

Use case description #1

Name: Set up a game

Primary actor(s):

User, AI

Stakeholders and interests:

Players, user: To set the game up for playing

Preconditions:

- Game Boards (Easy and Complex)
- 4 robots (Red, Blue, Green and Yellow)
- 16 round target chips with symbols (4 each in red, blue, green and yellow)
- 1 multicolored vortex chip
- 1 black robot component with its matching position marker for the black robot variant rules
- Java installed on the computer that you will run the game on

Post conditions:

The game is successfully set up with the conditions provided.

Main success scenario:

1. The user starts the game.
2. System asks the user to input his/her name.
3. The user inputs his/her player name.
4. System records down the user's player name.
5. System asks user how many AI bots he/she wishes to play with.
6. User chooses to play with 3 AI bots. [Alt 1] [Alt 2]
7. System asks for confirmation of the number of player bots.
8. User confirms the choice of number of players. [Alt 3]
9. System records down number of AI bots.
10. System asks user to input names for the 3 AI bots.
11. User inputs down the names for each of 3 AI bots.
12. System asks for confirmation of the player names (his/her name and 3 AI bots)
13. User confirms the names [Alt 4]
14. System records the names for the AI bots.
15. System asks the user for difficulty of the AI bots.
16. The user chooses the difficulty of the AI bots to be Easy. [Alt 5]
17. System records down difficulty of AI bots.
18. System asks the user for the type of board he/she wishes to play on.
19. The user chooses the simple board. [Alt 6]
20. System records down the user's choice of board type.
21. System asks for confirmation regarding the AI bots difficulty and board type.
22. User confirms the choices he/she made regarding bots difficulty and board type.[Alt 7]
23. The system sets up the game, with the conditions provided, which are 4 players in total, easy AI bots and simple game board. [Use case ends]

Alternative flow:

[Alt 1]: The user chooses to play with 1 AI bot

1. System asks for confirmation of the number of AI bot.

2. User confirms the choice of number of players.
3. System records down user choice and asks user to input names for the 1 AI bot.
4. User inputs down the name for the AI bot.
5. System asks for confirmation of the player names (his/her name and 1 AI bot).
6. Flow resumes at Main Success Scenario Step 13.

[Alt 2]: The user chooses to play with 2 AI bots

1. System asks for confirmation of the number of player bots.
2. User confirms the choice of number of players.
3. System records down user choice and asks user to input names for the 2 AI bots.
4. User inputs down the names for the AI bots.
5. System asks for confirmation of the player names (his/her name and 2 AI bot).
6. Flow resumes at Main Success Scenario Step 13.

[Alt 3]: The user doesn't confirm the choice of number of players

1. System asks the user for the number of AI bots he/she wishes to play with.
2. User chooses to play with 3 AI bots.
3. System asks for confirmation of user choice of AI bots.
4. User confirms the choice.
5. Flow resumes at Main Success Scenario Step 9.

[Alt 4]: The user doesn't confirm the names of AI bots

1. System asks user to input names for the 3 AI bots.
2. User inputs down the names for each of 3 AI bots.
3. System asks for confirmation of the player names (his/her name and 3 AI bots)
4. User confirms the names.
5. Flow resumes at Main Success Scenario Step 14.

[Alt 5]: User chooses the difficulty of AI bots to be hard

1. System records down difficulty of AI bots.
2. Flow resumes at Main Success Scenario Step 18.

[Alt 6]: User chooses the complex board.

1. System records down the board choice.
2. Flow resumes at Main Success Scenario Step 21.

[Alt 7]: User doesn't confirm choice for AI bot difficulty or board type.

1. System asks the user for AI bot difficulty
2. User chooses bot difficulty to be hard
3. System overwrites the previous data recorded and records down hard for bot difficulty
4. System asks the user for board type
5. User chooses simple board type.
6. System checks the recorded data and doesn't alter it.

7. System asks for confirmation of AI bot difficulty and board type
8. User confirms the bot difficulty and board type conditions
9. Flow resumes at Main Success Scenario Step 23.

Open issues:

1. The user has the option to terminate the game if he/she or they decide not to play.

Use case description #2

Name: Take a turn

Primary actor(s): User/s, AI

Stakeholders and Interests:

Players/users: To get the chosen robot to the target chip in the least number of moves.

AI: To get the chosen robot to the target chip in the least number of moves.

Preconditions:

- The game must be fully set up.
- The four players are 3 AI bots and 1 user
- Names of the players: Frank (Player), Bot_alpha (AI bot 1), Bot_beta (AI bot 2), Bot_charlie (AI bot 3)
- Type of board is Simple
- AI bot difficulty is easy
- 6 Rounds have already been played.

Post-conditions: A turn finishes, and round 7 is completed

Main success scenario:

1. The user starts the turn by selecting a random chip.
2. System generates a random chip.
3. System outputs blue chip.
4. The user makes the initial bid of 9. [Alt 1]
5. System registers the bid value made by the user.
6. System outputs it under his/her name on the screen.
7. System starts a 1 minute timer.
8. Bot_charlie makes a bid of 9 moves.
9. System registers the bid value made by the bot_charlie
10. System outputs it under its name on the screen.
11. Timer finishes, and bidding stops. [Alt 2]
12. System checks which player has the lowest bid.
13. System finds out that user has the lowest bid.
14. System gives the authority to the user to move the robots so to get the blue robot to the blue chip.
15. User asks for the assistance of the system in deciding where to move the robot [Alt 3]
16. System assists the user in choosing the direction he/she wishes to move the robot in.
17. User chooses to make a move with the blue robot. [Alt 4]

18. System checks if the move is legal. [Alt 5]
19. System finds out that the move is legal and acceptable.
20. System records down the move and the moves counter increases by 1.
21. Steps 17-20 is repeated until the user gets the blue robot to the blue target piece
22. System compares the moves counter with the bid value that user inputted at the beginning.
23. System figures out that moves counter is less than bid value. [Alt 6] [Alt 7]
24. System increases the score of the winning player, which is the user.
25. System ends the 7th round. [Use case ends]

Alternative flows:

[Alt 1]: The bot_alpha (AI bot 1) makes an initial bid of 9.

1. System registers the bid value made by bot_alpha.
2. System outputs it under its name on the screen.
3. System starts a 1 minute timer.
4. The user makes a bid of 8 moves.
5. System registers the bid value made by the user.
6. System outputs it under his/her name on the screen.
7. Flow resumes at main success scenario step 11

[Alt 2]: bot_charlie (AI bot 3) makes a bid of 8 moves.

1. System registers the bid value made by bot_charlie.
2. System outputs it under its name on the screen.
3. Timer finishes, and bidding stops.
4. System checks which player has the lowest bid.
5. System finds out that bot_charlie has the lowest bid.
6. System gives the authority to bot_charlie to move the robots so to get the blue robot to the blue chip.
7. Flow resumes at main success scenario step 17.

[Alt 3]: User doesn't ask for assistance from the system to move the robot.

1. Flow resumes at main success scenario step 17.

[Alt 4]: User chooses to make a move with another robot (green, yellow or red).

1. Flow resumes at main success scenario step 18.

[Alt 5]: The system figures out that the move isn't legal.

1. System will output an error message.
2. Flow resumes at main success scenario step 17.

[Alt 6]: System figures out that moves counter is more than bid value

1. System displays error message stating that moves counter was higher than bid value.
2. System resets the robots to their positions at the start of the round.

3. System gives the chance to the second lowest bidder the authority to the user to move the robots so to get the blue robot to the blue chip.
4. System finds out its bot_charlie
5. Flow resumes at main success scenario step 14.

[Alt 7]: System figures out that moves counter is same as bid value

1. Flow resumes at main success scenario step 24.

Special requirements:

1. The system lets the user move the robots only horizontally and vertically.
2. If the player is an AI, it does it's bidding and moving automatically according to the rules of the game.
3. For a complex board the system lets the robots pass through some colored barriers, if the robot's color doesn't matches the barrier color. Else, the robot is made to bounce 90 degrees along the direction of the barrier and records as one single move.

Open Issues:

1. Whenever a robot faces an obstacle in its path it stops, that is the final destination of the move.
2. The user is given the option to add or remove players later in the game.