

PUB MANAGEMENT SYSTEM

MASTER 1 JAVA 1, PROJECT REPORT
SOFTWARE ENGINEERING

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ABSTRACT

This report documents the process of designing, developing, and testing a software system that simulates life and activities in a pub. It takes advantage of the java programming language and object-oriented programming to achieve this.

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INTRODUCTION

The main objective of this project is to develop and mimic a real-world scenario of pub management with a belote card game. Project management is critical to all software projects and keeping to a project plan will be of similar importance.

Every pub has the owner or the boss who sees to the smooth operation of the pub, a bartender who has access to the bar stocks, servers who see to customers' satisfaction, customers who come to drink, and suppliers who stock the pub with drinks upon request from the bartender. Various activities entertain customers at the bar such as card games.

This Pub Management is implemented to simulate a pub properly by giving members maximum flexibility and also allowing the members to partake in the belote card game. One of the main objectives of this game is to maximize the players' experience in a pub.

PROJECT EXPLANATION

The pub management is a very simple, clear, and concise program. There are different functionalities and relationships between the classes, objects, and methods. We also took advantage of the file reading functionality of Java to implement an inventory of drinks in the pub.

Humans (Protagonists):

This section gives a brief description of the different Humans involved and their individual and common characteristics. The Human is the generic representation of the key members in the pub. It acts as the parent class for most of the classes used in the system. This is an outline of the classes used to represent the various humans who can perform generic actions such as load money on wallet, have a view of the drink menu, order a drink, get the drink from the sever, play the belote game and so on:

1. Boss
2. Bartender
3. Servers
4. Customers
5. Supplier

Boss

The boss is a woman who is the owner of the bar. She does not need to type her name because the bar has only one specific boss which has been set before. It inherits from the human class but has it's own special attributes and methods. Below is an outline of some methods performed by the boss:

1. She collects total sales made by the bartender
2. She has the ability to instruct the bartender to stop serving a particular customer who has had too much to drink or is misbehaving.
3. The boss does not incur any costs for drinks offered to other customers.

```
Enter the details of the Boss of the bar:
```

```
Name:
```

```
Manon
```

```
Nickname:
```

```
M
```

```
Meaningful Cry:
```

```
Aha!
```

```
Favourite Drink:
```

1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water

```
2
```

```
Backup Drink:
```

1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water

```
3
```

```
Enter the details of the Bartender of the bar:
```

```
First Name:
```

```
Mark
```

```
Nick Name:
```

```
MA
```

```
Meaningful Cry:
```

```
Yah
```

```
Welcome to Chez Manon
```

Bartender

The bartender is a major protagonist in the program. He/she manages the stock and is the only one capable of doing so. Some methods performed by the bartender are:

1. He views, orders and receive new stock from supplier
2. He adds table to the pub and assists customers to pick a table.
3. He handles the costs, sales and profits and give funds to the boss when there is too much liquidity.
4. He interacts with customers directly whereas and also receive orders from servers.
5. He also has the capacity of not allowing customers to be served.

Enter the details of the Bartender of the bar:

First Name:

Mark

Nick Name:

MA

Meaningful Cry:

Yah

Welcome to Chez Manon

Please select an option:

1.Create customer

2.Play

10.Exit

1

Enter the details of the Client:

Name:

Love

Nickname:

L

Meaningful Cry:

Whooo

Favourite Drink:

1. Peroni

2. White Wine

3. Lost Coast

4. Sangria

5. Becks

6. Water

5

Backup Drink:

1. Peroni

2. White Wine

3. Lost Coast

4. Sangria

5. Becks

Servers

They are differentiated from other protagonists by the following roles or capabilities.

1. Availability for the belote game but can't choose to play by themselves.
2. Choose a table for customers.

3. Present menu to customers.

```
Bar.servers.add(new Server("Jean", "J", "Coming!"));  
Bar.servers.add(new Server("Marie", "M", "Coming!"));
```

Customers

They play a major role in the pub and the belote game. In addition to these inherited attributes, customers have a popularity rating, back-up drink, their number of drinks count, current alcohol level and meaningful cry. Capabilities of the customer though, are not infinite and are highlighted below;

- a. They order a drink of their choice (favorite drink). In the absence of this drink, their back-up drink is requested for.
- b. Customers present themselves, mentioning their names and nicknames.
- c. They can offer a tour. Here, drinks are paid for everyone present in the bar and the customer is responsible for the bill.
- d. They choose their table of choice with the assistance of the bartender or server.
- e. With every drink ordered, offered or tour made, there is a proportional reduction in the customers wallet.
- f. Customers can order a drink for other customers. In this functionality, recipients do not pay for their drinks and the customer is responsible for the bill.

```
Welcome to Chez Manon
Please select an option:
1.Create customer
2.Play
10.Exit
1
Enter the details of the Client:
Name:
Love
Nickname:
L
Meaningful Cry:
Whooo
Favourite Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
5
Backup Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
6
```

Supplier

They objectives are simple.

- a. He receives orders for new stock from the bartender, delivers that order and receives payment from the boss.
- b. Although the methods of the supplier may be few, he is the backbone of the pub as without drinks, there is no use of a pub.

BAR MANAGEMENT

Bar

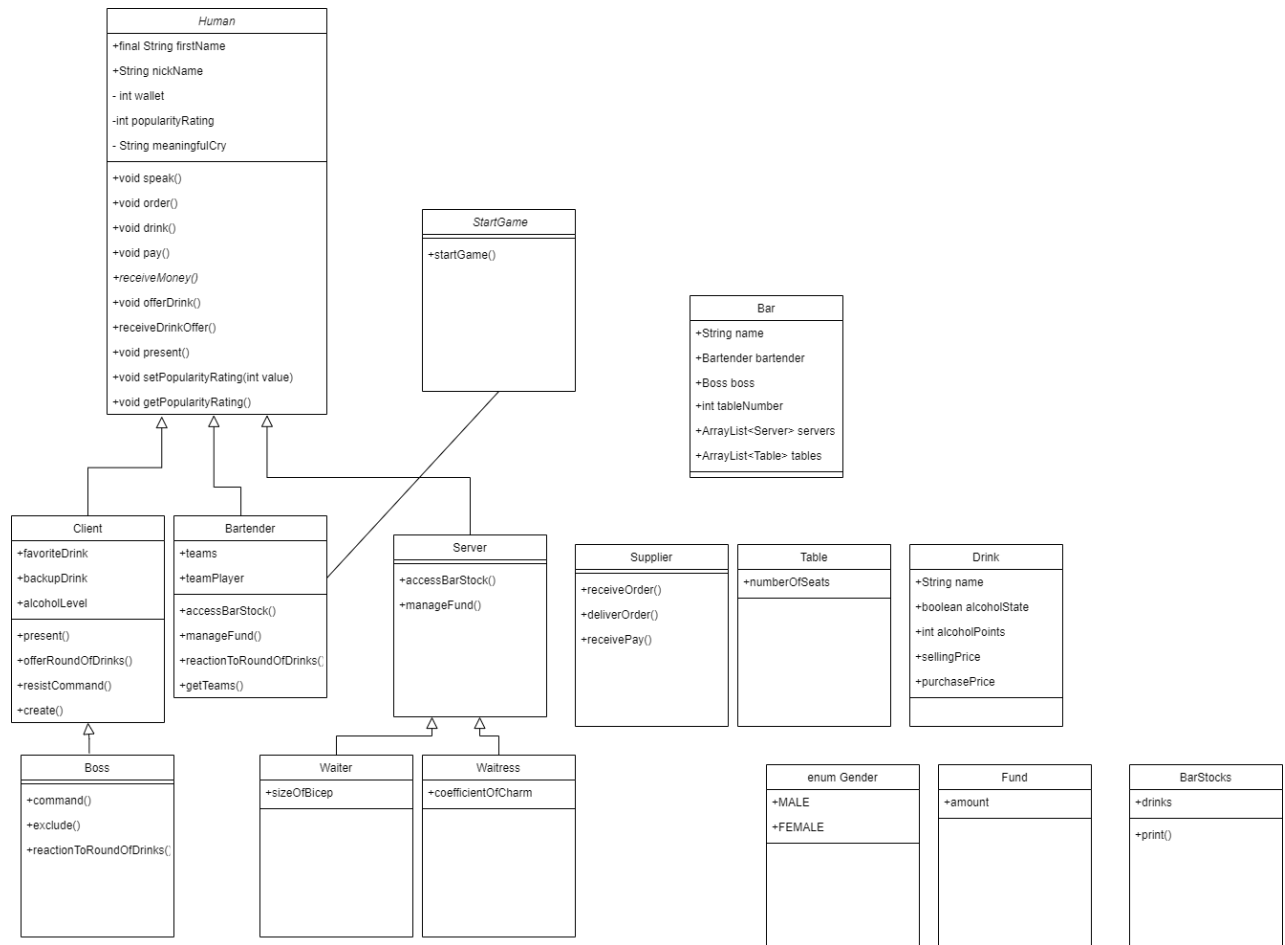
First, the User logs in as any protagonist (Human). If the First name of the user is equal to any of the protagonists the program welcomes the user back else it creates a new protagonist for the user. Taking the client protagonist as an example

The bar class has an array list of clients. If a protagonist logs in as a client, a First name will be required. Now if the array list of clients is greater than 0 that is there are some clients already in the bar therefore the program test the first name against all the first name of the clients in the clients array list. If there is a match, it means the client already exist and then the program welcomes the client or else create a new client and add to the client array list. The clients array list gets updated after the client finish execution of the client action. In so doing the client array list has the current state of each of the client. When logged in as a client there are possibilities to order drink, choose table, money on wallet and make yourself available to play a belote game.

Belote is a classical French 32 card trick-taking game. In other words it is a game of contract. The team that "takes" the contract must reach 82 points minimum to win. If this total is reached, each team scores the points it has made. If the team fails to reach the 82 points, it does not score a point, the 162 points will be awarded to the opponents. The total number of possible points (cards and ten der) in the folds is 162 points. The game ends when one of the team reaches a minimum of 1100 points. If both teams exceed 501 points, the team with the highest score wins the match.

A client can not make any order if a bartender is not available and also cannot order through a sever if no servers are available. An array list of strings stores the names of all clients and servers available to play the belote game and pass it as an argument to the belote gam. Once logged as a Bartender, you have the possibility to receive orders, receive payments, add selling price, etc. Getting commands from the boss once an order has been delivered.

The receiveOrder methods receives orders , it has a boss it receives instructions from, and the stock to fetch the order from. It first uses an if statement to check who is making the order and then pass it to the boss to receive command as to serve the order or not. If all requirements are checked the bartender serves the order. The bartender receives all orders and all payments. It has access to the stock. The supplier add drinks to the stock and is able to set the purchase price of the drink and the quantity added. The servers are able to order water, receives orders and play in the belote game. The Clients can order drinks, choose a table, pay for order etc. The bar is made up of all the protagonist and the user can log in as any user a point in time and log out. Only a client can start a belote game. And here is the diagram of the bar management part:



BELOTE GAME

To create the belote game, firstly we need to learn about the rules of the belote game, according to the documents, When the 'Atout' (In our code it represented as trump) changes, the points of each card will also change and there are also some different situations which will also change the points of the cards so we make a conclusion of all the points the cards may get in different situations, we create an interface called BeloteConstants, we set the basic elements of the game: player numbers(4), the amount of all cards(32) and also the cards which player gets in hand finally(8). And also set the basic elements of a card: trump (color),

CardsPackage

Belote game is all about cards, hence the most important element. This class adds all cards Colors (SPADE,DIAMOND,HEART,CLUBS) and Figures (ACE,KING,QUEEN... ETC) and save to an arraylist.

Team

This is a simple class which allows the creation of teams for the game. It includes the player name, team number to enable pairing.

Player

This is the backbone of the entire game. The methods to mix, cut and distribute are called from here and it harbors the game strategies. It also contains the trump rounds (first and second) methods with allow the player to accept or pass the Tump Card.

Game

The game class is the main class of the belote. It adds registered players to the tournament and in a case user choose to play without creating any customers, the idle Waiters are added to make game interesting. This is where the mixing, cutting and distribution of cards is made. The auto player moves methods are also called to enable flow of game.

| Card |
|------------------------|
| color |
| figure |
| getColor() |
| getFigure() |
| getFigurePoints() |
| getFigureTrumpPoints() |
| getCard() |

| CardPackage |
|--------------|
| newCards |
| cards |
| heart |
| spade |
| club |
| diamond |
| ace |
| king |
| queen |
| jack |
| ten |
| nine |
| eight |
| seven |
| mixing() |
| cut() |
| distribute() |
| display() |
| getCards() |

| Figure |
|-----------------|
| name |
| point |
| pointTrump |
| getName() |
| getPoint() |
| setPoint() |
| getTrumpPoint() |
| setTrumpPoint() |

| Game |
|------------------------|
| allPlayers |
| distributor |
| trumpDisplay |
| trumpColorDisplay |
| input |
| userInput |
| turns |
| cardPlaying |
| displayCard |
| numberCardPlayer |
| player |
| addPlayers() |
| displayCard() |
| getTrumpColorDisplay() |
| getAllPlayers() |
| run() |

| Game |
|-----------------------|
| input |
| userInput |
| name |
| position |
| leadCard |
| leadCardColor |
| leadCardFigure |
| card2 |
| card3 |
| card4 |
| cardPoint1 |
| cardPoint2 |
| cardPoint3 |
| cardPoint4 |
| color |
| figure |
| found |
| team1Points |
| team2Points |
| team1TotalPoints |
| team2TotalPoints |
| temp |
| responses |
| random |
| check |
| getName() |
| getPosition() |
| setPosition() |
| getCards() |
| getTeam1TotalPoints() |
| getTeam2TotalPoints() |
| firstRound() |
| secondRound() |
| displayCards() |
| cardSelection |
| selected() |
| strategy() |
| checkRoundPoints() |

| Team |
|-----------------|
| name |
| point |
| getName() |
| getPoint() |
| setPoint() |
| getTrumpPoint() |
| setTrumpPoint() |

WALKTHROUGH

```
RUN:
-----Welcome to the Pub Management Game !-----
Enter 'yes' for default and 'no' to create your own bar:
no
Enter the details of the Boss of the bar:
Name:
Manon
Nickname:
M
Meaningful Cry:
Aha!
Favourite Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
2
Backup Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
3
Enter the details of the Bartender of the bar:
First Name:
Mark
Nick Name:
MA
Meaningful Cry:
Yah
Welcome to Chez Manon
Please select an option:
1.Create customer
2.Play
10.Exit
1
Enter the details of the Client:
Name:
Love
Nickname:
L
Meaningful Cry:
Whooo
Favourite Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
5
```

```

Backup Drink:
1. Peroni
2. White Wine
3. Lost Coast
4. Sangria
5. Becks
6. Water
6
Please select an option:
1.Create customer
2.Play
10.Exit
2
Choose from your characters or 0 to go back:
1. Love
1
Please select an option:
1. Order a drink
2. Play Belote game
3. Offer round of drink
10.Back
100. Exit
2
-----Welcome to the Tournament !-----
Please select an option
1. Register a team
2. View teams
3. Play game
0. Exit game
--> 1
Enter your name of Team mate 1:
--> Love
Enter your name of Team mate 2:
--> Adrian
You have been Registered!
Returning back to menu
-----Welcome to the Tournament !-----
Please select an option
1. Register a team
2. View teams
3. Play game
0. Exit game
--> 3
numCardPlayer 5
PLAYER Love
card 1 EIGHT of HEART
card 2 NINE of DIAMOND
card 3 QUEEN of DIAMOND
card 4 KING of DIAMOND
card 5 TEN of DIAMOND
PLAYER Adrian
card 1 QUEEN of DIAMOND
card 2 JACK of SPADE
card 3 KING of CLUBS
card 4 SEVEN of SPADE

```

```
card 5 KING of SPADE
PLAYER Kevin
card 1 JACK of HEART
card 2 TEN of CLUBS
card 3 QUEEN of SPADE
card 4 SEVEN of CLUBS
card 5 EIGHT of DIAMOND
PLAYER Lucie
card 1 SEVEN of DIAMOND
card 2 TEN of HEART
card 3 ACE of HEART
card 4 QUEEN of HEART
card 5 NINE of SPADE
Potential Trump Card JACK of CLUBS
Do you Accept or pass the trump Card???
Enter yes or no or 10 to exit
no
Your trump card is JACK of CLUBS
Love takes the Trump card: JACK of CLUBS Game On!!!
PLAYER Love
Final Cards
card 1 EIGHT of HEART
card 2 NINE of DIAMOND
card 3 QUEEN of DIAMOND
card 4 KING of DIAMOND
card 5 TEN of DIAMOND
card 6 JACK of CLUBS
card 7 KING of HEART
card 8 QUEEN of CLUBS
PLAYER Adrian
Final Cards
card 1 QUEEN of DIAMOND
card 2 JACK of SPADE
card 3 KING of CLUBS
card 4 SEVEN of SPADE
card 5 KING of SPADE
card 6 ACE of DIAMOND
card 7 ACE of CLUBS
card 8 NINE of HEART
PLAYER Kevin
Final Cards
card 1 JACK of HEART
card 2 TEN of CLUBS
card 3 QUEEN of SPADE
card 4 SEVEN of CLUBS
card 5 EIGHT of DIAMOND
card 6 EIGHT of SPADE
card 7 ACE of SPADE
card 8 EIGHT of CLUBS
PLAYER Lucie
Final Cards
card 1 SEVEN of DIAMOND
card 2 TEN of HEART
card 3 ACE of HEART
card 4 QUEEN of HEART
card 5 NINE of SPADE
```

```

card 6 SEVEN of HEART
card 7 NINE of CLUBS
card 8 JACK of DIAMOND
Please choose the card you want to start with
PLAYER Love
Cards
1. EIGHT of HEART
2. NINE of DIAMOND
3. QUEEN of DIAMOND
4. KING of DIAMOND
5. TEN of DIAMOND
6. JACK of CLUBS
7. KING of HEART
8. QUEEN of CLUBS
0. Exit Game
---> 6
6
40. JACK of CLUBS
LeadCard Suit:. CLUBS
LeadCard :. JACK of CLUBS
Trump Suit:. CLUBS
5. EIGHT of HEART
6. NINE of DIAMOND
7. QUEEN of DIAMOND
8. KING of DIAMOND
9. TEN of DIAMOND
10. KING of HEART
11. QUEEN of CLUBS
PLAYER Adrian
Customer: KING of CLUBS
PLAYER Kevin
Customer: TEN of CLUBS
PLAYER Lucie
Customer: SEVEN of DIAMOND
Round Cards
JACK of CLUBS
KING of CLUBS
TEN of CLUBS
SEVEN of DIAMOND
Round Points
20
4
10
0
Team 1 points: 30
Team 2 points: 0
<=====
Team 1 total points: 30
Team 2 total points: 0
<=====

```

CHALLENGES

1. We used all the things we have learned from the class in this project, although we faced some problems with the limited technology difficulties in dealing the connections of the clients and the result of the belote game.
2. The auto player always passes the trump card so the Player 1 always accepts and continues the game. When no Customer registers to play the game, the Waiters play the tournament themselves but do not pay the drink when they lose because customers cannot drink.

3. Also, four players are needed to start a game. If there are not enough players created, a bot like player would have to assume the remaining spaces to enable the game to go on.
4. Lastly, having to do lot of research about the game to understand it in order to make the game on it and start a tournament.

ACHIEVEMENTS

On reflection, even though the majority of the proposed features were completed and the project was deemed a huge success, we felt that we could have been more disciplined in keeping to the plan. Our proudest moment was when we saw the interactive console running without errors and also combining different features like interfaces, composition, inherited classes, encapsulation, file creation, and error handling among others was fulfilling upon completion

For a general project, we felt that important aspects of the research were not undertaken including interviews with pub owners and user questionnaires. This would have provided good insight into existing solutions.

This project has helped us to attain new skills as well as develop existing skills. Both soft and technical skills were attained with the main individual skill being project management which required good timekeeping and management of the workload as well as team working. The best technical skill achieves is the “advanced coding using Java”.

CONCLUSION

This draws the project to a close and reflects on the design decisions made throughout. The system achieves all of its proposed priorities. However, the initial project plan had to be modified as the project became a week behind due to underestimations on the time to implement some features. This means that some of the lower priority requirements had to be scrapped.

The project was developed under time constraints of 20 hours. Therefore the proposed features specified in the requirements were what we thought to be realistic targets. However, if more time became available, the following could be implemented;

ADDITIONAL IDEAS:

Graphical User Interface (GUI): a GUI will be adequate to do the job because the GUI could have had a more appealing look and feel.

A database could be added to allow live multi-player belote game.

In all, the project has been very challenging but it improved our problem-solving skills.

REFERENCES

https://www.youtube.com/watch?v=UatI0mdyfNU&ab_channel=BeloteMultijoueur