**Team Project Sprint #3**

**Team Report**

**Team Project Sprint #3**

Team Name: Team Roo’s

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| **Information provided by the student team** | | **To be used by the grader** | |
| **Student name** | **Specific contributions to this sprint** | **Team Score** | **Individual Score** |
| Shiva Reddy Dubbaka | Discussed about the user stories and created the source code. |  |  |
| Vikas Reddy Chinnakistanolla | Discussed about the implementation tasks of the project. |  |
| Siddarth Bolisetty | Discussed and analyzed about the acceptance criteria. |  |
| Vedanth Goud Nagapola | Gathered some of the project requirements and done with source code. |  |

1. **Updated User Stories**

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| --- | --- | --- | --- | --- | --- | --- | --- |
| **ID** | **User Story Name** | **User Story Description** | **Priority** | **Estimated effort (hours)** | **Actual effort (if completed)** | **Status (completed, toDo, inProgress)** | **Developer names** |
| 1 | Choosing the player’s turn | In the Nine Men's Morris game, when the game starts, the human player will start the game. | High | 5 | 5 | Completed | Shiva Reddy Dubbaka, Vikas Reddy |
| 2 | Setting up a game | A player can select between human vs. AI or human vs. human when they start a new game in Nine Men's Morris. | High | 4 | 3 | Completed | Siddarth Bolisetty, Vedanth Goud |
| 3 | Placing a piece | In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn. | High | 3 | 3 | Completed | Shiva Reddy Dubbaka, Vikas Reddy |
| 4 | Moving a piece | A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board. | High | 3 | 2 | Completed | Siddarth Bolisetty, Vedanth Goud |
| 5 | Flying a piece | In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining. | High | 3 | 2 | Completed | Shiva Reddy Dubbaka, Vikas Reddy |
| 6 | Removing an opponent’s piece | In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill. | High | 3 | 2 | Completed | Siddarth Bolisetty, Vedanth Goud |
| 7 | Determining if the game is over | When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over. | Medium | 3 | 3 | Completed | Shiva Reddy Dubbaka, Vikas Reddy , |
| 8 | Recording all moves of a game in a text file | As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves. | Medium | 3 | 3 | Completed | Siddarth Bolisetty, Vedanth Goud |
| 9 | Replaying a game recorded in a text file manually | As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this. | Medium | 3 | 3 | Completed | Siddarth Bolisetty, Vedanth Goud |
| 10 | Replaying a game recorded in a text file automatically | As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input. | Medium | 3 | 3 | Completed | Siddarth Bolisetty, Vedanth Goud |

1. **Updated Acceptance Criteria (AC)**

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| --- | --- | --- | --- | --- |
| **User Story ID and Name** | **AC**  **ID** | **Description of Acceptance Criterion** | **Status (completed, toDo, inPo progress)** | **Developer Names** |
| 1. Choosing the player’s turn | 1.1 | AC 1.1 <In this scenario, In the Nine Men's Morris game, when the game starts the human player will start the game.>  Given the Nine Men's Morris game has started,  When the game begins,  Then the human player should have the first turn. | Completed | Shiva Reddy Dubbaka |
|  | 1.2 | AC 1.2 < In this scenario, In the Nine Men's Morris game, when the game starts the human player will start the game.>  Given it is the human player's turn,  When they make a valid move,  Then the move should be applied to the game board. | Completed | Vikas Reddy |
|  | 1.3 | AC 1.3 < In this scenario, In the Nine Men's Morris game, when the game starts the human player will start the game.. >  Given it is the human player's turn,  When they make an invalid move,  Then they should be prompted to make a valid move. | Completed | Siddarth Bolisetty |
|  | 1.4 | AC 1.4 < In this scenario, In the Nine Men's Morris game, when the game starts the human player will start the game.>  Given it is the computer player's turn,  When it makes a move,  Then the move should be applied to the game board. | Completed | Vedanth Goud |
|  | 1.5 | AC 1.5 < In this scenario, In the Nine Men's Morris game, when the game starts the human player will start the game.>  Given it is the computer player's turn,  When it makes a move,  Then the move should be displayed to the human player. | Completed | Shiva Reddy Dubbaka |
| 2. Setting up a game | 2.1 | AC 2.1 < A player can select between human vs. computer or human vs. human when they start a new game in Nine Men's Morris.>  Given a player is starting a new game in Nine Men's Morris,  When they are prompted to select the game mode,  Then they should be able to choose between "human vs. computer" and "human vs. human". | Completed | Shiva Reddy Dubbaka |
|  | 2.2 | AC 2.2.< A player can select between human vs. computer or human vs. human when they start a new game in Nine Men's Morris. >  Given a player has selected "human vs. computer" game mode,  When the game starts,  Then the player should play against an computer opponent. | Completed | Vikas Reddy |
|  | 2.3 | AC 2.3 < A player can select between human vs. computer or human vs. human when they start a new game in Nine Men's Morris.>  Given a player has selected "human vs. human" game mode,  When the game starts,  Then two human players should take turns playing against each other. | Completed | Siddarth Bolisetty, |
|  | 2.4 | AC 2.4 < A player can select between human vs. computer or human vs. human when they start a new game in Nine Men's Morris. >  Given a player has selected the game mode,  When they are prompted to make their selection,  Then they should be able to choose by entering a corresponding key or command. | Completed | Vedanth Goud |
|  | 2.5 | AC 2.5< A player can select between human vs. computer or human vs. human when they start a new game in Nine Men's Morris.>  Given a player has selected the game mode,  When they provide an invalid input or command,  Then they should be prompted again until they provide a valid selection. | Completed | Siddarth Bolisetty |
| 3 Placing a piece | 3.1 | AC 3.1 < In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn.. >  Given a player's turn has started,  When they choose a piece from their available pieces,  Then they should be able to place it on an empty position on the board in a legitimate way. | Completed | Shiva Reddy Dubbaka |
|  | 3.2 | AC 3.2 < In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn.. >  Given a player's turn has started,  When they try to place a piece on an occupied position on the board,  Then they should be prompted to choose a different position. | Completed | Vikas Reddy |
|  | 3.3 | AC 3.3 < In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn.>  Given a player's turn has started,  When they try to place a piece in a position that does not follow the game's rules,  Then they should be prompted to choose a different position. | Completed | Vedanth Goud |
|  | 3.4 | AC 3.4 < In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn..>  Given a player's turn has started,  When they successfully place a piece on the board,  Then the board state should be updated to reflect the new position of the piece. | Completed | Shiva Reddy Dubbaka, |
|  | 3.5 | AC 3.5< In the Nine Men's Morris game, a player should be able to choose a piece and position it on the board in a legitimate way throughout their turn.>  Given a player's turn has started,  When they have placed all their pieces on the board,  Then they should enter the "movement phase" where they can move their pieces to adjacent positions. | Completed | Vikas Reddy |
| 4 Moving a piece | 4.1 | AC 4.1 < A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board.>  Given it is a player's turn in the Nine Men's Morris game,  When they are prompted to select a piece and move it to a designated location on the board,  Then they should be able to choose a piece from their available pieces and a valid destination. | Completed | Siddarth Bolisetty |
|  | 4.2 | AC 4.2 < A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board.>  In the Nine Men's Morris game, a player should be prompted to select a piece from their available pieces if they attempt to select a piece that is not in their collection during their turn. | Completed | Vedanth Goud |
|  | 4.3 | AC 4.3 < A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board.>  Given it is a player's turn in the Nine Men's Morris game,  When they try to move a piece to an invalid destination,  Then they should be prompted to choose a different destination. | Completed | Shiva Reddy Dubbaka, |
|  | 4.4 | AC 4.4 < A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board.>  Given it is a player's turn in the Nine Men's Morris game,  When they successfully move a piece to the designated location,  Then the board state should be updated to reflect the new position of the piece. | Completed | Vikas Reddy |
|  | 4.5 | AC 4.5< A player's turn in the Nine Men's Morris game starts when they get to select a piece and move it to a designated location on the board.>  Given it is a player's turn in the Nine Men's Morris game,  When they successfully move a piece and form a mill,  Then they should be prompted to choose an opponent's piece to remove from the board. | Completed | Vikas Reddy |
| 5.Flying a piece | 5.1 | AC 5.1 <In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining.>  Given a player has just three pieces remaining,  When it is their turn to move,  Then they should be able to "fly" their pieces to any unoccupied area on the board. | Completed | Shiva Reddy Dubbaka |
|  | 5.2 | AC 5.2 < In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining.>  Given a player has just three pieces remaining,  When they try to move a piece to an occupied area on the board,  Then they should be prompted to choose a different destination. | Completed | Siddarth Bolisetty |
|  | 5.3 | AC 5.3 < In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining.>  Given a player has just three pieces remaining,  When they try to move a piece to an invalid destination,  Then they should be prompted to choose a different destination. | Completed | Vedanth Goud |
|  | 5.4 | AC 5.4 < In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining.>  Given a player has just three pieces remaining,  When they successfully move a piece to an unoccupied area on the board,  Then the board state should be updated to reflect the new position of the piece. | Completed | Shiva Reddy Dubbaka |
|  | 5.5 | AC 5.5< In the Nine Men's Morris game, a player should be able to "fly" their pieces to any unoccupied area on the board when they have just three pieces remaining.>  Given a player has just three pieces remaining,  When they successfully move a piece to an unoccupied area on the board,  Then the game should proceed to the next player's turn. | Completed | Vikas Reddy |
| 6. Removing an opponent’s piece | 6.1 | AC 6.1 < In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill.>  Given a player successfully forms a mill,  When they are prompted to choose an opponent's piece to remove,  Then they should be able to select one of the opponent's pieces on the board for removal. | Completed | Siddarth Bolisetty |
|  | 6.2 | AC 6.2 < In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill.>  Given a player successfully forms a mill,  When they try to select a piece that is not owned by the opponent,  Then they should be prompted to choose a valid opponent's piece for removal. | Completed | Vedanth Goud |
|  | 6.3 | AC 6.3 <. In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill.>  Given a player successfully forms a mill,  When they select an opponent's piece for removal,  Then the chosen piece should be removed from the board. | Completed | Siddarth Bolisetty |
|  | 6.4 | AC 6.4 < In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill.>  Given a player successfully forms a mill,  When they remove an opponent's piece,  Then the board state should be updated to reflect the absence of the removed piece. | Completed | Shiva Reddy Dubbaka |
|  | 6.5 | AC 6.5 < In the Nine Men's Morris game, a player should be able to pick and remove one of the opponent's pieces from the board when they create a mill.>  Given a player successfully forms a mill,  When they remove an opponent's piece,  Then the game should proceed to the next player's turn. | Completed | Vikas Reddy |
| 7. Determining if the game is over | 7.1 | AC 7.1 < When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over.>  Given the game is in progress,  When a player achieves a winning condition (e.g., forms a mill and removes an opponent's piece),  Then the system should accurately declare the player as the winner of the round. | Completed | Shiva Reddy Dubbaka, |
|  | 7.2 | AC 7.2 < When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over. >  Given the game is in progress,  When a player achieves a stalemate condition (e.g., no possible moves remaining for the opponent),  Then the system should accurately declare the game as a stalemate. | Completed | Siddarth Bolisetty |
|  | 7.3 | AC 7.3 < When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over.>  Given the game is in progress,  When a player achieves a winning condition or a stalemate condition,  Then the system should display the result of the round. | Completed | Vedanth Goud |
|  | 7.4 | AC 7.4 < When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over.>  Given the game is in progress,  When the round concludes (either with a win or a stalemate),  Then the system should provide the option to start a new round or exit the game. | Completed | Shiva Reddy Dubbaka, |
|  | 7.5 | AC 7.5< When a player wins or reaches a stalemate in the Nine Men's Morris game, the system need to be able to tell with accuracy when the round is over.>  Given the game has concluded a round (either with a win or a stalemate),  When the player chooses to start a new round,  Then the system should reset the game board and allow the players to begin a new round. | Completed | Vikas Reddy |
| 8. Recording all moves of a game in a text file | 8.1 | AC 8.1 < As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves.>  Given a player is playing a game of Nine Men's Morris,  When they choose to save the game,  Then the system should prompt them for a file name and location to save the game. | Completed | Siddarth Bolisetty, |
|  | 8.2 | AC 8.2< As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves.>  Given a player has provided a valid file name and location,  When they confirm the save action,  Then the system should create a text file and record every move made in the game. | Completed | Vedanth Goud |
|  | 8.3 | AC 8.3 < As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves.>  Given the game is in progress,  When a player chooses to save the game,  Then the system should continue to record every subsequent move made in the game. | Completed | Vedanth Goud |
|  | 8.4 | AC 8.4 < As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves.>  Given a player is playing a game of Nine Men's Morris,  When they have completed the game (either through a win or a stalemate),  Then the system should prompt them to save the final game state. | Completed | Shiva Reddy Dubbaka, |
|  | 8.5 | AC 8.5 < As a Nine Men's Morris player, I would like to be able to save every move I make in a text document. This will make it easier for me to monitor the game's progress and, if necessary, go back and evaluate the moves.>  Given a player has chosen to save the final game state,  When they confirm the save action,  Then the system should create a text file and record every move made in the entire game, including the final state. | Completed | Vikas Reddy |
| 9.Replaying a game recorded in a text file manually | 9.1 | AC 9.1< As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this.>  Given a player is playing a game of Nine Men's Morris,  When they choose to save the game,  Then the system should prompt them for a file name and location to save the game. | Completed | Siddarth Bolisetty |
|  | 9.2 | AC 9.2< As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this.>  Given a player has provided a valid file name and location,  When they confirm the save action,  Then the system should create a text file and record every move made in the game. | Completed | Vedanth Goud |
|  | 9.3 | AC 9.3< As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this.>  Given the game is in progress,  When a player chooses to save the game,  Then the system should continue to record every subsequent move made in the game. | Completed | Shiva Reddy Dubbaka, |
|  | 9.4 | AC 9.4< As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this.>  Given a player is playing a game of Nine Men's Morris,  When they have completed the game (either through a win or a stalemate),  Then the system should prompt them to save the final game state. | Completed | Vikas Reddy |
|  | 9.5 | AC 9.5< As a player in Nine Men's Morris game that has been recorded in a text file as a participant. I will be able to comprehend the players' tactics and go over the game's progression piece by piece thanks to this.>  Given a player has chosen to save the final game state,  When they confirm the save action,  Then the system should create a text file and record every move made in the entire game, including the final state. | Completed | Siddarth Bolisetty |
| 10.Replaying a game recorded in a text file automatically | 10.1 | AC 10.1< As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input.>  Given a player wants to automatically replay a previously recorded game in Nine Men's Morris,  When they choose to replay a game from a recorded text file,  Then the system should prompt them to provide the path to the text file containing the recorded moves. | Completed | Vedanth Goud |
|  | 10.2 | AC 10.2< As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input.>  Given a player has provided the path to the recorded text file,  When they confirm the replay action,  Then the system should read the recorded moves and display the initial state of the game board. | Completed | Shiva Reddy Dubbaka, |
|  | 10.3 | AC 10.3< As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input.>  Given the game replay has started,  When the player chooses to advance through the moves,  Then the system should automatically apply all the recorded moves in sequence without requiring any further player input. | Completed | Vikas Reddy |
|  | 10.4 | AC 10.4< As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input.>  Given the game replay has started,  When the replay reaches its conclusion (end of recorded moves),  Then the system should indicate that the replay has finished and provide the option to return to the main menu or start a new game | Completed | Siddarth Bolisetty |
|  | 10.5 | AC 10.5< As a player in the Nine Men's Morris game selects to have a previously recorded game automatically played again, the system ought to do so without requiring any user input.>  Given the game replay has finished,  When the player chooses to return to the main menu or start a new game,  Then the system should appropriately handle their selection. | Completed | Vedanth Goud |

**Implementation Tasks**

Summary of production code

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **User Story ID and Name** | **AC ID** | **Class Name(s)** | **Method Name(s)** | **Developer Name(s)** | **Status** | **Notes (optional)** |
| 1.Choosing the player’s turn. | 1.1 | NineMenMorris | Isplaying() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 1.2 | NineMenMorris | Is\_move\_valid() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 1.3 | NineMenMorris | Get\_clicked() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 2. Setting up a game. | 2.1 | NinemenMorris | Game\_phase() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 2.2 | NinemenMorris | Get\_font() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 2.3 | NinemenMorris | Make\_font() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 3 Placing a piece | 3.1 | NinemenMorris | Move\_Needed() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 3.2 | NinemenMorris | In\_hand() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 3.3 | NinemenMorris | Valid\_click\_pos() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 4.Moving a piece | 4.1 | NinemenMorris | Move\_Needed() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 4.2 | NinemenMorris | Is\_Position() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 4.3 | NinemenMorris | Check\_Position() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 5. Flying a piece | 5.1 | NinemenMorris | Valid\_Step() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 5.2 | NinemenMorris | On\_Board() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 6.Removing an opponent piece | 6.1 | NinemenMorris | Valid\_mill() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 6.2 | NinemenMorris | Is\_mill\_formed() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 7.Determining if the game is over. | 7.1 | NinemenMorris | Is\_Winner() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
|  | 7.2 | NinemenMorris | get\_valid\_kills() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 8.Recording all  moves of a game in a text file | 8.1 | NinemenMorris | Recorded\_moves.txt file got attached in zip file. | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 9.Replaying a game recorded in a text file manually | 9.1 | NinemenMorris | button\_main() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |
| 10. Replaying a game recorded in a text file automatically | 10.1 | NinemenMorris | button\_main() | Shiva Reddy Dubbaka, Vikas Reddy , Siddarth Bolisetty, Vedanth Goud | Done |  |

Summary of automated test code (directly corresponding to some acceptance criteria)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **User Story ID and Name** | **Acceptance Criterion ID** | **Class Name (s) of the Test Code** | **Method Name(s) of the Test Code** | **Description of the Test Case (input & expected output)** | **Status** | **Developer Name(s)** |
| 1. Choosing the player’s turn | 1.1 | NinemenMorris | Isplaying() | Valid Input 0<7 | Done | Vikas Reddy |
|  | 1.2 | NinemenMorris | Is\_move\_valid() | Invalid row index Row index as 8 | Done | Siddarth Bolisetty |
| 2 Placing a piece | 2.1 | NinemenMorris | Get\_clicked() | Row and Column index (0,0) | Done | Vedanth Goud |
|  | 2.2 | NinemenMorris | Game\_phase() | Row and Column index as 0,0 and Row and Column index as 0,0 | Done | Shiva Reddy Dubbaka, |
| 3.Placing a piece | 3.1 | NinemenMorris | Get\_font() | Row and Column index as 0,0 | Done | Vikas Reddy |
|  | 3.2 | NinemenMorris | Make\_font() | Row and Column index as 0,0 | Done | Siddarth Bolisetty |
| 4.Moving a piece | 4.1 | NinemenMorris | Move\_Needed() | Row and Column index as 0,0 | Done | Vedanth Goud |
|  | 4.2 | NinemenMorris | In\_hand() | Row and Column index as 0,0 | Done | Shiva Reddy Dubbaka, |
|  | 4.3 | NinemenMorris | Valid\_click\_pos() | Row and Column index as 0,0 | Done | Vikas Reddy |
| 5.Flying a piece | 5.1 | NinemenMorris | Move\_Needed() | Row and Column index as 0,0 | Done | Siddarth Bolisetty |
|  | 5.2 | NinemenMorris | Is\_Position() | Row and Column index as 0,0 | Done | Vedanth Goud |
|  | 5.3 | NinemenMorris | Check\_Position() | Row and Column index as 0,0 | Done | Shiva Reddy Dubbaka, |
| 6.Removing Opponent piece | 6.1 | NinemenMorris | Valid\_Step() | Row and Column index as 0,0 | Done | Vikas Reddy |
|  | 6.2 | NinemenMorris | On\_Board() | Row and Column index as 0,0 | Done | Siddarth Bolisetty |
|  | 6.3 | NinemenMorris | Valid\_mill() | Row and Column index as 0,0 | Done | Vedanth Goud |
| 7.Determining if the  game is over | 7.1 | NinemenMorris | Is\_mill\_formed() | Row and Column index as 0,0 | Done | Shiva Reddy Dubbaka, |
|  | 7.2 | NinemenMorris | Is\_Winner() | Row and Column index as 0,0 | Done | Vikas Reddy |
| 8.Recording all  moves of a game in a text file | 8.1 | NinemenMorris | get\_valid\_kills() | Output can be seen on text file. | Done | Siddarth Bolisetty |
| 9.Replaying a game recorded in a text file manually | 9.1 | NinemenMorris | Recorded\_moves.txt file got attached in zip file. | Output can be seen on text file. | Done | Vedanth Goud |
| 10. Replaying a game recorded in a text file automatically | 10.1 | NinemenMorris | button\_main() | Output can be seen on text file. | Done | Shiva Reddy Dubbaka, |

1. **Summary of Source Code**

|  |  |  |  |
| --- | --- | --- | --- |
| Production or test code? | Source code file name | # lines of code | Developer names and contributions (% of the source code) |
| Production | Graphics.py  MillEnv.py | 292  234 | Shiva Reddy Dubbaka,(25%) Vikas Reddy(25%) , Siddarth Bolisetty(25%), Vedanth Goud(25%) |
| Test | Mcts.py | 187 | Shiva Reddy Dubbaka,(26%) Vikas Reddy(24%) , Siddarth Bolisetty(26%), Vedanth Goud(24%) |
|  | Total | 654 |  |

1. **Design Documentation**
2. **User Interface Design**

Contributors **:**Shiva reddy, Siddharth bolisetty

**A screenshot of a computer

Description automatically generated**

**A screenshot of a computer

Description automatically generated**

1. **Class Diagram**

Contributors **:**Vikas Reddy,Vedanth Goud

A diagram of a diagram

Description automatically generated

The class diagram provides a high-level overview of the structure of the Nine Men's Morris game. It shows the different classes that are involved in the game and the relationships between them

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1. **Algorithm Design**

Contributors:Shiva reddy, Siddharth bolisetty

Human Vs Human and Human vs Computer Pseudo code

We have added this file to our zip

1. **Extensibility**

Contributors**:** Vikas Reddy, Vedanth Goud

Class Extension for variants:

You may develop new classes that extend the existing classes without affecting their code if you wanted to extend the game to include multiple varieties of Nine Men's Morris (e.g., with extra rules or alternative board configurations).

For example, you might build a MillEnv subclass for each version and apply the variant-specific rules in that subclass.

Game Strategy Extension:

The Open-Closed Principle is used while using Monte Carlo Tree Search (MCTS) for computer manoeuvres. If you wish to alter the approach of the computer player, you might develop a new class that implements a different strategy (for example, the Minimax algorithm) without affecting the old MonteCarloTreeSearch class.

User Interface Extension:

PySimpleGUI is used to create the user interface. You may extend the MillDisplayer class or build new classes to provide new features or change the design without affecting the existing PySimpleGUI code.

Recording Extension:

The Moderated Graphics class contains the recording capabilities (toggle recording, pause recording, and save record). If you wish to change how motions are recorded or enhance the recording capability, you may do so within this class without affecting other portions of the code.

1. **Findings from the Code Review Exercise**

Participant names: Vedanth Goud, Vikas Reddy, Shiva Reddy, Siddharth Bolisetty

Class that was reviewed: Graphics.py

|  |  |  |  |
| --- | --- | --- | --- |
| **Checklist** | **Checklist Item** | **Findings** | |
| Coding Standards | Naming conventions | The PlaceImage class contains a naming convention violation. The name of the "\_\_init\_\_" method should be changed to "\_\_init\_\_" rather than "\_init\_." | |
| Ordering convention of method arguments | Every method adheres to the same ordering standard for its parameters. | |
| Meaningful and valid comments | There are comments, however some might not be very clear or detailed. | |
| Consistent style of code blocks | Curly braces are formatted using a consistent line style ({ on the same line as the statement). | |
| Consistent indentation | Consistent indentation is maintained throughout the codebase | |
| Design Principles | Good class abstraction and interface | A few classes would gain from improving the clarity of their abstractions. | |
| Appropriate visibility of each variable, method, and class | The code makes no explicit use of the visibility modifiers (private, protected, and public). Take into account include the proper visibility modifiers, particularly for students. adjusted appropriately | |
| Any violation of the command-query separation principle | No | |
| Design by contract (pre/post-conditions) | For public methods, there is variable adherence to Design by Contract.  The required prerequisites must be more widely and consistently provided. | |
| Is the Open-Closed Principle violated? | No | |
| Is the Single Responsibility Principle violated? | No | |
| Code Smells | Magic numbers | There were no occurrences of magic numbers or unknown constants discovered. | |
| Unnecessary global / class variable | No unnecessary global or class variables were identified. | |
| Duplicate code | There is some code duplication, particularly in the draw\_board function. | |
| Long methods | For better maintainability, the draw\_board function might be divided into smaller, more focused functions as it is fairly lengthy. | |
| Long parameter list | There were no instances of unduly lengthy parameter lists found. | |
| Over-complex expression | Some of the code's expressions could be deemed excessively complicated, particularly when used in conditions. | |
| Switch or if-then-else that needs to be replaced with polymorphism | No apparent cases where switch or if-then-else statements should be replaced with polymorphism | |
| Variable or method name whose intent is unclear | Although the names of variables and methods are usually obvious, there are several situations where extra explanation is helpful. | |
| Any similar methods in other classes? | No identical methods in multiple classes were observed | |
| Bugs | Buggy code snippet | What is the bug? | Why it is a bug? |
| Nil | NA | NA |

1. **Meeting Minutes (only during this sprint)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Date** | **Time and Duration** | **Place** | **Participant Names** | **Purpose of the Meeting** | **Specific Action Items** |
| 11/26/23 | 6:00 PM-8:00PM | 520 East | Shiva Reddy Dubbaka, Vikas Reddy , Siddharth Bolisetty, Vedanth Goud | Discussed about the user stories and acceptance criteria and started the source code | Discussed about the development, logics, user stories and started the acceptance criteria and source code |
| 11/29/23 | 7:00 PM-9:00PM | Zoom | Shiva Reddy Dubbaka, Vikas Reddy , Siddharth Bolisetty, Vedanth Goud | Discussed about the implementation tasks and created the source code. | We have discussed about implementation tasks required for project and done with code execution |
| 12/02/23 | 7:00 PM-9:00PM | 520 East | Shiva Reddy Dubbaka, Vikas Reddy , Siddharth Bolisetty, Vedanth Goud | Observed the production code to write the method names. | Completed with implementation tasks. |
| 12/05/23 | 7:00 PM-9:00PM | UMKC LIBRARY  (MNLC) | Shiva Reddy Dubbaka, Vikas Reddy , Siddharth Bolisetty, Vedanth Goud | Report Planning | Contribution to the code and discussed about next sprint. |
| 12/06/23 | 3:00 PM – 6:00 PM | Zoom | Shiva Reddy Dubbaka, Vikas Reddy , Siddharth Bolisetty, Vedanth Goud | Report Planning | Final changes in Documentation and Code |

1. **Buddy Ratings**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  | Shiva Reddy Dubbaka | Siddharth Bolisetty | Vedanth Goud | Vikas Reddy |
| Shiva Reddy Dubbaka | X | 1 | 1 | 1 |
| Siddharth Bolisetty | 1 | X | 1 | 1 |
| Vedanth Goud | 1 | 1 | X | 1 |
| Vikas Reddy | 1 | 1 | 1 | X |
|  | *Average* | 1 | 1 | 1 | 1 |