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Project - Mancala User Manual

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User Manual

1. Description

The following sections describe the steps needed to Java Generate Source Code from the Mancala.crt file. This CRT file includes the Model and the Test Cases modeled as Story Boards. When the Java code is generated all the classes in the model are mapped to Java Classes and are placed in the folder **generated** under the **package ut.ee.mancala**. Also the test cases that are modeled as Story Boards inside the CRT file are mapped to JUnit Test Cases and the classes for these test cases are placed in the folder **generated** under the package **default**.

The project implemented the MVC pattern. All the classes regarding the model can be found in the folder **generated** under the package **ut.ee.mancala**. All the classes regarding the controller can be found in the folder **src** under the package **ut.ee.mancala.controller**. Finally all the classes regarding the view can be found under the folder **src** and the package **ut.ee.mancala.view**.

2. Scenarios

1. A simple game

There are two players Alice and Bob who wish to play digital Mancala. They have a computer with the program installed. They double-click the program icon on the desktop. The system displays a welcome screen. Also displayed is a Mancala board in the initial game play state (3 stones in each house). prompting the two players to enter their names. The system prompts the user to enter the names of the two players. After entering their names, the user clicks "Play". The system randomly chooses Bob to play first. The system notifies the players that it is Bob's turn. Bob chooses 3 seeds from one of his houses to sow, and system updates the display with the seeds properly sowed. Since Bob's last seed did not land in his store, it is now Alice's turn to play. The two continue playing until it becomes Bob's turn, and he does not have any seeds to sow (Alice still has some). The system announces "Game Over". The system tabulates the final score, with the Alice's remaining seeds counting for her. Alice has the most points. The system displays the final score, along with the running game count (Alice - 1, Bob - 0). At this point, the system allows Alice and Bob the choice between playing again, or quitting. The user selects quit, and the program exits.

2. Invalid Move, Notification, Allowed Move

Two players Alice and Bob are playing Mancala game for second time. Bob won first game. They are still not very familiar with Mancala rules. They are in the middle of second game and current status is: It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6. Alice attempts to move from her house number 3. As there are no seeds in this store system will not allow this move and instead will notify players that this kind of move is invalid. Alice now chooses her house number 6 to make a move from. As number of seed in 6th house is two, one seed will be saw in Alice store, making total number of seeds in it to 6, and second seed will increment Bob's first house for one, setting total number of seeds in it to 6. Its Bob turn now.

3. User Stories

1. Game Start - initial display
2. First Game Start
3. Move; no point score; no capture last seed lands in own house.
4. Move; point score; last seed lands in opponent hous.
5. Move; point score; last seed lands in opponent house; opposite empty
6. Move; point score; last seed lands in own house after wrapping
7. Move; points score via capture
8. Move; point score; extra turn
9. Game over: Tied
10. Game over: last mover wins
11. Game over: not last mover wins
12. Another game; previous winner gets first move
13. Another game; previous game was tie, random first mover
14. Player attempts to move from an empty house, can't, still her turn.
15. Player attempts to move from opponents house, can't, still her turn
16. GUI - Game over - presents score, option to play again, or quit - user quits
17. GUI - Game over - presents score, option to play again, or quit - user continues
18. GUI - Player selects "Quit" during game play, chooses close, and program exits
19. GUI - Player selects "Quit" during game play, chooses cancel, returns to game play
20. GUI - Very first game, Player checks history function (for keeping previous scores) before to start the game, its empty
21. GUI - Some games are already been played, Player checks history function some data are displayed
22. Alice attempts to move from her store, can't, still her turn

23. Alice attempts to move from opponent store, can't, still her turn.
24. GUI - Player checks the "How to play" before to start the game
25. GUI - Player checks the "How to play" during a game play
26. GUI - Player checks the "About and credits"
27. Third Game Over
28. Move; no point score; last seed lands in own empty house; capture not triggered.
29. End of game after capture
30. Move; point score; last seed lands in own house after wrapping; capture.

Pre pre conditions:

The playing board consists of 12 houses and 2 stores. Each player owns exclusively 6 houses and one store. The houses are ordered sequentially, and for the purposes of our user stories, labeled 1 through 6. The player's first house is 1, and his last house is 6.

Each house has a one-to-one "opposite" relationship to a house owned by the opposing player. House 1 is opposite of opposing house 6, house 2 opposite of house 5 and so on.

1. Title: Game Start - initial display

Pre Condition: The game Mancala.exe is placed in Alice's desktop.

Description: Alice runs the game Mancala.exe double clicking on the icon "Mancanala".

Post Condition: The message "Enter player names" is displayed. Two boxes are shown. One for the player one with the label "Player 1" and one for the play 2 with the label "Player 2". On the bottom one button with the text "Play" is shown.

2.

Title: First game start

Pre Condition: Two players Alice and Bob will begin to play their first game, with no prior games having been played. The board is not shown yet. Window asking them to enter their names is displayed.

Description: Alice and Bob enter their names and press PLAY.

Post Condition: The board is drawn. 6 houses are placed on the bottom and 6 houses are placed in the top. 1 store is placed on the right and 1 on the left. 3 seeds are sewn in each house. Alice's houses are 1:3, 2:3, 3:3, 4:3, 5:3, 6:3. Bob's houses are 6:3, 5:3, 4:3, 3:3, 2:3, and 1:3. Alice's store has 0 stones and Bob's 0. Alice and Bob can start playing game.

3.

Title: Move, no point score, no capture, last seed lands in own house.

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6.

Description: Alice selects her house 2, from left, sewing the 3 seeds in stores 3, 4, and 5.

Post Conditions: Alice's houses from left to right have seed counts: 1:4, 2:0, 3:1, 4:2, 5:3, 6:2. Alice's and Bob's store counts remains unchanged. Bob's houses remain unchanged. It is Bobs turn.

4.

Title: Move, point score, last seed lands in opponent house.

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are: 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are: 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 seeds and Bob's store has 6 seeds.

Description: Alice selects the 2 seeds from house 6 from the left. Alice sews one seed in her store (scoring a point) and one seed in Bob's 1st house.

Post Conditions: Alice's houses are: 1:4, 2:3, 3:0, 4:1, 5:2, 6:0. Alice's store now has 6 seeds. Bobs houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:6. Bob's store has 6 seeds. It is Bobs turn.

5.

Title: Move, point score, last seed lands in opponent house, opposite empty

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are: 1:0, 2:3, 3:0, 4:2, 5:2, 6:5. Bob's houses are: 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 seeds and Bob's store has 6 seeds.

Description: Alice selects the 5 seeds from house 6th. Alice sews one seed in her store (scoring a point) and one seed in Bob's 1st house, one seed in Bob's 2nd house, one seed in Bob's 3rd house and one seed in Bob's 4th house.

Post Conditions: Alice's houses are: 1:0, 2:3, 3:0, 4:2, 5:2, 6:0. Alice's store now has 6 seeds. Bobs houses are 6:0, 5:2, 4:2, 3:3, 2:4, and 1:6. Bob's store has 6 seeds. It is Bobs turn.

6.

Title: Move, point score, last seed lands in own house after wrapping.

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are: 1:1, 2:0, 3:0, 4:1, 5:2, 6:8. Bob's houses are: 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 seeds and Bob's store has 6 seeds.

Description: Alice selects the 8 seeds from house 6th. Alice sews one seed in her store (scoring a point) and one seed in Bob's 1st house, one seed in Bob's 2nd house, one seed in Bob's 3rd house, one seed in Bob's 4th house, one seed in Bob's 5th house, one seed in Bob's 6th house and the last one in Alice's first house.

Post Conditions: Alice's houses are: 1:0, 2:3, 3:0, 4:2, 5:2, 6:0. Alice's store now has 6 seeds. Bobs houses are 6:0, 5:2, 4:2, 3:3, 2:4, and 1:6. Bob's store has 6 seeds. It is Bobs turn.

7.

Title: Move, points score via capture

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are: 1:4, 2:3, 3:0, 4:1, 5:0, and 6:2 and Alice's store has 6 seeds. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Bob's store has 7 seeds

Description: Alice selects the four seeds from her house 1 from left. Alice sews one seed in houses 2, 3, 4 and 5. Since the house number 5 was previously empty Alice captures the three seeds in Bobs 2nd house. The three captured seeds and the last sewn seed are moved to Alice's store, increasing Alice's score by four.

Post Conditions: Alice's houses have seed counts as: 1:0, 2:4, 3:1, 4:2, 5:0, 6:2. Alice's store now has 10 seeds. Bobs houses seed counts as: 6:0, 5:2, 4:1, 3:2, 2:0, and 1:5. It is Bobs turn.

8.

Title: Move, point score, extra turn.

Pre Conditions Alice and Bob are playing. It is Alice's turn. Alice's store has 5 seeds and Bob's store has 6 seeds. Alice's houses have seed counts: 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5.

Description: Alice selects the 2 seeds from her house 5 . Alice sews one seed in her house 6 and one in her store (scoring a point).

Post Conditions: Alice's houses now have seed counts: 1:4, 2:3, 3:0, 4:1, 5:0, 6:3. Her store now has 1 seed more, total 6. Bobs houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. It is Alice's turn.

9.

Title: Game over, Tied

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0, 6:1. Bob's houses from are 6:0, 5:0, 4:2, 3:0, 2:0, and 1:0. Alice's stores have 17 seeds and Bob's store has 16 seeds. No previous games have been played (history is empty). The game status is PLAYING.

Description: Alice selects the single seeds from house number 6 . Alice sews this seed in her store (scoring a point). The two remaining seeds in Bob's houses are awarded to Bob's store.

Post Conditions: Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0 and 6:0. Her store now has 18 seeds. Bobs houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:0. His store now has 18 seeds. There are no remaining seeds to play. The game is over with a tie result. The game history now has record [Alice:18, Bob:18].

10.

Title: Game over, last mover wins

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0, 6:1. Bob's houses are 6:0, 5:1, 4:1, 3:0, 2:0, and 1:0. Alice's stores have 21 seeds and Bob's store has 12 seeds. No previous games have been played (history is empty). The game status is PLAYING.

Description: Alice selects the single seeds from house number 6 . Alice sews this seed in her store (scoring a point). The two remaining seeds in Bob's houses are awarded to Bob's store.

Post Conditions: Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0 and 6:0. Her store now has 22 seeds. Bobs houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:0. His store now has 14 seeds. There are no remaining seeds to play. The game is over and winner is Alice. The game history now has record [Alice:22, Bob:14].

11.

Title: Game over, not last mover wins

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0, 6:1. Bob's houses are 6:0, 5:1, 4:1, 3:0, 2:0, and 1:0. Alice's stores have 12 seeds and Bob's store has 21 seeds. No previous games have been played (history is empty). The game status is PLAYING.

Description: Alice selects the single seeds from house number 6 . Alice sews this seed in her store (scoring a point). The two remaining seeds in Bob's houses are awarded to Bob's store.

Post Conditions: Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0 and 6:0. Her store now has 13 seeds. Bobs houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:0. His store now has 23 seeds. There are no remaining seeds to play. The game is over and winner is Bob. The game history now has record [Alice:13, Bob:23].

12.

Title: Another game; previous winner gets first move

Pre Conditions: Alice and Bob have just finished a game, with Alice winning 22 vs 14. The game status is GAME_OVER. Alice won the previous game. The system displays the option to play another game.

Description: The user selects the option to play again. The system renders the Mancala board in the initial game play state. The system makes it Alice's turn.

Post Conditions: The board is in initial state. Game status is PLAYING, and each house It is Alice's turn.

13.

Title: Another game; previous game was tie, random first mover

Pre Conditions: Alice and Bob have just finished a game. The previous game ended in a tie. The system displays the option to play another game.

Description: The user selects the option to play again. The system renders the Mancala board in the initial game play state. The system randomly chooses Bob to have the first move.

Post Conditions: The board is in initial state. It is Bob's turn.

14.

Title: Alice attempts to move from an empty house, can't, still her turn.

Pre Condition: Alice and Bob are playing. It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6.

Description: The Alice selects house 3 to move. The system doesn't allow player to move from.

Post Condition: The board has not changed. It is still Alice's turn.

15.

Title: Alice attempts to move from opponents house, can't, still her turn.

Pre Condition: Alice and Bob are playing. It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6.

Description: The Alice selects Bob's house number 6. The system notifies the player that the house cannot be moved from. Error message displayed : "Cannot move from opponent house".

Post Condition: The board has not changed. It is still Alice's turn.

16.

Title: GUI - Game over - presents score, option to play again, or quit - user quits

Pre Condition: Alice and Bob just finished a game. The game is over. Alice's houses are 1:0, 2:0, 3:0, 4:0, 5:0, 6:0. Bob's houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:0. Alice's store has 16 stones and Bob's 20.

Description: Alice and Bob decided don't play again. The initial display is shown.

Post Condition: The message "Enter player names" is displayed. Two boxes are shown. One for the player one with the label "Player 1" and one for the play 2 with the label "Player 2". On the bottom one button with the text "Play" is shown.

17.

Title: GUI - Game over - presents score, option to play again, or quit - user quits

Pre Condition: Alice and Bob just finished a game. The game is over. Alice's houses are 1:0, 2:0, 3:0, 4:0, 5:0, 6:0. Bob's houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:0. Alice's store has 16 stones and Bob's 20.

Description: Alice and Bob decided don't play again. The board is drawn. 6 houses are placed on the bottom and 6 houses are placed in the top. 1 store is placed on the right and 1 on the left. 3 seeds are swan in each house.

Post Condition: Alice and Bob are playing. The game is being played. Alice's houses are 1:3, 2:3, 3:3, 4:3, 5:3, 6:3. Bob's houses are 6:3, 5:3, 4:3, 3:3, 2:3, and 1:3. Alice's store has 0 stones and Bob's 0.

18.

Title: GUI - Player selects "Quit" during game play, chooses close, and program exits.

Pre Condition: Alice and Bob are playing.

Description: Alice selects "Quit".

Post Condition: The game ends with no winner. The program stops running and exits.

19.

Title: GUI - Player selects "Quit" during game play, chooses cancel, returns to game play

Pre Condition: Alice and Bob are playing. It is Alice's turn.

Description: Alice selects "Quit".

Post Condition: Alice and Bob are playing. The board has not changed. It is still Alice's turn.

20.

Title: GUI - Very first game, Alice checks history function (for keeping previous scores) before to start the game, its empty

Pre Condition: Alice and Bob already input their nick names. No game is being played. The button "Check History" is disable. The display shows the button "Start Game"

Description: Alice selects "Check History". Nothing happens since the option is disable.

Post Condition: The display shows the button "Start Game"

21.

Title: GUI - Some games are already been played, Player checks history function (for keeping previous scores), some data are displayed

Pre Condition: Alice and Bob already input their nick names. No game is being played. 3 games have been played with the results in descending time order: 1. Alice won (20 v 16), 2. Tied (18 v 18), 3. Bob won (21 v 15).

Description: Alice selects "Check History".

Post Condition:

A dialog with the following text is displayed.

"

Alice Bob

20 16

18 18

15 21

"

22.

Title: Alice attempts to move from her store, can't, still her turn

Pre Condition: Alice and Bob are playing. It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6.

Description: The Alice selects her own store in order to move. The system notifies the player that the store cannot be moved from. Error message displayed : "Cannot move from store".

Post Condition: The board has not changed. It is still Alice's turn.

23.

Title: Alice attempts to move from opponent store, can't, still her turn.

Pre Condition: Alice and Bob are playing. It is Alice's turn. Alice's houses are 1:4, 2:3, 3:0, 4:1, 5:2, 6:2. Bob's houses are 6:0, 5:2, 4:1, 3:2, 2:3, and 1:5. Alice's store has 5 stones and Bob's 6.

Description: The Alice selects her opponent store in order to move. The system notifies the player that the store cannot be moved from. Error message displayed : "Cannot move from store".

Post Condition: The board has not changed. It is still Alice's turn.

24.

Title: GUI - Player checks the "How to play" during a game play

Pre Condition: Alice and Bob are playing. It is Alice's turn

Description: Alice selects "How to play". A dialog with the game instructions is shown.

Alice selects "Close".

Post Condition: Alice and Bob are playing. The board has not changed. It is still Alice's turn.* /

25.

Title: GUI - Player checks the "How to play" before to start the game

Pre Condition: Alice and Bob already input their nick names. No game is being played.

Description: Alice selects "How to play". A dialog with the game instructions is shown.

Alice selects "Close".

Post Condition: The display shows the button "Start Game"

26.

Title: About and credits

Pre Conditions: Alice and Bob have inputted their names in Player 1 and Player 2 fields respectively and click submit. Board with initial state has been drawn. Alice's houses are 1:3, 2:3, 3:3, 4:3, 5:3, 6:3. Bob's houses are 6:3, 5:3, 4:3, 3:3, 2:3, and 1:3. Alice's store has 0 stones and Bob's 0.

Description: From the menu panel Alice selects "About and Credits".

Post Conditions: Textual description about game version and game creators are displayed on the screen.

27.

Title: Third Game Over

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses have seed counts: 1:0, 2:0, 3:0, 4:0, 5:0, 6:1. Bob's houses are 6:0, 5:1, 4:1, 3:0, 2:0, and 1:0. Alice's stores have 21 seeds and Bob's store has 12 seeds. The game status is PLAYING. Two previous games have been played (previous game score was Alice:15, Bob:21; first game score was Alice:28, Bob:8).

Description: Alice selects the single seeds from house number 6. Alice sews this seed in her store (scoring a point). The two remaining seeds in Bob's houses are awarded to Bob's store.

Post Conditions: The game is over and winner is with score Alice:22, Bob:14. The game history now has records [Alice:22, Bob:14], [Alice:15, Bob:21], [Alice:28, Bob:8].

28.

Title: Move; no point score; last seed lands in own empty house; capture not triggered.

Pre Conditions Alice and Bob are playing. It is Alice's turn. Alice's store has 1 seeds and Bob's store has 0 seeds. Alice's houses

have seed counts: 1:3, 2:3, 3:3, 4:3, 5:3 , 6:0. Bob's houses are 6:3, 5:3, 4:4, 3:4, 2:6, and 1:0.

Description: Alice selects her house number 3 to move from.

Post Condition: Alice's store has 1 seeds and Bob's store has 0 seeds. Alice's houses have seed count: 1:3, 2:3, 3:0, 4:4, 5:4 , 6:1. Bob's houses are 6:3, 5:3, 4:4, 3:4, 2:6, and 1:0. No capture has occurred. It's Bob turn.

29.

Title: End of game after capture

Pre Conditions Alice and Bob are playing. It is Alice's turn. Alice's store has 21 seeds and Bob's store has 12 seeds. Alice's houses have seed count: 1:0, 2:0, 3:0, 4:0, 5:1 , 6:0. Bob's houses are 6:0, 5:0, 4:0, 3:0, 2:0, and 1:2. The status of the game is playing. No previous games have been played.

Description: Alice selects her house number 5 to move from, capturing the seeds in Bob's 1st. house.

Post Condition: The status is Game over. The history now contains a new game record with the score Alice:24, Bob:12.

30.

Title: Move; point score; last seed lands in own house after wrapping; capture.

Pre Conditions: Alice and Bob are playing. It is Alice's turn. Alice's houses are: 1:0, 2:1, 3:0, 4:1, 5:0, 6:8. Bob's houses are: 6:2, 5:0, 4:1, 3:2, 2:3, and 1:5. Alice's store has 6 seeds and Bob's store has 7 seeds.

Description: Alice selects the 8 seeds from house 6th. Alice sews one seed in her store (scoring a point) and one seed in Bob's 1st house, one seed in Bob's 2nd house, one seed in Bob's 3rd house, one seed in Bob's 4th house, one seed in Bob's 5th house, one seed in Bob's 6th house and the last one in Alice's first house.

Post Conditions: Alice's houses are: 1:0, 2:1, 3:0, 4:1, 5:0, 6:0. Alice's store now has 11 seeds. Bobs houses are 6:0, 5:1, 4:2, 3:3, 2:4, and 1:6. Bob's store has 7 seeds. It is Bobs turn.

4. Objects Location

The following table describes where the artifacts are placed into the project/file system structure.

Set of Objects	Folder	Package
Mancala.crt	System-Modeling-Mancala/	
Class Diagram	System-Modeling-Mancala/Mancala.crt/Mancala/Diagrams/Class Diagrams/Main	
Story Boards	System-Modeling-Mancala/Mancala.crt/Mancala/Diagrams/Activity	

	Diagrams/Main	
Test Cases	System-Modeling-Mancala/generated/	Default-package
Controller Class	System-Modeling-Mancala/src/	ee.ut.mancala.controller
View Classes	System-Modeling-Mancala/src/	ee.ut.mancala.view
Main Classes	System-Modeling-Mancala/src/	ee.ut.mancala.main
Model Classes	System-Modeling-Mancala/generated/	ee.ut.mancala
Object Diagrams	System-Modeling-Mancala/object_diagrams	

Table 1 – Artifacts Location

5. Artifacts Inventory

The following table describes each user story with the object diagrams, story boards and test case associated. The location of each set of artifacts is described in the Table 1.

User Story	Object Diagrams	Story Board
Alice attempts to move from her store, can't, still her turn.	Alice attempts to move from her own store, can't, still her turn post.dia	N/A
	Alice attempts to move from her own store, can't, still her turn pre.dia	N/A
Alice attempts to move from opponent store, can't, still her turn.	Alice attempts to move from opponent store, can't, still her turn post.dia	N/A
	Alice attempts to move from opponent store, can't, still her turn pre.dia	N/A
Another game; previous game was tie, random first mover	Another game_previous game was tie_random first mover_post.dia	N/A
	Another game_previous game was tie_random first mover_pre.dia	N/A
Another game; previous winner gets first move	Another game; previous winner gets first move_pre.dia	T12 Another game previous winner gets first move
End of game after capture	Another game; previous winner gets first move_post.dia	
	end_of_game_after_capture_post.dia	T29 End of game after capture
First Game Start	end_of_game_after_capture_pre.dia	
	game_initialization_post.dia	T02 First Game Start
Game over: last mover wins	game_initialization_pre.dia	
	Game_over_last-mover_wins_post.dia	T10 Game over: last mover wins

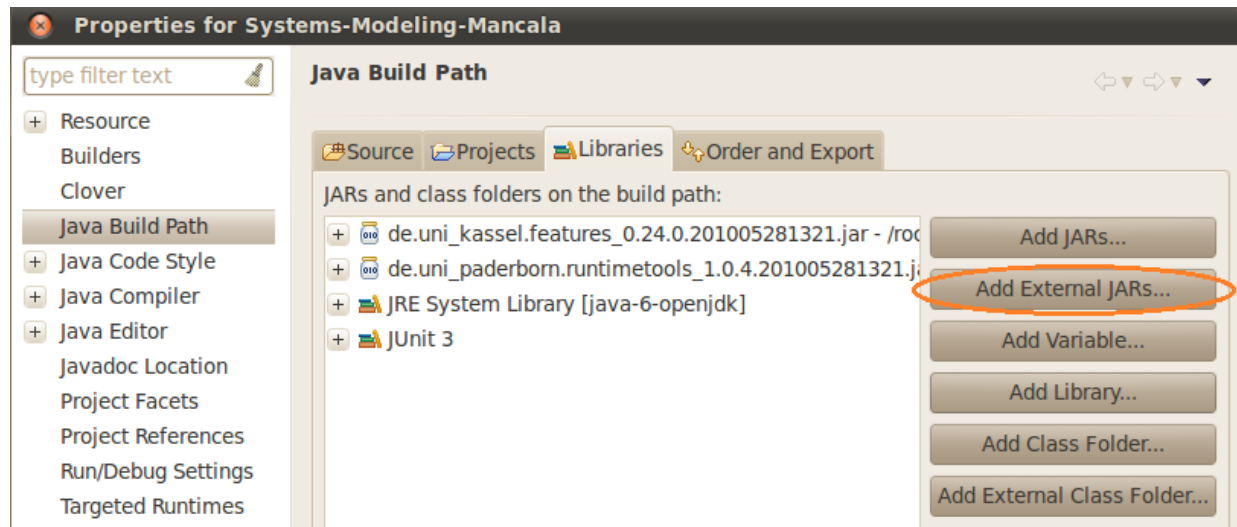
	Game_over_last-mover_wins_pre.dia	
Game over: not last mover wins	Game_over_not_last-mover_wins_post.dia	T11 Game over not last mover wins
	Game_over_not_last-mover_wins_pre.dia	
Game over: Tied	game_over_tied_post.dia	T09 Game over Tied
	game_over_tied_pre.dia	
Game Start - initial display	N/A	N/A
GUI - Game over - presents score, option to play again, or quit - user continues	N/A	N/A
GUI - Game over - presents score, option to play again, or quit - user quits	N/A	N/A
GUI - Player checks the “About and credits”	N/A	N/A
GUI - Player checks the “How to play” before to start the game	N/A	N/A
GUI - Player checks the “How to play” during a game play	N/A	N/A
GUI - Player selects “Quit” during game play, chooses cancel, returns to game play	N/A	N/A
GUI - Player selects “Quit” during game play, chooses close, and program exits.	N/A	N/A
GUI - Some games are already been played, Player checks history function (for keeping previous scores), some data are displayed	N/A	N/A
GUI - Very first game, Player checks history function (for keeping previous scores) before to start the game, its empty	N/A	N/A
Move; no point score; last seed lands in own empty house; capture not triggered.	Move_no point score_last seed lands in own empty house_capture triggered_opponent empty_no capture_post.dia	
	Move_no point score_last seed lands in own empty house_capture triggered_opponent empty_no capture_pre.dia	N/A
Move; no point score; last seed lands in own house.	Move_no point score_no capture last seed lands in own house_post.dia	T03 Move no point score last seed lands in own house
	Move_no point score_no capture last seed lands in own house_pre.dia	
Move; point score; extra turn.	Move_point_score_extra_turn_post.dia	T08 Move point score extra turn
	Move_point_score_extra_turn_pre.dia	
Move; point score; last seed lands in	Move, point score, last seed lands in opponent house,	T05 Move point score last seed lands in

opponent house; opposite empty.	opposite empty post.dia Move, point score, last seed lands in opponent house, opposite empty pre.dia	opponent house opposite empty
Move; point score; last seed lands in opponent house.	Move point score last seed lands in opponent house post.dia Move point score last seed lands in opponent house pre.dia	T04 Move point score last seed lands in opponent house N/A
Move; point score; last seed lands in own house after wrapping; capture.	Move, point score, last seed lands in own house after wrapping, capture post.dia Move, point score, last seed lands in own house after wrapping, capture pre.dia	N/A N/A
Move; point score; last seed lands in own house after wrapping.	Move, point score, last seed lands in own house after wrapping post.dia Move, point score, last seed lands in own house after wrapping pre.dia	T06 Move point score last seed lands in own house after wrapping T28 Move no point score last seed lands in own empty house capture not triggered
Move; points score via capture	Move, points score via capture post.dia Move, points score via capture pre.dia	T07 Move points score via capture
Player attempts to move from an empty house, can't, still her turn.		T14 Player attempts to move from an empty house, cant, still her turn.
Player attempts to move from opponents house, can't, still her turn.	Alice attempts to move from opponents house, can't, still her turn post.dia Alice attempts to move from opponents house, can't, still her turn pre.dia	T15 Player attempts to move from opponents house, cant, still her turn N/A
Third Game Over	third_game_over_post.dia third_game_over_pre.dia	T27 Third Game Over N/A

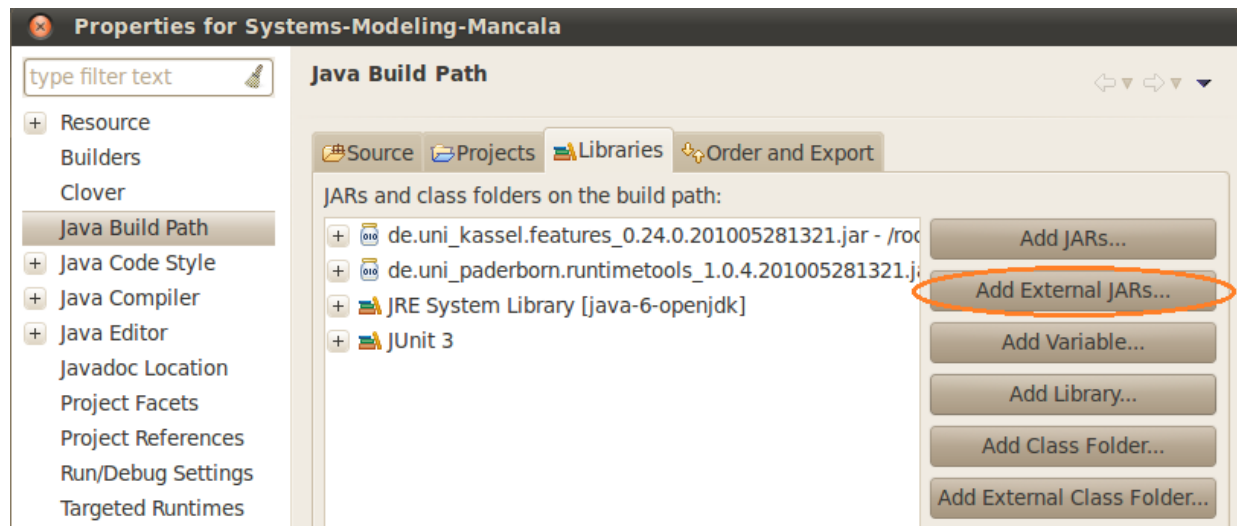
Table 2 - Artifacts Inventory

6. Configure the Class path (Add Fujaba and JUnit JARS)

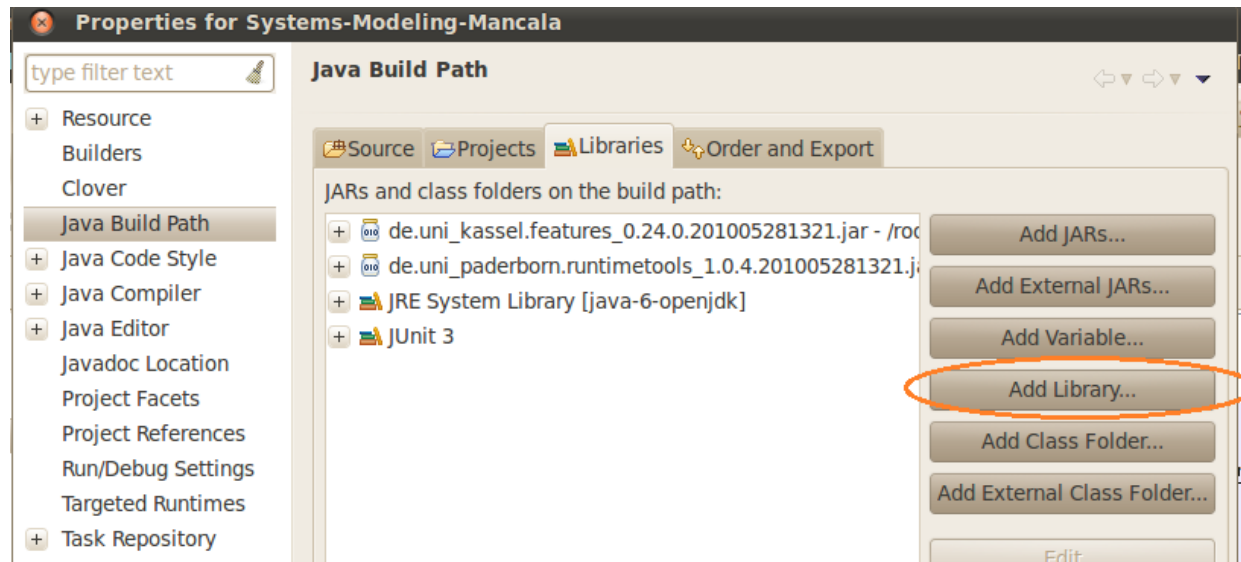
- Open the Java project in Eclipse
- Right click on the Java project
- Select Build Path
- Select Configure Build Path
- Select Add External Jars



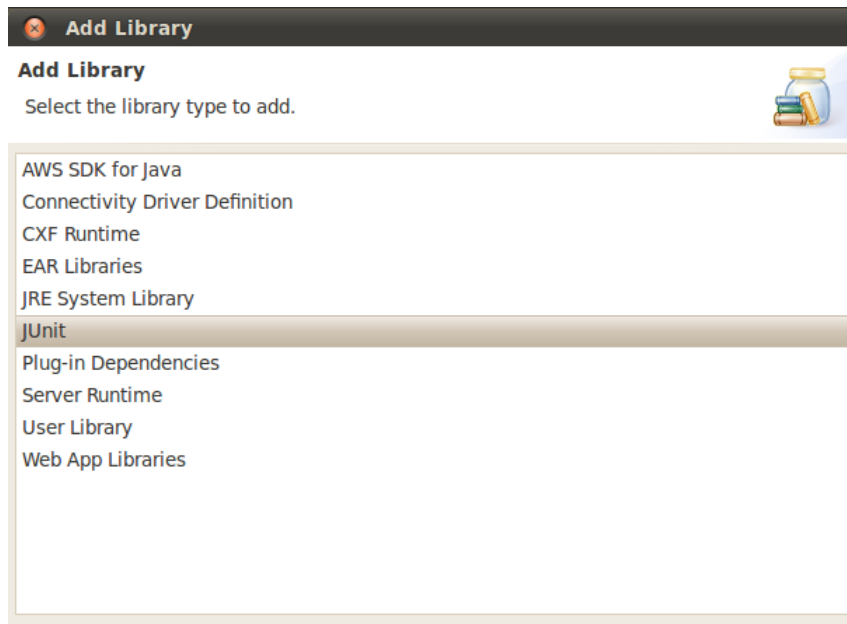
- Browse to the location where the Fujaba JARs are located.
- Select both JARs



- Select Ok
- In order to add the libraries to use JUnit select Add Library



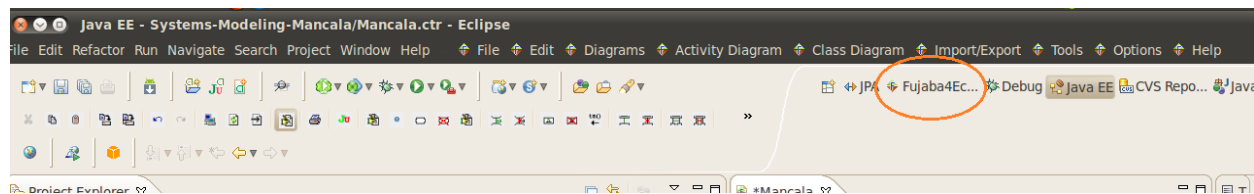
- From the list select JUnit



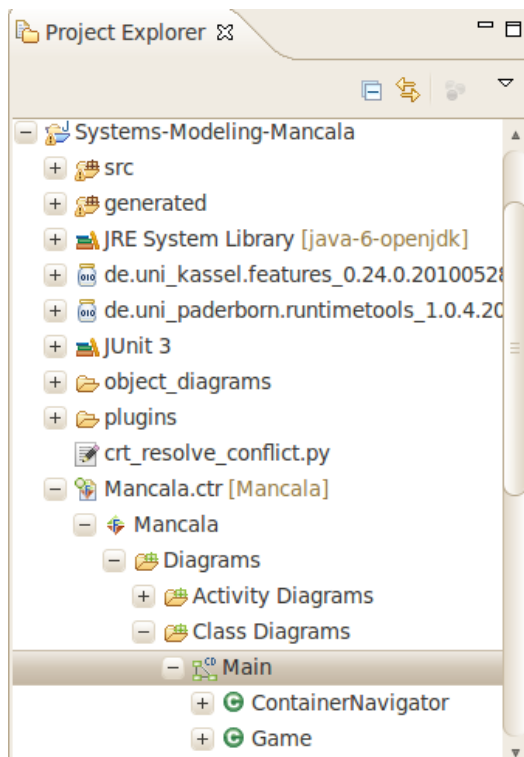
- Click on Next
- Click on Finish

7. How to generate code from Fujaba

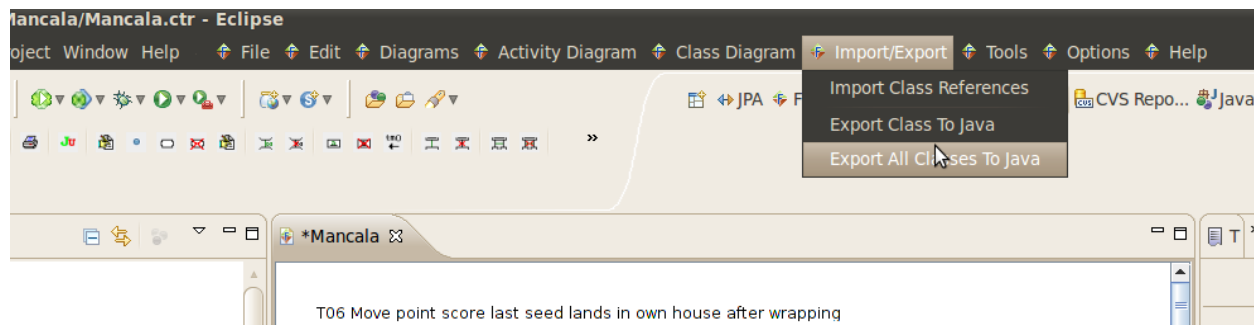
- Open the Java Project in Eclipse
- Switch to Fujaba perspective



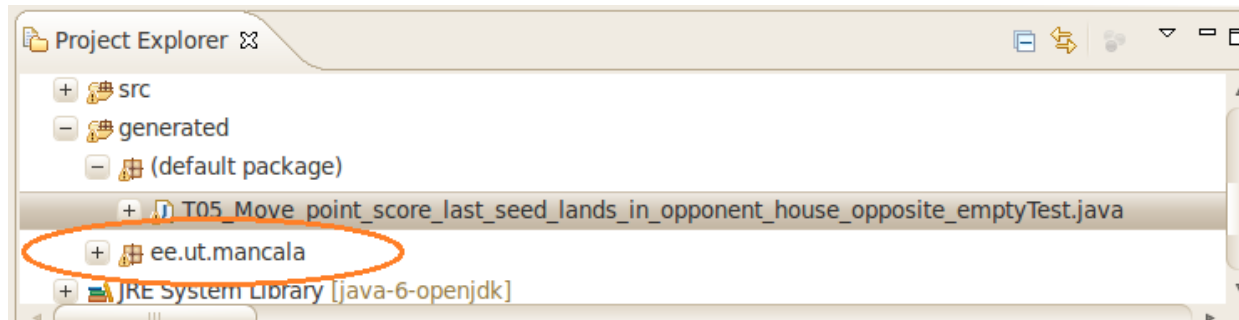
- Open Mancala crt file
- Open the Class Diagram



- Go to the Fujaba menu “Import/Export”
- Select “Export All Classes to Java”

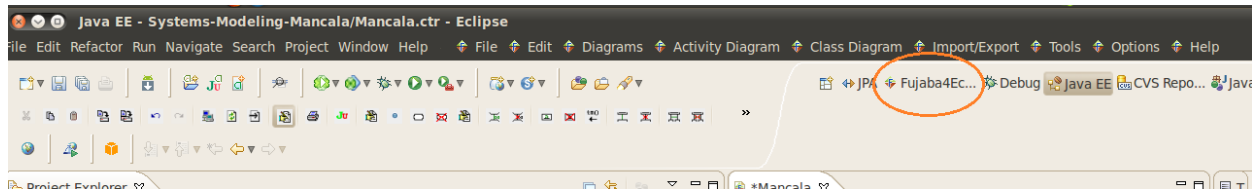


- The result will be all the classes mapped in the folder Generated and the package ee.ut.mancala

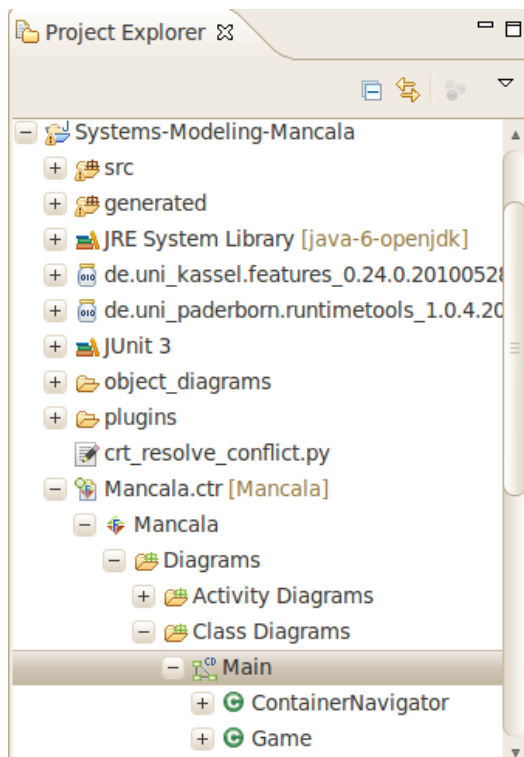


8. Generate test code

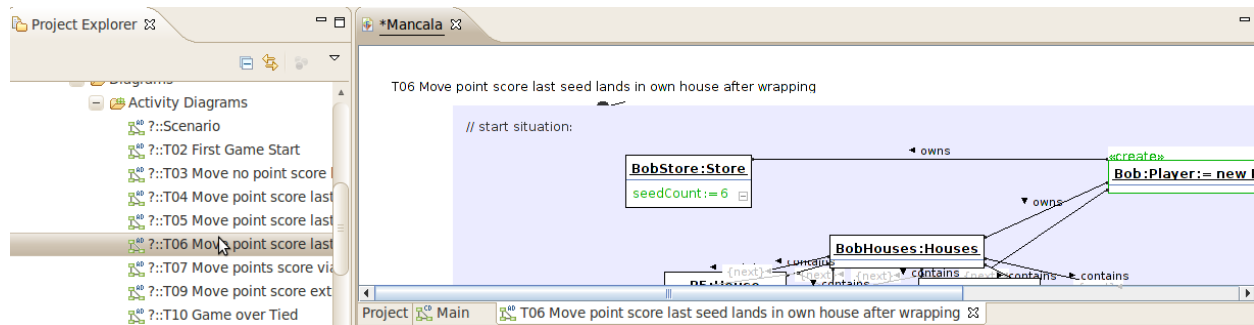
- Open the Java Project
- Switch to Fujaba perspective

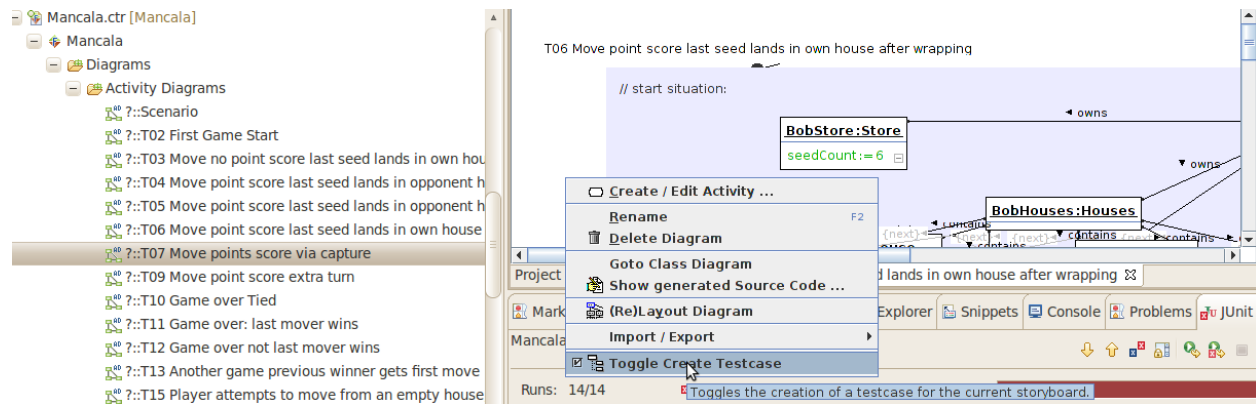


- Open Mancala.crt file

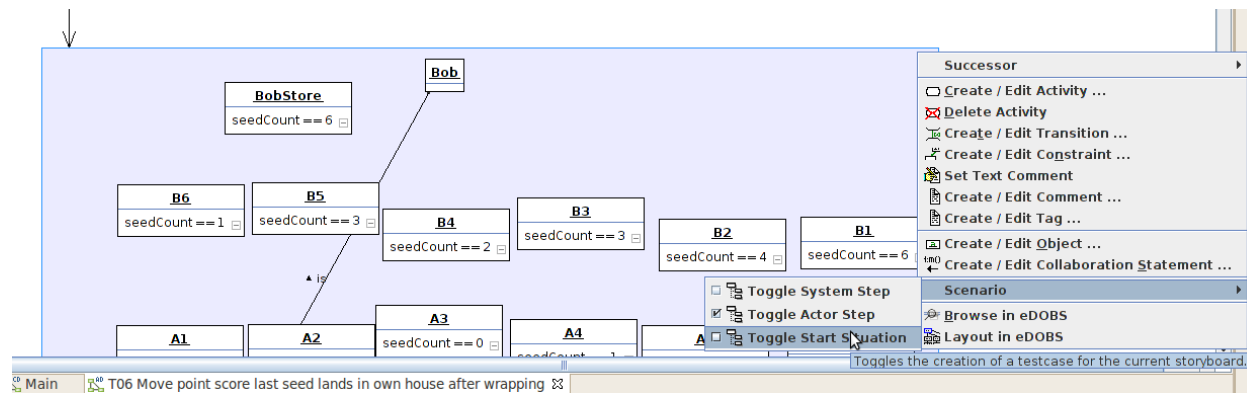


- The test case whose code is going to be generated should have the option “Toggle create test case”

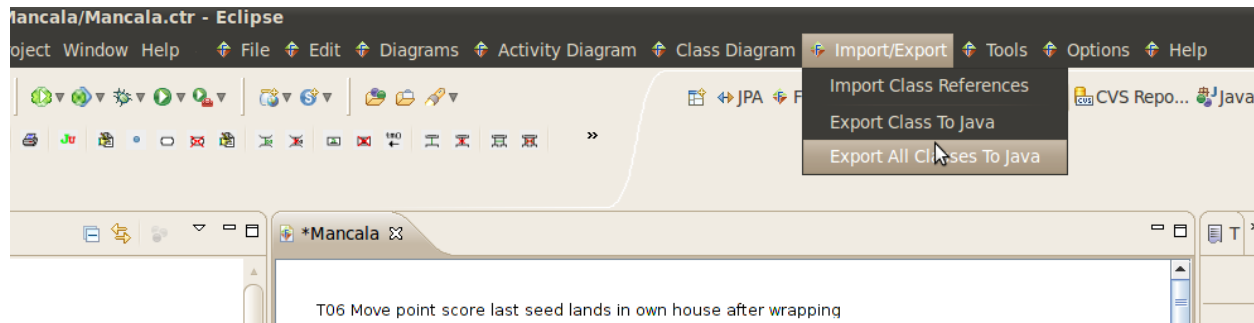




- Check that the post condition has the option “Toggle start situation”



- Go to Fujaba menu and select “Import/Export”
- Select “Export All Classes to Java”



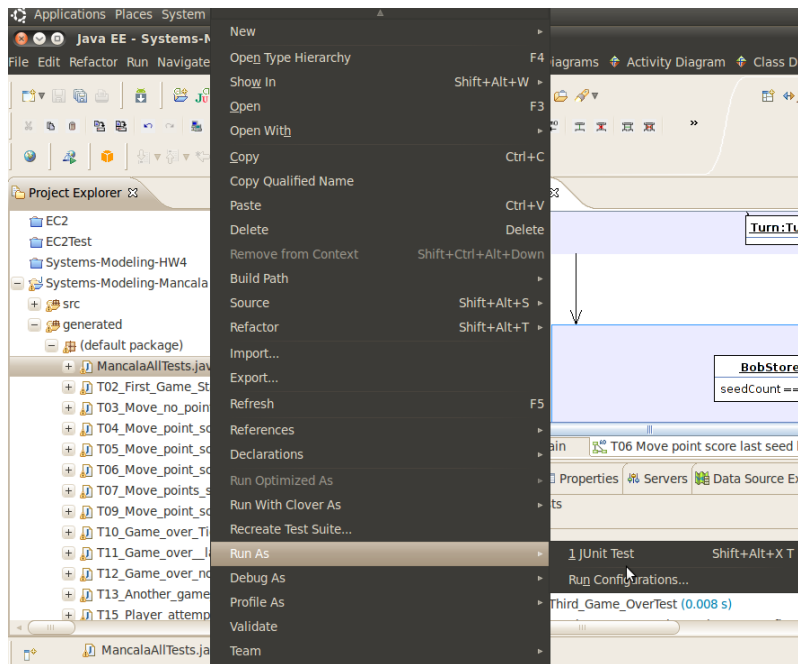
- The result will be the test case mapped in the folder Generated/Default



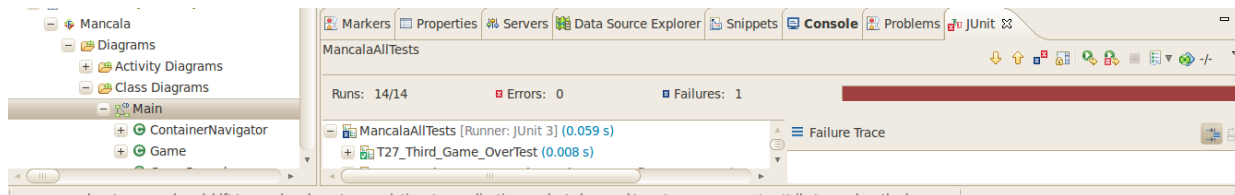
9. How to run the test cases at once

- Go to the folder Generated/Default

- Rick click on the class “MancalaAllTests.java”
- Select Run As..
- Select JUnit Test



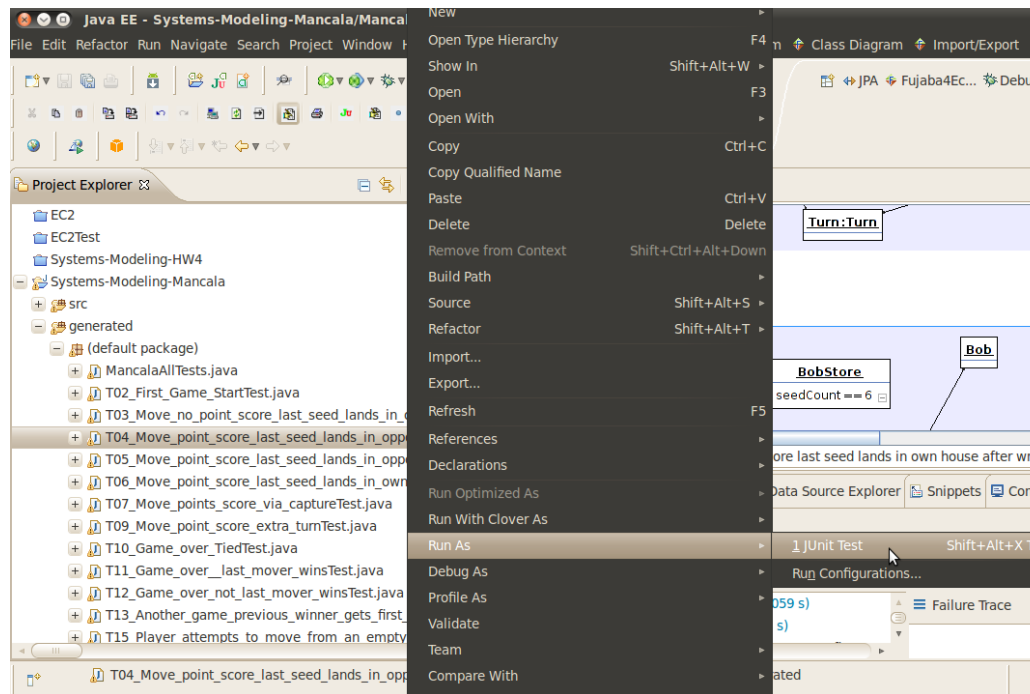
- Check for the results in the JUnit View



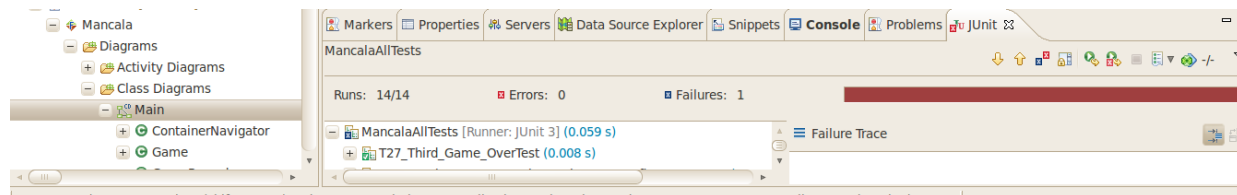
10. How to run one test case

- Go to the folder Generated/Default

- Right click on the class <Test Case>.java Where <Test Case> is the name of the test case you want to run
- Select Run As
- Select JUnit Test



- Check for the results in the JUnit View



11. How to run the application

- Open the Java Project

- Go to the package `scr/ee.ut.mancala.main`
- Right click over the class `Main.java`
- Select "Run As"
- Select Java Application
- Play