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:

- 2 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

Post conditions:

The game is set up

Main success scenario:

1. The user starts the game.
2. The user is asked to input his/her player name.
3. The user chooses to play with 3 AI bots and inputs their names. [Alt 1] [Alt 2] [Alt 3]
4. The user chooses the difficulty of the AI bots to be Easy. [Alt 4]
5. The user chooses the simple board. [Alt 5]
6. The system sets up the simple game board.
7. The system randomizes the location of the four robots and places them on the board. [Use case ends]

Alternative flow:

[Alt 1]: The user plays with 1 other real player

1. The user must input his/her name.
2. User chooses to play with 2 AI bots and inputs their names.
3. Flow resumes at Main Success Scenario Step 4

[Alt 2]: The user plays with 2 other real players

1. The user must input their names.
2. User chooses to play with 1 AI bot and inputs its name.
3. Flow resumes at Main Success Scenario Step 4

[Alt 3]: The user plays with 3 other real players

1. The user must input their names.
2. Flow resumes at Main Success Scenario Step 5

[Alt 4]: The user chooses the difficulty of AI bots to be hard

1. Flow resumes at Main Success Scenario Step 5

[Alt 5]: The user chooses the complex board

1. The system sets up the complex game board.

Special requirements:

An input button to put the bids(for the moves) for each player.

Open issues:

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

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Use case description #2

Name: Take a turn

Primary actor(s): User/s, AI

Stakeholders and Interests: Players/users: To get the 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
- 6 Rounds have already been played

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

Main success scenario:

1. The user selects a game chip to start the turn.
2. The system outputs the image of a blue chip.
3. The user makes the initial bid of 9. [Alt 1]
4. System registers the bid value made by the user.
5. System outputs it under his/her name on the screen.
6. System starts a 1 minute timer.
7. AI bot (Player 4) makes a bid of 9 moves.

8. System registers the bid value made by the AI bot (Player 4).
9. System outputs it under its name on the screen.
10. Timer finishes, and bidding stops. [Alt 2]
11. System checks which player has the lowest bid.
12. System finds out that user has the lowest bid.
13. System gives the authority to the user to move the robots so to get the blue robot to the blue chip.
14. The user reaches the blue target piece according to the bid number of moves; therefore, he/she acquires the target piece and scores a point. [Alt 3]
15. System updates the scores of each player. [Use case ends]

Alternative flows:

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

1. System registers the bid value made by the AI bot.
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 10

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

1. System registers the bid value made by the AI bot (Player 3).
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 AI bot (Player 3) has the lowest bid.
6. System gives the authority to AI bot (Player 3) to move the robots so to get the blue robot to the blue chip.
7. AI bot (Player 3) reaches the blue target piece according to the bid number of moves; therefore, it acquires the target piece and scores a point. [Alt 3]
8. Flow resumes at main success scenario step 15.

[Alt 3]: The user fails to reach the blue target piece according to the bid that he/she placed.

1. System resets the robots to their initial positions.
2. 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.
3. System finds out its AI bot (Player 4)
4. AI bot (Player 4) reaches the blue target piece according to the bid number of moves; therefore, it acquires the target piece and scores a point.
5. Flow resumes at main success scenario step 15.

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 biding 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.