Age of Battleships

Group 5

Eman Ijaz	15L-4267
Ayishm Aziz	15L-4140
Mirah Saqib	15L-4080
Tehreem Talat	15L-4143
Midhat Asif	15L-4282
Hafsa Batool	15L-4127

Test Cases

Submitted on December 9, 2018

1. Test Cases

1.1 Test Cases for Opponent() Method

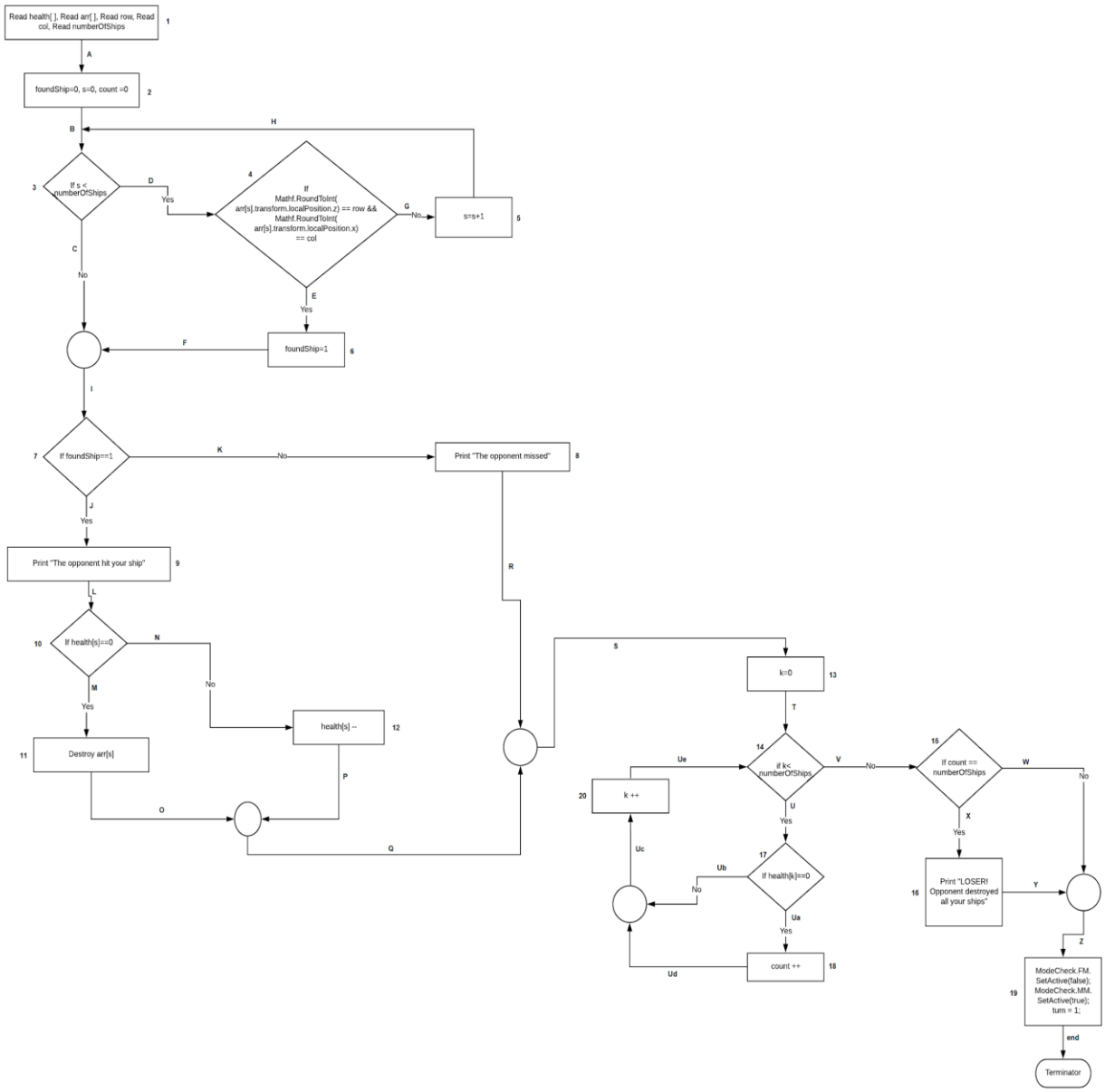

Figure: Flow chart for Opponent() method

Testing Document

- Statement Coverage

Identifier	TC-1 (Opponent() - Statement Coverage)
Priority	High
Short description	Opponent's turn to fire
Pre-condition(s)	User has finished his turn
Input data	Row = 4, Column = 4, numberOfShips = 4, arr[] (arr[1].transform.localPosition.z =4 and arr[1].transform.localPosition.x=4), health[] (health[1]=5)
Detailed steps	1A-2B-3D-4G-5H-3D-4E-6F-I-7J-9L-10N-12P-Q-S-13T-14U-17Ub-Uc-20Ue-14V-15W-Z-19end
Expected result(s)	Print "Opponent hits users ship", Health[1]=4 ModeCheck.FM.SetActive(false); ModeCheck.MM.SetActive(true); turn = 1;
Post-condition(s)	Opponent completes his turn

- Branch Coverage

Identifier	TC-2 (Opponent() - Branch Coverage)
Priority	High
Short description	Opponent's turn to fire
Pre-condition(s)	User has finished his turn
Input data	Row = 6, Column = 7, numberOfShips = 3, arr[] (arr[0].transform.localPosition.z =6 and arr[0].transform.localPosition.x=7), health[] (health[0]=1, health[1]=0, health[2]=0)
Detailed steps	Testing for: 1A-2B-3D-4E-6F-I-7J-9L-10M-11O-Q-S-13T-14U-17Ua-18Ud-Uc-20Ue-14V-15X-16Y-Z-19end Others: 1A-2B-3D-4E-6F-I-7J-9L-10N-12P-Q-S-13T-14U-17Ub-Uc-20Ue-14V-15W-Z-19end 1A-2B-3D-4G-5H-3C-7K-8R-S-13T-14U-17Ub-Uc-20Ue-14V-15W-Z-19end
Expected result(s)	Print "Opponent hits users ship", Health[0]=0 Print "LOSER! Opponent destroyed all your ships" ModeCheck.FM.SetActive(false); ModeCheck.MM.SetActive(true); turn = 1;
Post-condition(s)	Opponent completes his turn

- Path Coverage

Identifier	TC-3 (Opponent() - Path Coverage)
Priority	High
Short description	Opponent's turn to fire
Pre-condition(s)	User has finished his turn
Input data	Row = 10, Column = 5, numberOfShips = 3, arr[] (arr[1].transform.localPosition.z =10 and arr[1].transform.localPosition.x=5), health[] (health[2]=3, health[1]=3, health[0]=0)
Detailed steps	1A-2B-3D-4G-5H-3D-4E-6F-I-7J-9L-10N-12P-Q-S-13T-14U-17Ua-18Ud-Uc-20Ue-14V-15W-Z-19end
Expected result(s)	Print "Opponent hits users ship", Health[2]=2 ModeCheck.FM.SetActive(false); ModeCheck.MM.SetActive(true); turn = 1;
Post-condition(s)	Opponent completes his turn

- Loop Boundary Testing

Identifier	TC-4 (Opponent() - Loop Boundary Testing)
Priority	High
Short description	Opponent's turn to fire - Exactly one pass through the loops
Pre-condition(s)	User has finished his turn
Input data	Row = 2, Column = 11, numberOfShips = 1, arr[] (arr[0].transform.localPosition.z !=2 and arr[0].transform.localPosition.x !=11), health[] (health[1]=5)
Detailed steps	1A-2B-3D-4G-5H-3C-I-7J-9L-10N-12P-Q-S-13T-14U-17Ub-Uc-20Ue-14V-15W-Z-19end
Expected result(s)	Print "Opponent hits users ship", Health[1]=4 ModeCheck.FM.SetActive(false); ModeCheck.MM.SetActive(true); turn = 1;
Post-condition(s)	Opponent completes his turn

1.2 Test Case for Placing Ships

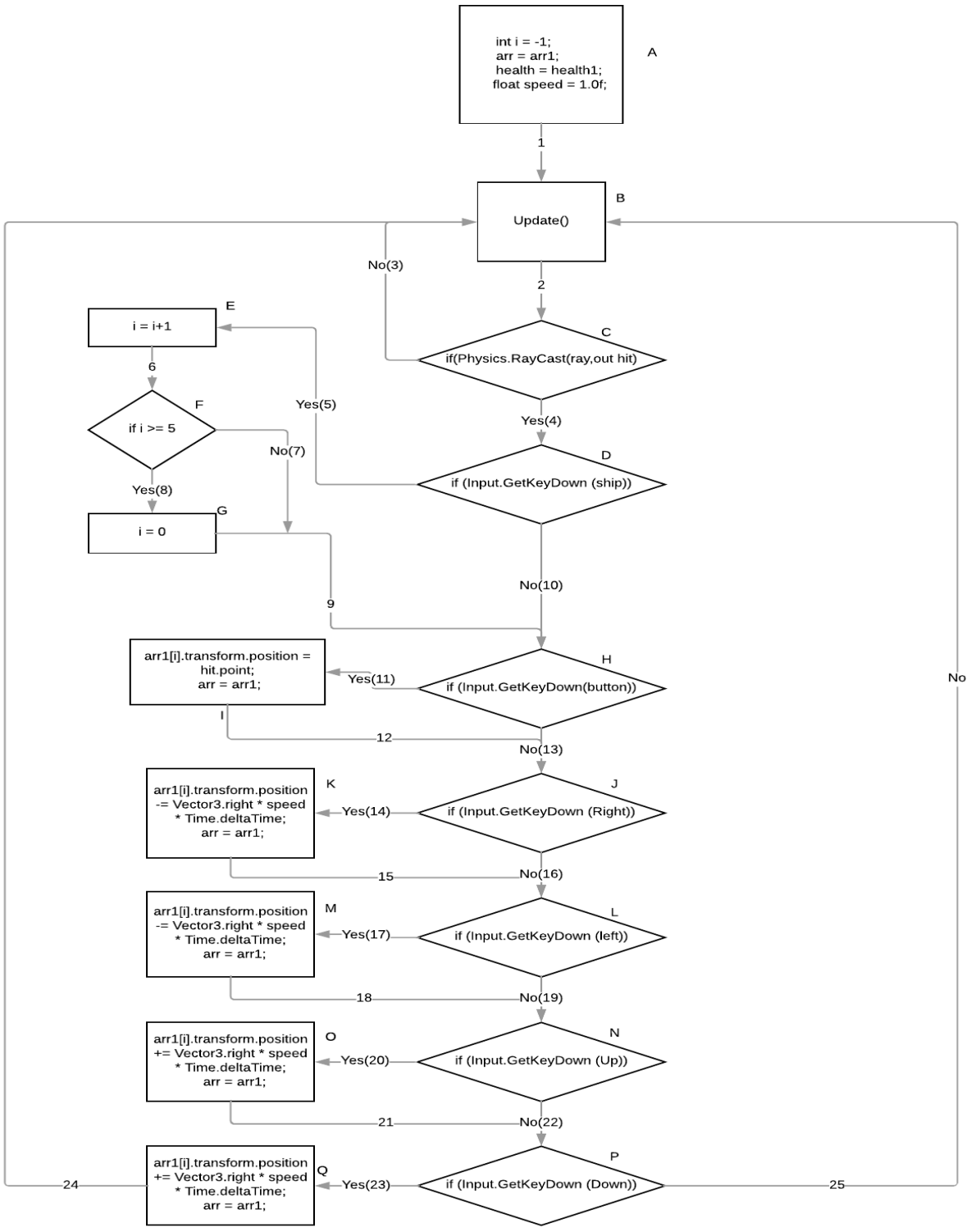

Figure: Flow Chart for PlaceShip() method

- Statement Coverage

Identifier	TC-5 (Update() - Statement Coverage)
Priority	High
Short description	User places his ships on the grid.
Pre-condition(s)	User has logged in.
Input data	User clicks on the ship, then clicks outside the grid.
Detailed steps	A1-B2-C4-D5-E6-F8-G9-H13-J16-L19-N22-P25
Expected result(s)	The ship should not be placed outside the grid.
Post-condition(s)	The user places his ships on the grid.

- Path Coverage

Identifier	TC-6 (Update() - Path Coverage)
Priority	High
Short description	User places his ships on the grid.
Pre-condition(s)	User has logged in.
Input data	User clicks on the ship, then clicks outside the grid.
Detailed steps	A1-B2-C4-D5-E6-F8-G9-H13-J16-L19-N22-P25
Expected result(s)	The ship should not be placed outside the grid.
Post-condition(s)	The user places his ships on the grid.

- Branch Coverage

Identifier	TC-7 (Update() - Branch Coverage)
Priority	High
Short description	User places his ships on the grid.
Pre-condition(s)	User has logged in.
Input data	User clicks on the ship, then clicks outside the grid.
Detailed steps	If the branch in the path is taken 1A-2B-4C-D5-E6-F8-G9 If the branch in the path is not taken 1A-2B-4C-D5-E6-F7-H13
Expected result(s)	The ship should not be placed outside the grid.
Post-condition(s)	The user places his ships on the grid.

- Loop Coverage
  Loop coverage test for this method is not possible as the method contains no loops.

1.3 Test Cases for SelectShip() Method

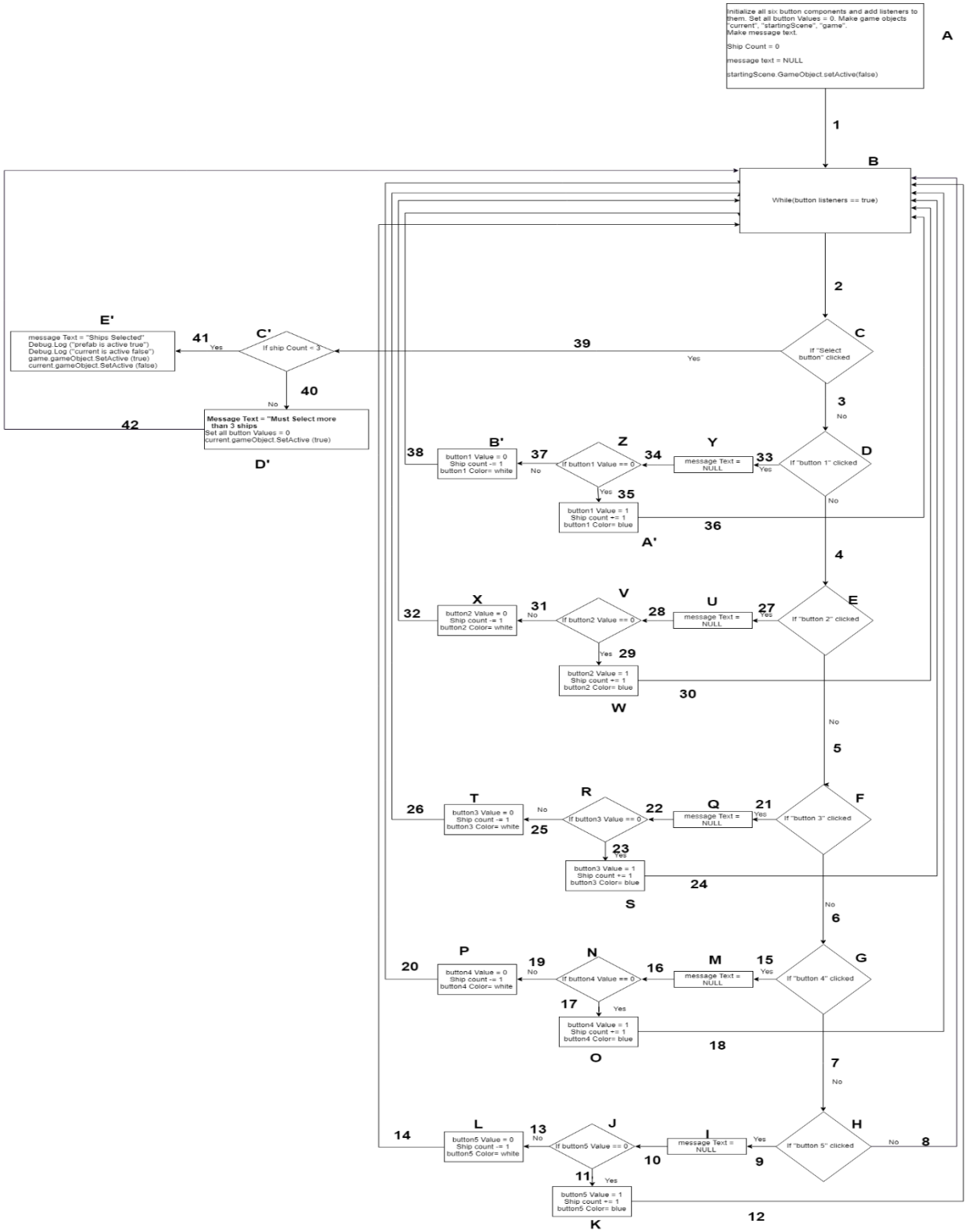

Figure: Flow Chart for SelectShip() method

- Statement Coverage

Identifier	TC-8 (Select Ship()- Statement Coverage)
Priority	High
Short description	User selects ships by clicking on radio buttons.
Pre-condition(s)	User has selected map(WWI or WWII).
Input data	User clicks on select button without selecting any ship.
Detailed steps	A1-B2-C3-D4-E5-F6-G7-H9-I10-J11-K12
Expected result(s)	The user is displayed message “Must select more than three ships”
Post-condition(s)	Ships got selected and user is moved to play mode

- Path Coverage

Identifier	TC-9 (Select Ship()- Path Coverage)
Priority	High
Short description	User selects ships by clicking on radio buttons.
Pre-condition(s)	User has selected map(WWI or WWII).
Input data	User clicks on select button without selecting any ship.
Detailed steps	A1-B2-C3-D4-E5-F6-G7-H9-I10-J11-K12
Expected result(s)	The user is displayed message “Must select more than three ships”
Post-condition(s)	Ships got selected and user is moved to play mode

- Branch Coverage

Identifier	TC-10 (Select Ship()- Branch Coverage 1)
Priority	High
Short description	User selects ships by clicking on radio buttons.
Pre-condition(s)	User has selected map(WWI or WWII).
Input data	User clicks on select button without selecting any ship.
Detailed steps	A1-B2-C39-C'40-D'42
Expected result(s)	The user is displayed message "Must select more than three ships"
Post-condition(s)	Ships got selected and user is moved to play mode

Identifier	TC-11 (Select Ship()- Branch Coverage 2)
Priority	High
Short description	User selects ships by clicking on radio buttons.
Pre-condition(s)	User has selected map(WWI or WWII).
Input data	User clicks on select button by selecting less than three ships.
Detailed steps	A1-B2-C3-D4-E5-F6-G7-H9-I10-J11-K12-B2-C39-C'40-D'42
Expected result(s)	The user is displayed message "Must select more than three ships"
Post-condition(s)	Ships got selected and user is moved to play mode

1.4Test Cases for GenerateGrid() Method

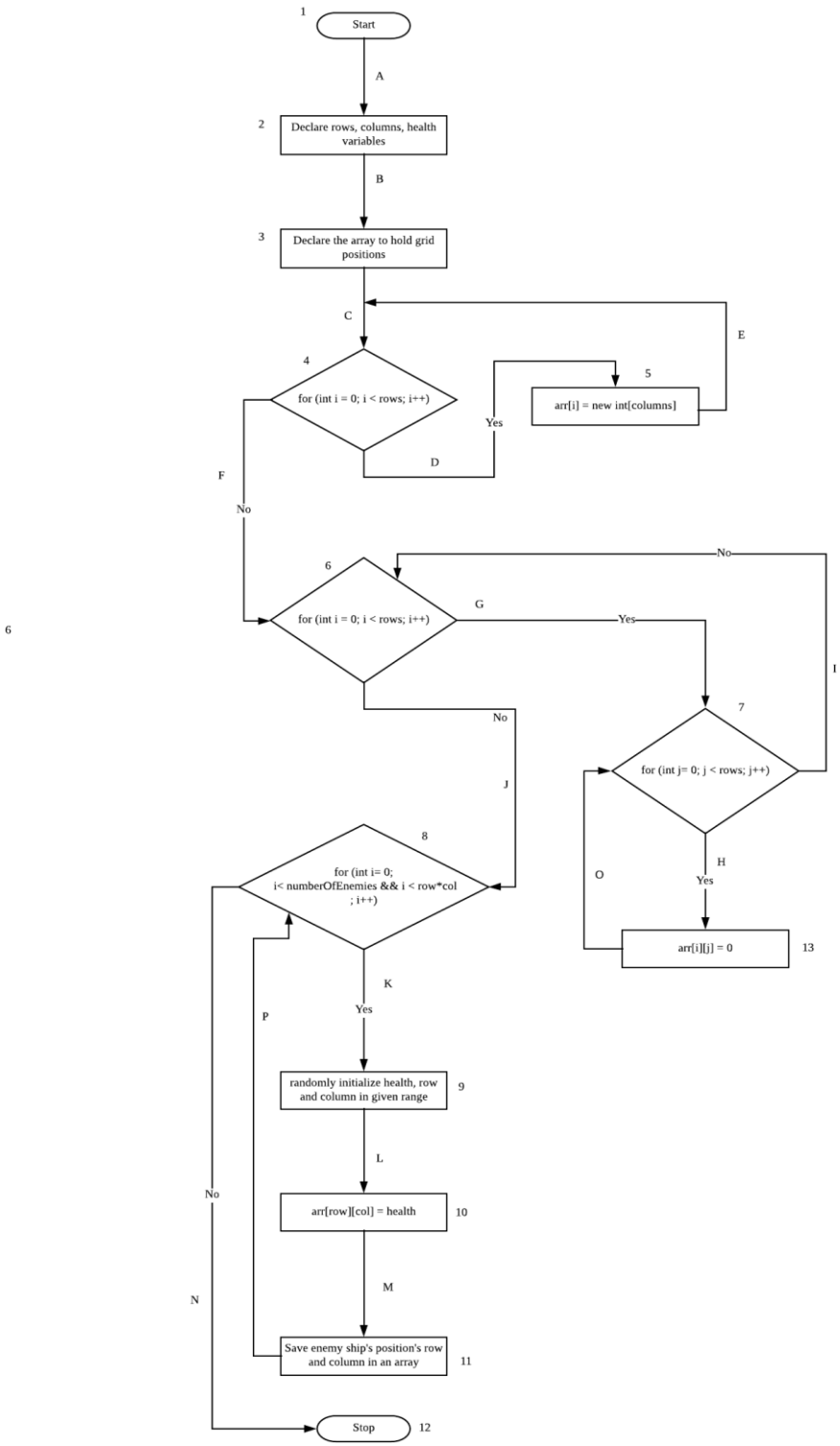

Figure: Flow Chart for GenerateGrid() method

- Statement Coverage

Identifier	TC-12 (GenerateGrid() – Statement Coverage)
Priority	High
Short description	This function places the enemy's ships randomly across the grid.
Pre-condition(s)	User has selected the difficulty level.
Input data	Number of rows and columns for the respective difficulty level and the number of enemy's ships to be placed. Rows= 12, Columns = 12, NumberOfEnemyShips = 6
Detailed steps	Path to be followed is 1A - 2B - 3C - 4D - 5E - 4F - 6G - 7H - 13O - 7I - 6J - 8K - 9L - 10M - 11P - 8N – Stop
Expected result(s)	Successful placement of enemy's ships. No User-visible output is displayed on the screen.
Post-condition(s)	Game starts.

- Branch Coverage

Identifier	TC-13 (GenerateGrid() – Branch Coverage)
Priority	High
Short description	This function places the enemy's ships randomly across the grid.
Pre-condition(s)	User has selected the difficulty level.
Input data	Rows= 12, Columns = 12, NumberOfEnemyShips = 6
Detailed steps	Path to be followed is 1A - 2B - 3C - 4D - 5E - 4F - 6G - 7H - 13O - 7I - 6J - 8K - 9L - 10M - 11P - 8N – Stop
Expected result(s)	Successful placement of enemy's ships. No User-visible output is displayed on the screen.
Post-condition(s)	Game starts.

- Path Coverage

Identifier	TC-14 (GenerateGrid() – Path Coverage)
Priority	High
Short description	This function places the enemy's ships randomly across the grid.
Pre-condition(s)	User has selected the difficulty level.
Input data	Rows= 12, Columns = 12, NumberOfEnemyShips = 8
Detailed steps	Path to be followed is 1A - 2B - 3C - 4D - 5E - 4F - 6G - 7H - 13O - 7I - 6J - 8K - 9L - 10M - 11P - 8N – Stop
Expected result(s)	Successful placement of enemy's ships. No User-visible output is displayed on the screen.
Post-condition(s)	Game starts.

- Loop Boundary Testing

Identifier	TC-15 (GenerateGrid() – Loop Boundary Testing)
Priority	High
Short description	This function places the enemy's ships randomly across the grid.
Pre-condition(s)	User has selected the difficulty level.
Input data	Rows= 0, Columns = 0, NumberOfEnemyShips = 8
Detailed steps	Path to be followed is 1A - 2B - 3C - 4F - 6J - 8N - Stop
Expected result(s)	No enemy ship is placed.
Post-condition(s)	Game starts.

Identifier	TC-16 (GenerateGrid() – Loop Boundary Testing – 2)
Priority	High
Short description	This function places the enemy's ships randomly across the grid.
Pre-condition(s)	User has selected the difficulty level.
Input data	Rows= 12, Columns = 12, NumberOfEnemyShips = 145
Detailed steps	Path to be followed is 1A - 2B - 3C - 4D - 5E - 4F - 6G - 7H - 13O - 7I - 6J - 8K - 9L - 10M - 11P - 8N – Stop
Expected result(s)	144 Enemy ships placed.
Post-condition(s)	Game starts.

1.5Test Cases for ButtonFunction() Method

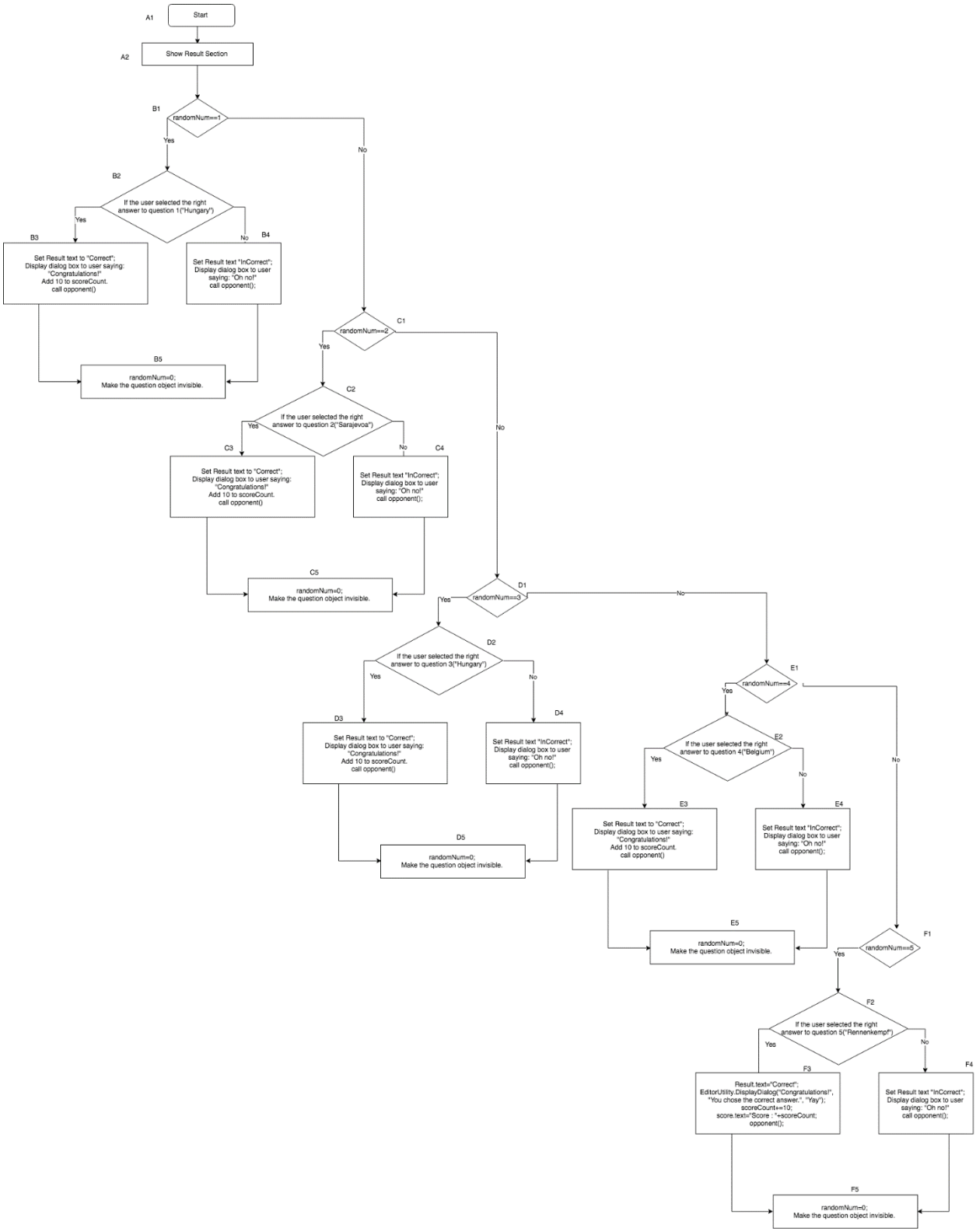

Figure: Flow Chart for ButtonFunc() method

- Statement Coverage

Identifier	TC-17 (ButtonFunc() – Statement Coverage)
Priority	High
Short description	This function tests the user's answer to the question.
Pre-condition(s)	User has hit the opponent's ship, and the question is displayed to the user.
Input data	User's click on the correct/incorrect answer button
Detailed steps	Path to be followed is A1 - A2 - B1 - B2 - B3 - B5
Expected result(s)	Either user's answer is correct: user is displayed with a "congratulations" dialog box, or user's answer is incorrect: user is displayed with a "oh no!" dialog box.
Post-condition(s)	Opponent's turn to fire the user's ship.

- Path Coverage

Identifier	TC-18 (ButtonFunc() – Path Coverage)
Priority	High
Short description	This function tests the user's answer to the question.
Pre-condition(s)	User has hit the opponent's ship, and the question is displayed to the user.
Input data	User's click on the correct/incorrect answer button
Detailed steps	A1 - A2 - B1 - B2 - B3 - B5
Expected result(s)	Either user's answer is correct: user is displayed with a "congratulations" dialog box, or user's answer is incorrect: user is displayed with a "oh no!" dialog box.
Post-condition(s)	Opponent's turn to fire the user's ship.

- Branch Coverage

Identifier	TC-19 (ButtonFunc() – Branch Coverage)
Priority	High
Short description	This function tests the user's answer to the question.
Pre-condition(s)	User has hit the opponent's ship, and the question is displayed to the user.
Input data	User's click on the correct/incorrect answer button
Detailed steps	If outer first branch is taken and if the inner first branch is taken: A1 - A2 - B1 - B2 - B3 - B5 If outer first branch is taken and if the inner first branch is not taken: A1 - A2 - B1 - B2 - B4 - B5 If outer first branch is not taken and if the inner branch is taken: A1 - A2 - C1 - C2 - C3 - C5 If outer first branch is not taken and if the inner branch is not taken: A1 - A2 - C1 - C2 - C4 - C5
Expected result(s)	Either user's answer is correct: user is displayed with a "congratulations" dialog box, or user's answer is incorrect: user is displayed with a "oh no!" dialog box.
Post-condition(s)	Opponent's turn to fire the user's ship.

- Loop Coverage
  Not applicable for this method as the code does not contain any loops.

1.6 Test Cases for OnMouseDown() Method

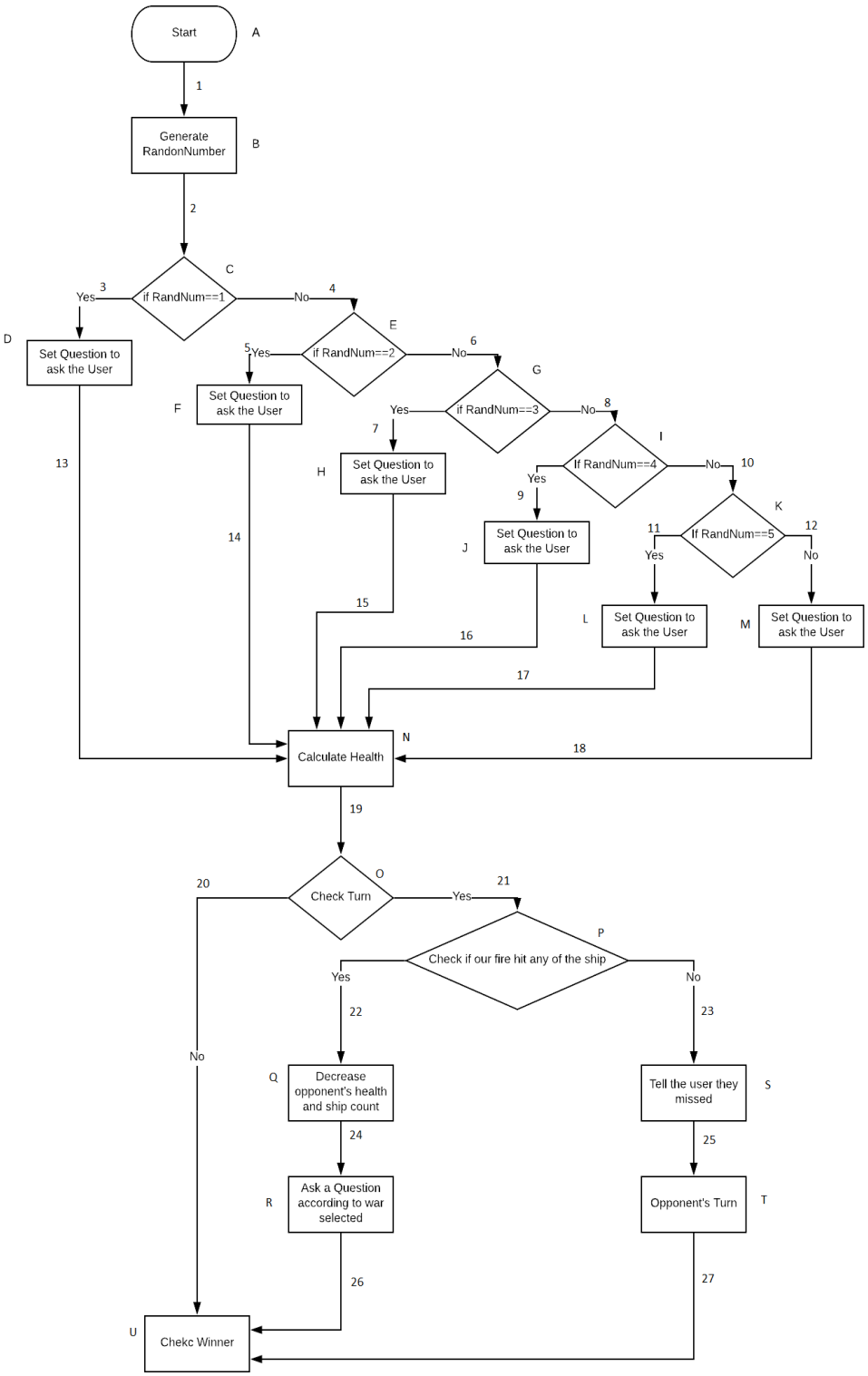

Figure: Flow Chart for OnMouseDown()

- Statement Coverage

Identifier	TC-20 (OnMouseDown() – Statement Coverage)
Priority	High
Short description	User's turn to fire
Pre-condition(s)	User is in fire mode and clicked on one of the spots on the grid.
Input data	User's turn and It was a hit on opponent's ship.
Detailed steps	Path to be followed is A1 - A2 - B1 - B2 - B3 - B5
Expected result(s)	The function to ask the user a question should be called
Post-condition(s)	…

- Branch Coverage

Identifier	TC-21 (OnMouseDown() – Branch Coverage 1)
Priority	High
Short description	User's turn to fire
Pre-condition(s)	User is in fire mode and clicked on one of the spots on the grid.
Input data	User's turn and It was a hit on opponent's ship.
Detailed steps	A1-B2-C4-E6-G8-I10-K12-M18-N19-O21-P22-Q24-R26-Uend
Expected result(s)	The function to ask the user a question should be called
Post-condition(s)	…

Identifier	TC-22 (OnMouseDown() – Branch Coverage 2)
Priority	High
Short description	User's turn to fire
Pre-condition(s)	User is in fire mode and clicked on one of the spots on the grid.
Input data	User's turn and fire was a miss.
Detailed steps	A1-B2-C4-E6-G8-I10-K12-M18-N19-O21-P23-S25-T27-U end
Expected result(s)	The control should be transferred to the autoplayer now and it should take its turn.
Post-condition(s)	…

- Path Coverage

Identifier	TC-23 (OnMouseDown() – Path Coverage)
Priority	Medium
Short description	User's turn to fire.
Pre-condition(s)	User is in fire mode and clicked on one of the spots on the grid.
Input data	User's turn and he hit on a position on grid.
Detailed steps	A1-B2-C4-E6-G8-I10-K12-M18-N19-O21-P22-Q24-R26-Uend
Expected result(s)	If the position had opponent's ship on it, a question should be asked by the system else if it was a miss, the opponent should take its turn.
Post-condition(s)	…