. The user can choose to turn off the background by touching/clicking the “Volume Off” button if they wish. The user can then turn the background music back on by touching/clicking the “Volume On” button. The next feature is giving the user the choice of turning the volume of the background music up. This can be done by touching/clicking the “Volume Up” button. Another feature within this screen is giving the user the choice of turning the volume of the background music down. This can be achieved by touching/clicking the “Volume Down” button. There is also a “Main Menu” button present within this screen so the user can transition back to the Main Menu successfully.



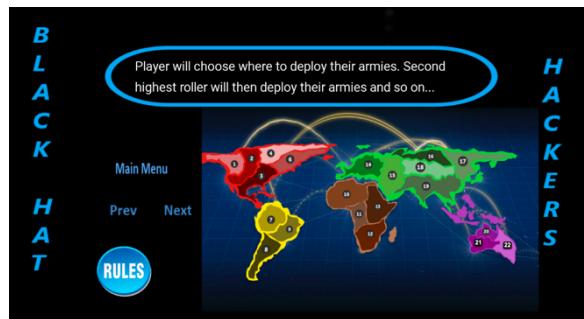
## Risk Rules Screen (Daniel Nelis)

Within the “Risk Rules Screen” there are images and good detailed descriptions on how to play Black Hat Hackers. Once the “Rules” button is touched(clicked the screen will transition to another screen.

This is the first page of the rules and will be the screen that will appear once the “Rules” Button is clicked



This is the screen transition that occurs when the “Rules” button is touched(clicked. It will begin to advise the user on how to play Black Hat Hackers. During this transition two buttons will appear on screen. One being the “Prev” button and one being the “Next” button. When the “Next” button is touched(clicked the screen will transition to the second page of the rules (This can be seen overleaf).



The user can then repeat this process of touching/clicking the “Next” button in order to navigate to the end of “Risk Rules” Screen. The last page of the rules can be seen to the right. The user may also touch/click the “Prev” button that is located beside the “Next”. This will allow user to read over rules they may be unsure of.



## DiceRollScreen/Battle Screen

This screen to the right is the DiceRollScreen. This is where the battles between two players take place for control of a field. As shown above, the attacking player will be on the left hand side of the screen and the defending player on the right hand side.



The attacking player will use their teams on the field connected to the one they are trying to conquer and the defending player will use the teams on that field to try to keep control. When the “Roll” button is pressed, the random number generator randomly selects a number between 1 and 6 for each number of dice the attacking player wishes to play. The attacker can choose how many dice they wish to roll by selecting the dice icon for 1, 2 or 3 at the bottom of the screen. The defending player will always have 1 less dice than the attacker unless the attacker chooses 1 dice or they are winning and the attacker has 1 team left. The total is shown below the individual numbers and is the sum of all of those numbers. Whoever has the lower total each time the dice are rolled, they lose a team until they have no more teams left as shown in Figure 1.

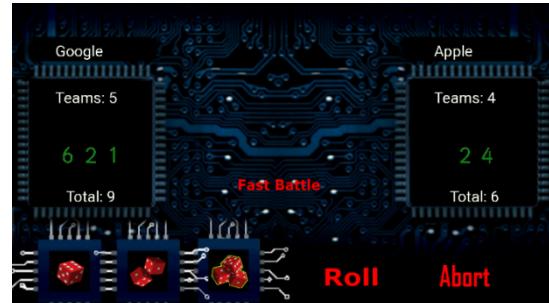


Figure 2



button allows the player to abort the battle at any time and return the map with the amount of teams they have left. Both button presses are shown below in Figure 3 and Figure 4.



Figure 3



Figure 4

### Risk Game Screen

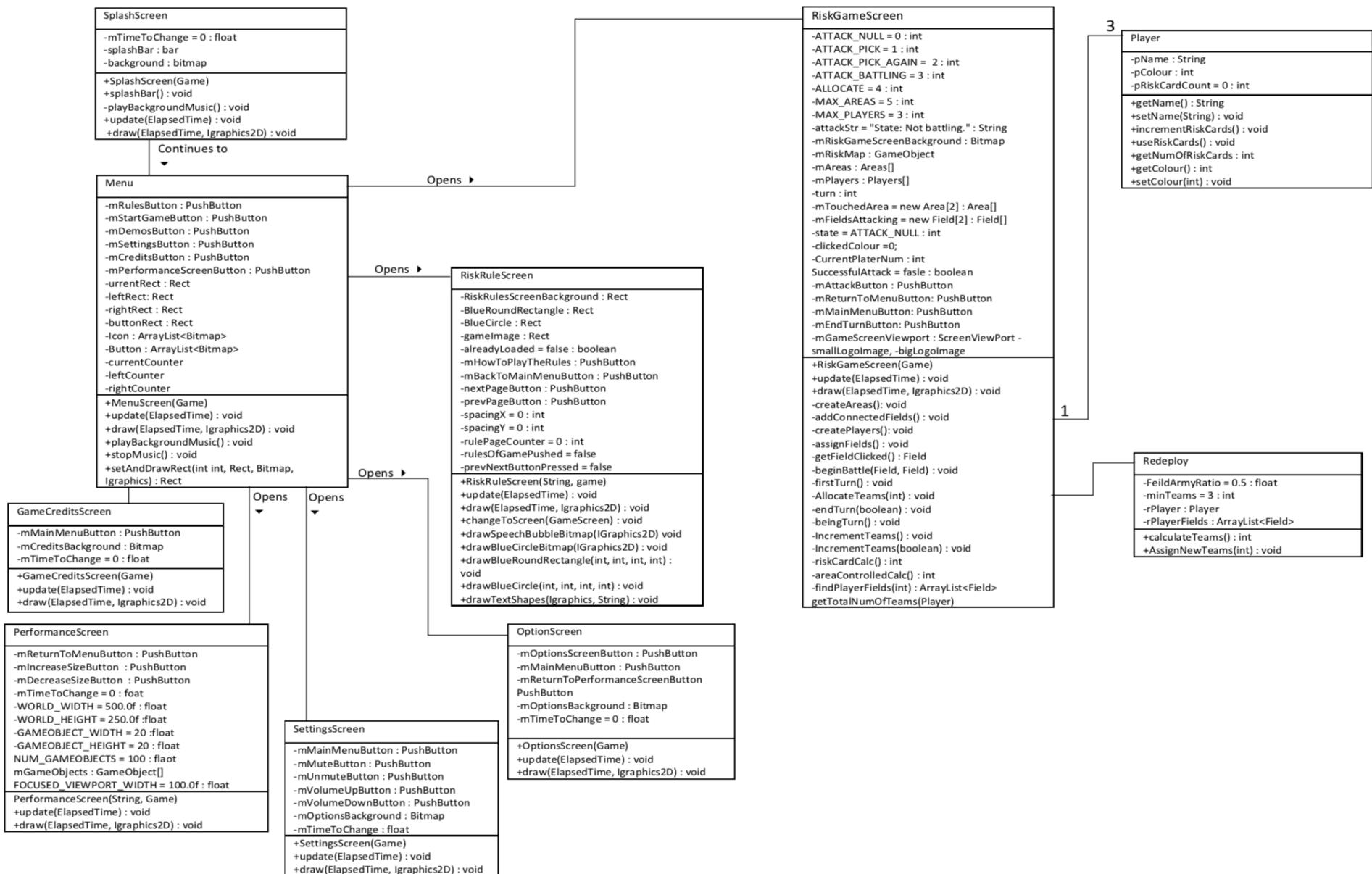
This is debug information: It allows us to track our progress and ensure the application is working.

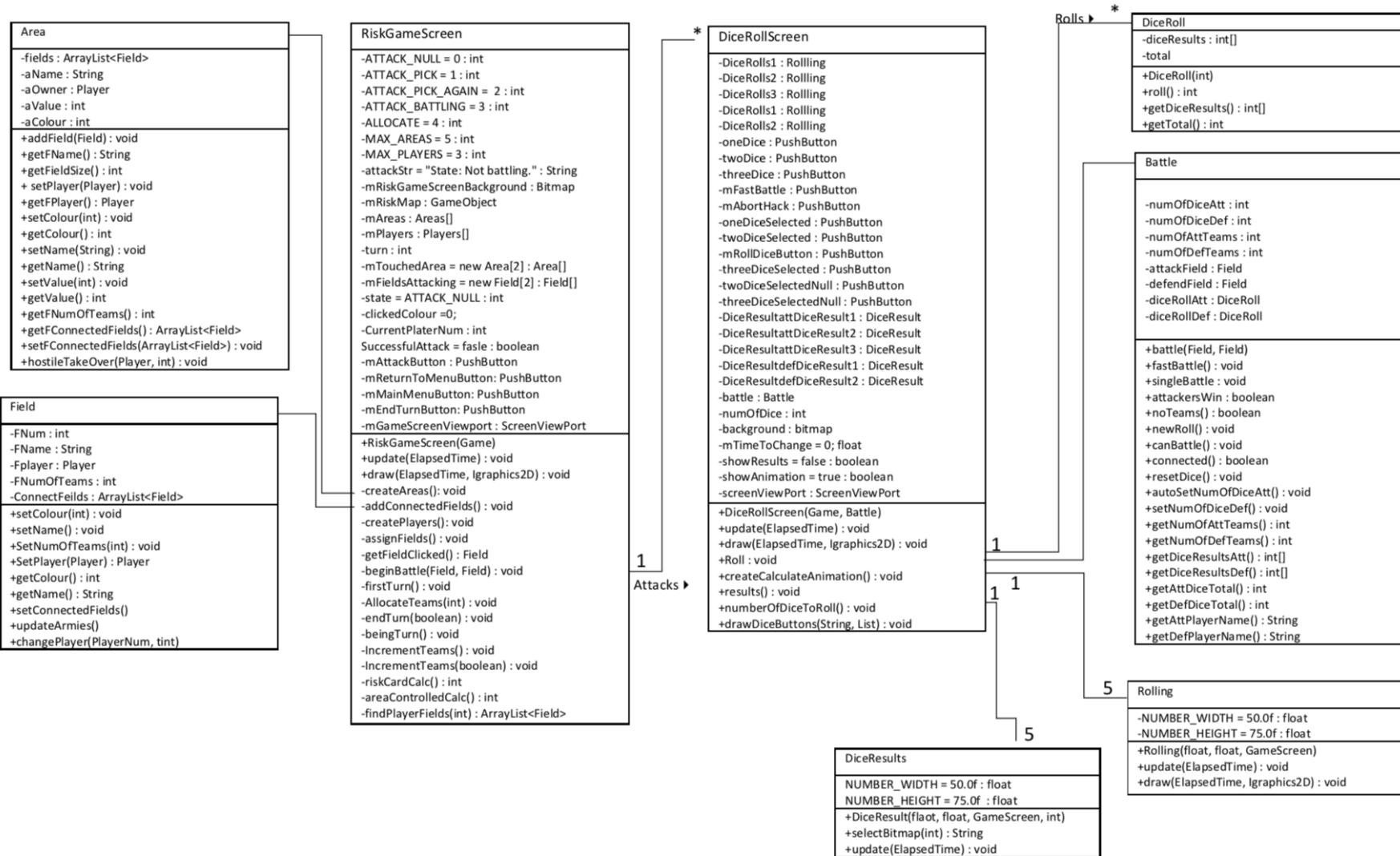
This is a button that takes you back to the main screen.



This is another main menu button. The orange back button one will be removed.

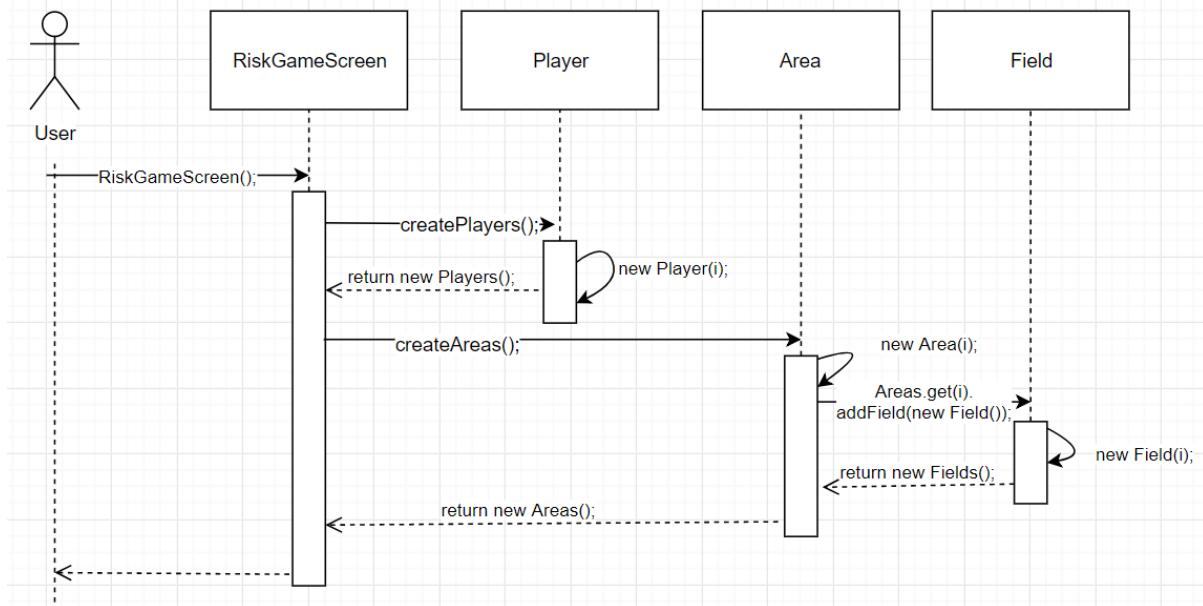
This is the end turn button (looks better on phone). Once a player has finished their turn, they can press this button then the next player can take their turn.



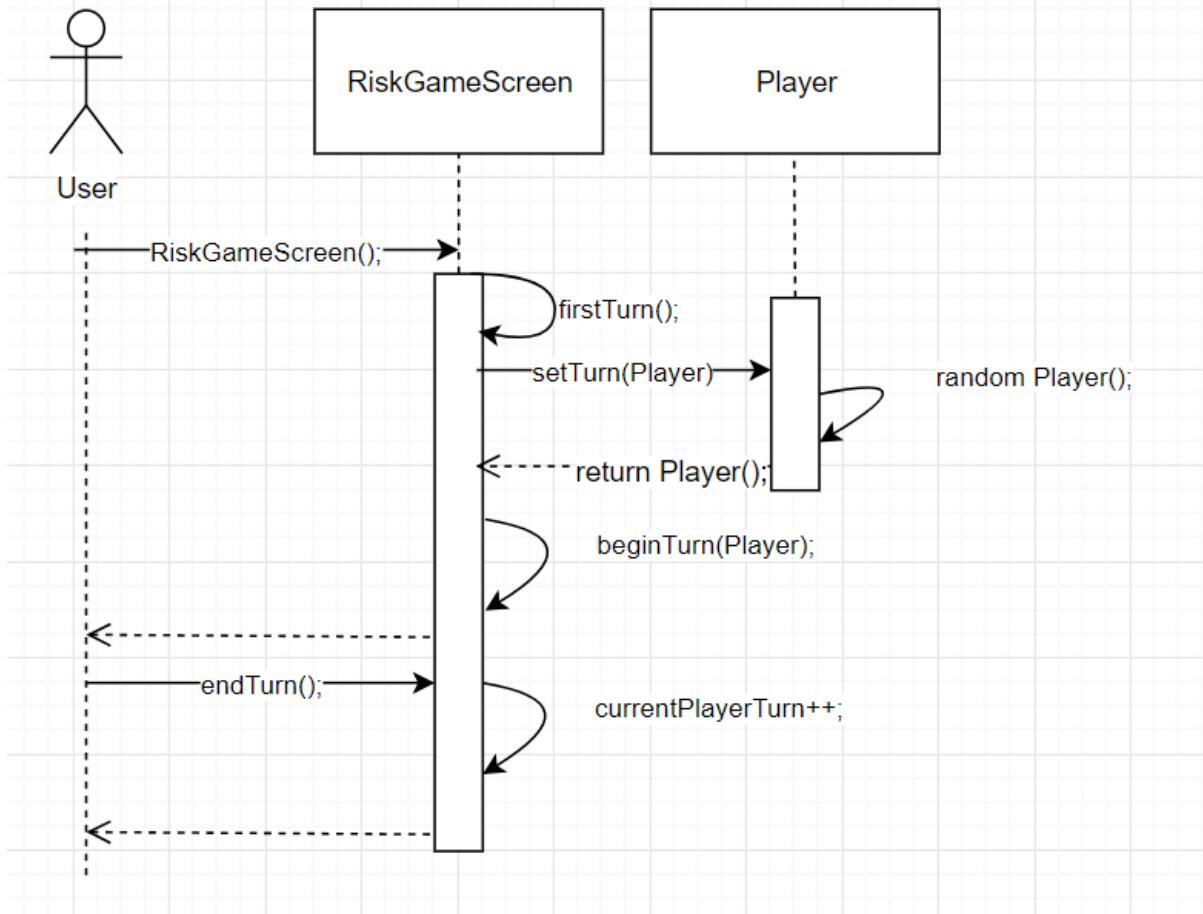


# Sequence Diagrams

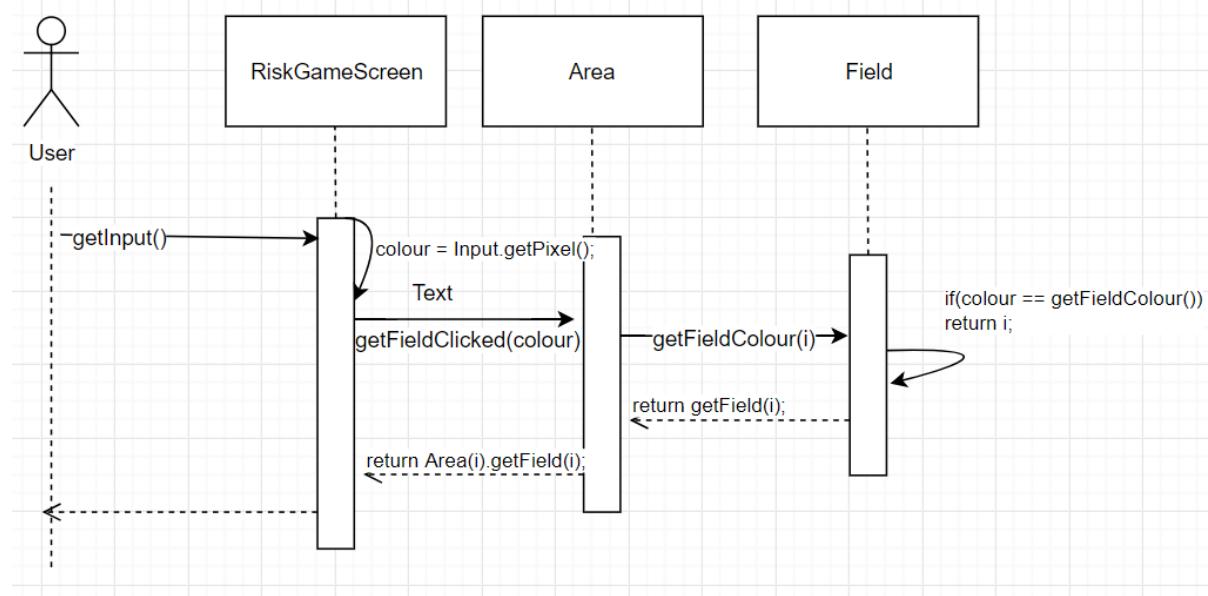
`createPlayers() + createAreas()`



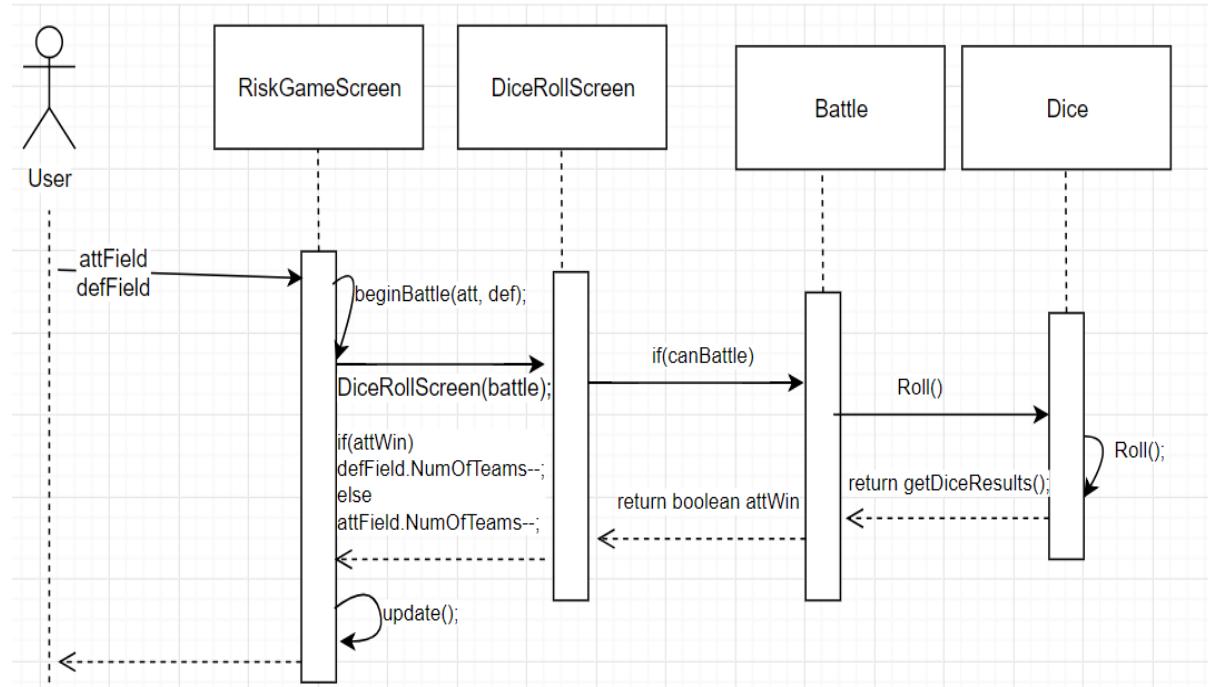
`beginTurn() + endTurn()`



### getFieldClicked()



### beginBattle()



# System Testing Performa for [Black Hat Hackers]

## Risk Main Menu Screen Test Plan

Complete for All Tests

#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
1	Main menu Icons and Buttons	Test when the icon to the right of the start logo is clicked the icons rotate and the clicked icon is brought to the front as well as the corresponding button to the logo being shown	1.Start application 2.Click on the icon to the right of the front icon	Icons should rotate to the left, the clicked icon should be moved to the front along with its corresponding button	Icons rotate to the left, the clicked icon is moved to the front along with its corresponding button	P
2	Main menu Icons and Buttons	Test when the icon to the left of the start logo is clicked the icons rotate and the clicked icon is brought to the front as well as the corresponding button to the logo being shown	1.Start application 2.Click on the icon to the left of the front icon	Icons should rotate to the right, the clicked icon should be moved to the front along with its corresponding button	Icons rotate to the right, the clicked icon is moved to the front along with its corresponding button.	P
3	Main Menu Start Button	Screen change to load the Risk Game Screen	1.Start application 2.Click on the Start Game Button icon to the left of the front icon	Screen should change to the Risk Game Screen	Screen changes to the Risk Game Screen	P
4	Main Menu Risk Rules Button	Screen change to load the Risk Rules Screen	Start application 2.Click to the right of the start game icon, on the rules icon 3.Click on the Risk Rules Button	Screen should change to the Risk Rules Screen	Screen changes to the Risk Rules Screen	P
5	Main Menu Game Settings Button	Screen change to load the Settings Screen	1.Start application 2.Click to the right of the start game icon, on the rules icon 3.Click to the right of the rules icon, on the settings icon 4.Click on the Game Settings Button	Screen should change to the Settings Screen	Screen changes to the Settings Screen	P
6	Main Menu Game Credits Button	Screen change to load the Credits Screen	1.Start application 2.Click to the left of the start game icon, on the credits icon 3.Click on the Game Credits Button	Screen should change to the Credits Screen	Screen changes to the Credits Screen	P

# Risk Rules Screen Test Plan

*Complete for All Tests*

#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
7	Main Menu Button	Screen transition back to Black Hat Hackers Main Menu Screen.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Main Menu Button and release.	Screen should transition smoothly back to the Black Hat Hackers Main Menu Screen.	Screen transitioned smoothly back to Black Hat Hackers Main Menu Screen as expected	P
8	Main Menu Button	Push Bitmap for Main Menu Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Push/Click Main Menu Button without releasing it.	Main Menu Button Bitmap should change from Black & Blue to White & Blue.	Main Menu Button Bitmap changed from Black & Blue to White & Blue as expected.	P
9	Main Menu Button	Push Bitmap for Main Menu Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: However when releasing make sure it is released off the button.	Main Menu Button Bitmap should change from White & Blue back to original Black & Blue.	Main Menu Button Bitmap changed back to original bitmap as expected	P
10	Rules Button	Rules button triggers rules of Black Hat Hackers.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release.	Once Rules Button is touched/clicked and released, images of the game should appear along with a good description of each image.	Images and description of each image appear as expected once Rules Button is touched/clicked and released.	P
11	Rules Button	Rules button triggers Next and Prev button to appear.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release.	Once Rules Button is touched/clicked and released, a Next Button and a Prev Button should appear.	Next Button and Prev Button appear when Rules button is touched/clicked then released as expected.	P
12	Next Button	Push Bitmap for Next Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button without releasing it.	Next Button Bitmap should change from Black & Blue to White & Blue.	Next Button Bitmap changed from Black & Blue to White & Blue as expected.	P

13	Next Button	Push Bitmap for Next Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release however when releasing make sure it is released away from the button.	Next Button Bitmap should change from White & Blue back to original Black & Blue.	Next Button Bitmap changed back to original bitmap as expected.	P
14	Previous Button	Push Bitmap for Previous Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Previous Button without releasing it.	Next Button Bitmap should change from Black & Blue to White & Blue.	Previous Button Bitmap changed from Black & Blue to White & Blue as expected.	
15	Previous Button	Push Bitmap for Previous Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Previous Button and release however when releasing make sure it is released away from the button.	Previous Button Bitmap should change from White & Blue back to original Black & Blue.	Previous Button Bitmap changed back to orginal bitmap as expected.	
16	Next Button (First Iteration)	Successful iteration to first page of rules.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release.	First page of rules should appear along which should contain an inplay image of Black Hat Hackers and a detailed description of the image.	First page of rules appears successfully along with inplay image of Black Hat Hackers and a detailed description of the image as expected.	P
17	Next Button (After First Iteration)	Push Bitmap for Next Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release. 5: Touch/Click Next Button without releasing it.	Next Button Bitmap should change from Black & Blue to White & Blue.	Next Button Bitmap changed from Black & Blue to White & Blue as expected.	P
18	Next Button (After First Iteration)	Push Bitmap for Next Button.	1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release. 5: Touch/Click Next Button and release however when releasing make sure it is released away from the button.	Next Button Bitmap should change from White & Blue back to original Black & Blue.	Next Button Bitmap changed back to original bitmap as expected.	P

19	Main Menu Button (After First Iteration)	Push Bitmap for Main Menu Button after first iteration.	<p>1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release. 5: Touch/Click Main Menu button without releasing it.</p>	Main Menu Button Bitmap should change from Black & Blue to White & Blue.	Main Menu Button Bitmap changed from Black & Blue to White & Blue as expected.	P
20	Main Menu Button (After First Iteration)	Push Bitmap for Main Menu Button after first iteration.	<p>1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release. 5: Touch/Click Main Menu button releasing it away from the Main Menu Button.</p>	Main Menu Button Bitmap should change from White & Blue back to original Black & Blue.	Main Menu Button Bitmap changed back to orginal bitmap as expected	P
21	Previous Button (Seventh Iteration)	Successful iteration to the sixth page of rules.	<p>1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Previous Button and release.</p>	Sixth page of rules should appear along which should contain an inplay image of Black Hat Hackers and a detailed description of the image.	Sixth page of rules appears successfully along with inplay image of Black Hat Hackers and a detailed description of the image as expected.	P
22	Previous Button (After Seventh Iteration)	Push Bitmap for Next Button.	<p>1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Previous Button and release. 5: Touch/Click Previous Button without releasing it.</p>	Previous Button Bitmap should change from Black & Blue to White & Blue.	Previous Button Bitmap changed from Black & Blue to White & Blue as expected.	P
23	Next Button (Seventh Iteration)	Successful iteration to seventh page of rules.	<p>1: Run Application. 2: Touch/Click Risk Rules Button and release. 3: Touch/Click Rules button and release. 4: Touch/Click Next Button and release.</p>	Seventh page of rules should appear along which should contain an inplay image of Black Hat Hackers and a detailed description of the image.	Seventh page of rules appears successfully along with inplay image of Black Hat Hackers and a detailed description of the image as expected.	P

### Risk Settings Screen

#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
24	Main Menu Button	Screen transition back to Black Hat Hackers Main Menu Screen.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Main Menu Button and release.	Screen should transition smoothly back to the Black Hat Hackers Main Menu Screen.	Screen transitioned smoothly back to Black Hat Hackers Main Menu Screen as expected	P
25	Main Menu Button	Push Bitmap for Main Menu Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Main Menu Button without releasing.	Main Menu Button Bitmap should change from Black & Blue to White & Blue.	Main Menu Button Bitmap changed from Black & Blue to White & Blue as expected.	P
26	Main Menu Button	Push Bitmap for Main Menu Button.	1: Run Application. 2: Touch/Click Risk Settings Button and release. 3: However when releasing make sure it is released off the button.	Main Menu Button Bitmap should change from White & Blue back to original Black & Blue.	Main Menu Button Bitmap changed back to original bitmap as expected	P
27	Volume Down Button	Background Music of Black Hat Hackers is decreased.	1: Run Application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Down Button and release.	Black Hat Hackers background music should appear to decrease in volume.	Black Hat Hackers background music decreases in volume as expected.	P
28	Volume Down Button	Push Bitmap for Volume Down Button.	1: Run Application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Down Button without releasing.	Volume Down Button Bitmap should change from Black & Blue to White & Blue.	Volume Down Button Bitmap changed from Black & Blue to White & Blue as expected.	P
29	Volume Down Button	Push Bitmap for Volume Down Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Down Button and release. 4: However when releasing make sure it is released off the button.	Volume Down Button Bitmap should change from White & Blue back to original Black & Blue.	Volume Down Button Bitmap changed back to original bitmap as expected.	P

30	Volume Down Button	Black Hat Hackers Background Music remains at same volume when transitioning back to Main Menu Screen.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Down Button and release. 4: Touch/Click Main Menu Button and release.	Volume of Black Hat Hackers Background Music should stay the same volume as it left the RiskSettings Screen before the transition.	Black Hat Hackers Background Music volume does stay at the same volume it was when it left the RiskSettingsScreen as exepcted.	P
31	Volume Up Button	Background Music of Black Hat Hackers is increased.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Up Button and release.	Black Hat Hackers background music should appear to increase in volume.	Black Hat Hackers background music increases in volume as exepcted.	P
32	Volume Up Button	Push Bitmap for Volume Up Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Up Button without releasing.	Volume Up Button Bitmap should change from Black & Blue to White & Blue.	Volume Up Button Bitmap changed from Black & Blue to White & Blue as expected.	P
33	Volume Up Button	Push Bitmap for Volume Up Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Up Button and release. 4: However when releasing make sure it is released off the button.	Volume Up Button Bitmap should change from White & Blue back to original Black & Blue.	Volume Up Button Bitmap changed back to orginal bitmap as expected.	P
34	Volume Up Button	Black Hat Hackers Background Music remains at same volume when transitioning back to Main Menu Screen.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Up Button and release. 4: Touch/Click Main Menu Button and release.	Volume of Black Hat Hackers Background Music should stay the same volume as it left the RiskSettings Screen before the transition.	Black Hat Hackers Background Music volume does stay at the same volume it was when it left the RiskSettingsScreen as exepcted.	P
35	Volume Off Button	Background Music of Black Hat Hackers is silent.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Off Button and release.	Black Hat Hackers background music should appear to be put on silent.	Black Hat Hackers background music is put on silent and can't be heard as exepcted.	P
36	Volume Off Button	Push Bitmap for Volume Off Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Off Button without releasing.	Volume Off Button Bitmap should change from Black & Blue to White & Blue.	Volume Off Button Bitmap changed from Black & Blue to White & Blue as expected.	P
37	Volume Off Button	Push Bitmap for Volume Off Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Off Button and release. 4: However when releasing make sure it is released off the button.	Volume Off Button Bitmap should change from White & Blue back to original Black & Blue.	Volume Off Button Bitmap changed back to orginal bitmap as expected.	P

38	Volume Off Button	Black Hat Hackers Background Music remains at same volume when transitioning back to Main Menu Screen.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume Off Button and release. 4: Touch/Click Main Menu Button and release.	Volume of Black Hat Hackers Background Music should stay the same volume as it left the RiskSettings Screen before the transition.	Black Hat Hackers Background Music volume does stay at the same volume it was when it left the RiskSettingsScreen as expected.	P
39	Volume On Button	Background Music of Black Hat Hackers will be turned back on.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Enter RiskSettingsScreen. 4: Touch/Click Volume On Button and release.	Black Hat Hackers background music should appear to be playing and easily heard.	Black Hat Hackers background music is turned back on and can be easily heard as expected.	P
40	Volume On Button	Push Bitmap for Volume On Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume On Button without releasing.	Volume On Button Bitmap should change from Black & Blue to White & Blue.	Volume On Button Bitmap changed from Black & Blue to White & Blue as expected.	P
41	Volume On Button	Push Bitmap for Volume On Button.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume On Button and release. 4: However when releasing make sure it is released off the button.	Volume On Button Bitmap should change from White & Blue back to original Black & Blue.	Volume On Button Bitmap changed back to orginal bitmap as expected.	P
42	Volume On Button	Black Hat Hackers Background Music remains at same volume when transitioning back to Main Menu Screen.	1: Run application. 2: Touch/Click Risk Settings Button and release. 3: Touch/Click Volume On Button and release. 4: Touch/Click Main Menu Button and release.	Volume of Black Hat Hackers Background Music should stay the same volume as it left the RiskSettings Screen before the transition.	Black Hat Hackers Background Music volume does stay at the same volume it was when it left the RiskSettingsScreen as expected.	P

43

<b>RiskGameScreen</b>						
#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
44	Main Menu Button	Screen transition back to Black Hat Hackers Main Menu Screen.	1: Enter RiskGameScreen. 2: Push/Click Main Menu Button and release.	Screen should transition smoothly back to the Black Hat Hackers Main Menu Screen.	Screen transitioned smoothly back to Black Hat Hackers Main Menu Screen as expected	P
45	Start Button (Main Menu)	Screen transition to load the RiskGameScreen	1: Start application 2: Click "start game" button and release	Screen should transition smoothly into the RiskGameScreen, showing the map, etc.	Screen transitioned smoothly into the RiskGameScreen, showing the map, etc.	P

46	Input Detection	Ensure that tapping on Fields do nothing (must push attack button first)	1: Enter RiskGameScreen 2: Click on different Fields	On the top right debug information the State should not change after each Area/Field clicked. Colours clicked will show but nothing is actually done.	The state did not change, and colours clicked still displayed the colour codes. Nothing is actual done though.	P
47	Input Detection	Ensure that Fields can be selected when needed	1: Enter RiskGameScreen 2: Click the "Attack" button 3: Click a Field 4: Click another Field	The state should change once you click "Attack", then once two Fields are chosen both Field names should be displayed.	The state changed once I clicked "Attack", then once two Fields were clicked both their names were displayed.	P
48	Input Detection	Ensure multiple Fields can't attack themselves	1: Enter RiskGameScreen 2: Click the "Attack" button 3: Click a Field 4: Click the same Field	The state should change once you click "Attack", then once a Field is clicked twice the game should still be waiting for a user to click a different Field.	The state changed once I clicked "Attack", then once a Field was clicked twice the game continued to wait for me to click a different Field.	P
49	Players	Ensure Players load	1: Enter RiskGameScreen	Debug information should displayed three Player names: "Microsoft", "Google", and "Apple".	Debug information displayed "Microsoft", "Google", and "Apple."	P
50	Areas	Ensure Areas load	1: Enter RiskGameScreen	Debug information should display 5 Area names: "Telecommunications", "Security", "Development", "Machine Learning", and "Data & Information".	Debug information displayed 5 Area names: "Telecommunications", "Security", "Development", "Machine Learning", and "Data & Information".	P
51	Fields	Ensure Fields load	1: Enter RiskGameScreen 2: Click "Attack" 3: Click a Field 4: Repeat for each Field	Each time you click a Field it should change the state from "Pick area 1" to "Pick area 2". You must click "Attack" after each click on a Field. This means each Field and their colour codes are working.	Each time "Attack" and a Field was clicked the state changed to "Pick area 1" to "Pick area 2". Worked as expected.	P
52	RiskGameScreen	When a user begins a game, the players are all allocated fields	1. Begin game 2. Select each field to check ownership	Each field is assigned to one player and each player has a similar number of fields	Each field is allocated to a single player	P
53	RiskGameScreen	When game starts first player is selected randomly	1. Run game, check first player 2. Run game several times to check randomness	Each player has first turn on average the same number of times as each other	first player is selected by a psuedo random number	P
54	RiskGameScreen	When game starts it enters allocate mode for the first player	1. Run game 2. Check test text/ HUD for game state and make sure it is in allocate	State is player X allocate, with X meaning whoever has first turn	Allocate mode is first state	P

55	RiskGameScreen	When first player allocates a team, number of teams for that field should increase	1. Run Game 2. Check state is allocate for the first player 3. Select a field belonging to the first player 4. Check number of teams for field	Number of teams should have incremented	When a field owned by the player is clicked in allocate state number of teams increases	P
56	RiskGameScreen	When first player has allocated a team, game state should change to the next players allocate phase	1. Run Game 2. Check state is allocate for the first player 3. Select a field belonging to the first player 4. Check game state	Game state should now be in the next players allocate phase	Allocate state updates after every allocation	P
57	RiskGameScreen	Allocate phase should allow each player in turn to add 20 teams to their fields	1. Run game 2. Select a field for each player 20 times	Game should allow allocation for each and update each field appropriately	each player is allowed to allocate 20 teams each	P
58	RiskGameScreen	After the game start allocations, the first player should have their first turn allocation	1. Run game 2. Select a field for each player 20 times 3. Check State string	State should be the first players allocation phase	Moves on to first players allocate teams phase and first turn	P
59	RiskGameScreen	Each player on their first turns should get the same number of teams to allocate based on starting fields	1. Run game 2. Select a field for each player 20 times 3. Allocate all teams for first player	Number of times allocation is possible should be equal to: 7 for the first turn, altering based on how many fields and areas and risk cards are owned	7 teams are allowed to start	P
<b>(RiskGameScreen &amp; Battle)</b>						
#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
60	Test Connected class	Test the connected() method in the Battle class that checks if the defending field is connected to the attacking field	1: Add the 2nd field to an array of fields connected to the 1st field 2. See if it returns true or false 3. If returns true then it passed	Should return true as it is in the array for cfields connected to Field 1	Method returns true so test passes	P
61	RiskGameScreen	Test when Microsoft is current player it shows their logo	1. Run the game 2. Start the game 3. When its the turn of Microsoft, check their logo loads in the bottom left HUD	Microsoft logo will appears	Test passed as Microsoft logo appears in the bottom left	P
62	RiskGameScreen	Test when Apple is current player it shows their logo	1. Run the game 2. Start the game 3. When its the turn of Apple, check their logo loads in the bottom left HUD	Apple logo will appears	Test passed as Apple logo appears in the bottom left	P

63	RiskGameScreen	Test when Google is current player it shows their logo	1. Run the game 2. Start the game 3. When its the turn of Google, check their logo loads in the bottom left HUD	Google logo will appears	Test passed as Google logo appears in the bottom left	P
64	RiskGameScreen	Test it shows Microsoft's total teams when its their go	1. Run the game 2. Start the game 3. When its the turn of Microsoft, check their total teams display in the bottom left HUD	A number of teams will appear to the right of the logo	Test passed as the number displays in the bottom left HUD	P
65	RiskGameScreen	Test it shows Apple's total teams when its their go	1. Run the game 2. Start the game 3. When its the turn of Apple, check their total teams display in the bottom left HUD	A number of teams will appear to the right of the logo	Test passed as the number displays in the bottom left HUD	P
66	RiskGameScreen	Test it shows Google's total teams when its their go	1. Run the game 2. Start the game 3. When its the turn of Google, check their total teams display in the bottom left HUD	A number of teams will appear to the right of the logo	Test passed as the number displays in the bottom left HUD	P
<b>(Dice Roll Screen)</b>						
#	Area Under Test	Test Case	Steps	Expected Result	Actual Result	P/F
67	Abort Hack Button	Screen transition back to Risk game screen.	1: Enter DiceRollScreen. 2: Push/Click Abort Hack Button and release.	Screen should transition smoothly back to the RiskGameScreen.	Screen transitioned smoothly back to RiskGameScreen as expected	P
68	Roll Button	Random numbers are displayed in the designated areas. The player with the lower total of the results should have a team removed from their field	Press and release the roll button	Random numbers are displayed and the total calculated. The one with the smaller total has its number of team decremented	Random numbers are displayed and the total calculated. The one with the smaller total has its number of team decremented as expected	p
69	The button that shows one dice	When roll is pressed only 1 of the results should be returned and the others will be 0	1: Click one dice button. 2: Click the roll button.	One random result number is displayed (should be the left one) and the other results should be 0. When clicked it should change the bit map and have a yellow outline to show that it is selected.	One random result is shown and the others are 0. When clicked it should change the bit map and have a yellow outline to show that it is selected as expected	p

70	The button that shows two dice	When roll is pressed only 2 of the results should be returned and the others will be 0	1: Click two dice button. 2: Click the roll button.	Two random result number is displayed (should be the left one & middle) and the other result should be 0. When clicked it should change the bit map and have a yellow outline to show that it is selected.	Two of the results are shown and the other are 0. When clicked it should change the bit map and have a yellow outline to show that it is selected as expected	p
71	The button that shows three dice	All 3 results should be displayed on the screen	1: Click three dice button. 2: Click the roll button.	All the attackers results should be displayed. When clicked it should change the bit map and have a yellow outline to show that it is selected.	When clicked it should change the bit map and have a yellow outline to show that it is selected and all the results are shown as expected	p
72	Attacker has 3 Teams	The Dice 3 Button	1: Click three dice button. 2: Click the roll button.	The three dice button should be grayed out and when clicked should not have the yellow outline	There is no out line and the three dice button cannot be selected.	p
73	Attacker has 2 Teams		1: Click two dice button. 2: Click the roll button.	The two dice button should be grayed out and when clicked should not have the yellow outline	There is no out line and the two dice button cannot be selected.	p
74	Attacker has 1 Team	The attacking team ending up with 1 team from a battle sequence	Click Roll when the attacker has 2 teams	If they lose and the attacker is on 1 team the screen should transition back to the risk game screen	When the attacker loses and ends up on one team the screen goes to the risk game screen.	p