**Construction Phase:** Black Queen Card Game

Human play script:

Cast

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| **Human Character** | **Program Character Name** | **Role** | **Brief** |
| Catherine | Manager | Coordinator | Coordinates the play between players and other chief operators like controller. |
| Jack | Player1 | Highest bidder | Player who bids maximum points |
| Greg | Player2 | Player2 |  |
| Mary | Player3 | Player3 | Undisclosed partner |
| Sally | Player4 | Player4 | Undisclosed partner |
| Jay | Player5 | Player5 |  |
| Cherry | Player6 | Player6 |  |
| Steve | Commander | Controller |  |
| Wendy | Abacus | Calculator | Math Calculations. |
| Ashley | Clerk | Database Administrator | Stores and maintains data. |

The play demonstrates basic functionality of the Black Queen card game. It starts with the bidding round where all players bid their points, then the game begins. The manager interacts with all players, and he acts as a medium of channel between players and commander. All requests from players are directed to the commander via manager and then responses are sent back to players via manager. Meanwhile, as the play continues other chief operators like abacus and clerk are directed by the commander to perform critical operations like calculating scores after each round, displaying the scores on the scoreboard. Finally, as the play ends, the manager asks the commander to calculate total points for each player and display the winner of the game.

**Human play script**

**Player3:** Manager, I want to host a game of Black Queen for 6 players.

**Manager:** Controller, please start a game of 6 players.

**Commander:** Manager, game table is ready. Please, ask the host to start bidding round.

**Manager:** Player3, please start the bidding process.

**Player3:** Manager, I want to pass my bid.

**Player2:** Manager, I want to bid 75 points.

**Player1** (Highest bidder)**:** Manager, I want to bid 150 points.

**Player4:** Manager, I want to bid 90 points.

**Player5:** Manager, I want to pass my bid.

**Player6:** Manager, I want to bid 75 points.

**Manager:** Commander, please save the bidding points for each player.

(Player3:0, Player2:75, Player1:150, Player4:90, Player5:0, Player6:75)

**Commander:** Manager, the scoreboard is ready. Please start the game.

**Manager:** Player1, as you are the highest bidder, it is your turn. Please announce the trump and two

cards for declaring partners.

**Player1:** Manager, the trump is ‘Spade’ and players with ‘Ace of spade’ and ‘King of heart’ are my

partners.

**Manager:** Commander, please record the trump as ‘spade’ and partner’s card as ‘Ace of spade’ and ‘King

of heart’.

**Commander:** Manager, please ask Player1 to play the card.

**Manager:** Player1, please play the card.

**Player1:** Manager, I have played ‘5 of spade’.

**Manager:** Player2, your turn please play the card.

**Player2:** Manager, I have played ‘King of spade’.

**Manager:** Player3, your turn please play the card.

**Player3** (Undisclosed partner)**:** Manager, I have played ‘Ace of spade’.

**Manager:** Player4, your turn please play the card.

**Player4** (Undisclosed partner)**:** Manager, I have played ‘Queen of spade’.

**Manager:** Player5, your turn please play the card.

**Player5:** Manager, I have played ‘3 of spade’.

**Manager:** Player6, your turn please play the card.

**Player6:** Manager, I have played ‘King of spade’.

**Manager:** Player1 you win this round and this hand is yours.

**Manager:** Commander, one round is finished. Please calculate and store the number of points for

each player.

**Commander:** Calculator, please calculate the number of points for each player and return.

**Abacus:** The number of points for each player are these

[Player1:55,Player2:0,Player3:0,Player4:0,Player5:0,Player6:0]

**Commander:** Clerk, please store the number of points for each player for the last pass

and display them on the scoreboard.

[Player1:55,Player2:0,Player3:0,Player4:0,Player5:0,Player6:0]

**Clerk:** Commander, the points are stored and displayed on the scoreboard for the last pass.

**Commander:** Manager, please continue with the next round.

**Manager:** Player1, your turn please play the card.

**Player1:** Manager, I have played ‘5 of hearts’.

**Manager:** Player2, your turn please play the card.

**Player2:** Manager, I have played ‘Ace of hearts’.

\*\*\*\*\*\*\*\*\*\*This game continues for another 4 rounds\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*

**Manager:** Commander, all rounds are finished. Please calculate the points for each player, store them, and display them on the scoreboard.

**Commander:** Abacus, please calculate the total number of points for each player and return.

**Abacus:** Commander, the total number of points for each player are these

[Player1:150,Player2:-75,Player3:150,Player4:150,Player5:0,Player6:0,Player7:-75]

**Commander:** Clerk, please store the number of points for each player after the final round and display

them on the scoreboard.

[Player1:150,Player2:-75,Player3:150,Player4:150,Player5:0,Player6:0,Player7:-75]

**Clerk:** Commander, the total points are stored and displayed on scoreboard for this

game.

**Commander:** Manager, Player1 is the winner of this game with 150 points.

**Manager:** Player1, you win this game with 150 points. Congratulations!!!

Sequence diagram showing the interactions of human play script of Black Queen Card Game.

Graphical user interface

Description automatically generated with medium confidence

Class diagram from the sequence diagram created above.

Diagram

Description automatically generated with medium confidence