## SPL-1 Project Report, 2019

# 3_Guti

## Course No: SE-305

## Course name: Software Project Lab I

Submitted by

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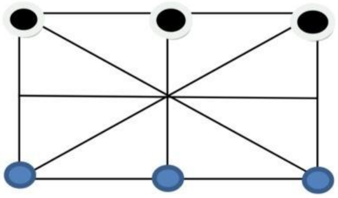
# 1. Introduction

3-Guti is a well-known village game. Many of us have played many types of games in childhood. These games are now slowly going lost. Generally the village children play this game. It’s a tricky game and a wrong move can turn the game.

In this game, there should be 3 beads of each player and they play against each other.



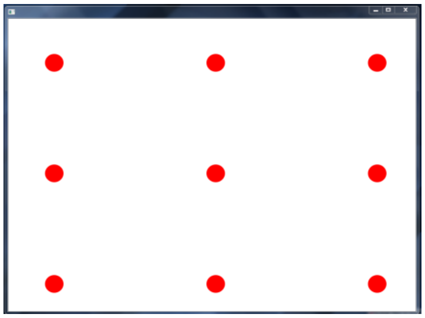
## 1.1 Background study

**For this Project I had to learn javafx and how to build GUI manually. I had to learn how to create “anchor pane”, “border pane”, “multiple stage”, “multiple scene”. I also learned how to create “vbox”, “hbox” and many other things.**

**For creating a gaming board, I had to learn how to create Circle and Line in javafx manually.**

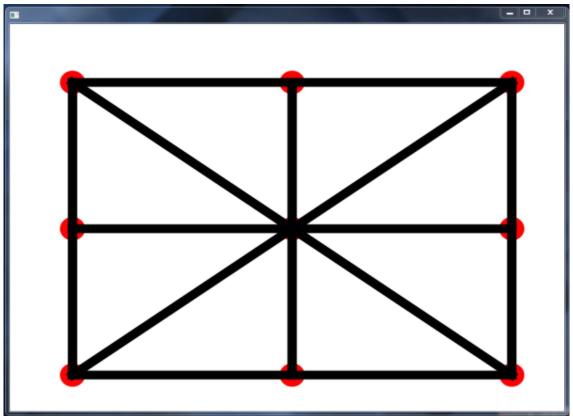
For creating Cricle, I had to-

- circle[i] = **new Circle();**
- circle[i].setCenterX(x);
- circle[i].setCenterY(y);
- circle[i].setRadius(30);
- circle[i].setFill(Color.***RED);***



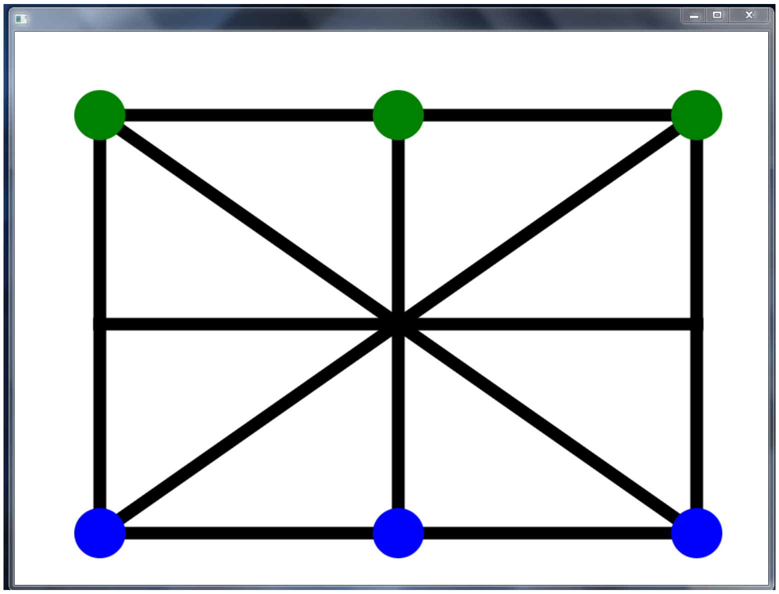
For creating Line, I had to-

- line[0][0] = **new Line();**
- line[0][0].setStartX(100);
- line[0][0].setStartY(100);
- line[0][0].setEndX(450);
- line[0][0].setEndY(100);
- line[0][0].setStrokeWidth(15);
- line[0][1] = **new Line();**
- line[0][1].setStartX(450);
- line[0][1].setStartY(100);
- line[0][1].setEndX(800);
- line[0][1].setEndY(100);
- line[0][1].setStrokeWidth(15);



**For creating Guti, I had to learn how to create Ellipse in javafx manually. I also had to set Ellipse to the position of Circle.**

```
public void drawGuti()
{
        int count=0;

        for(int k=0;k<9;k++)
        {
                if(board[k][2]!=0)
                {
                        guti[count]=new Ellipse();
                        guti[count].setCenterX(board[k][0]);
                        guti[count].setCenterY(board[k][1]);
                        guti[count].setRadiusX(30);
                        guti[count].setRadiusY(30);
                        guti[count].setStrokeWidth(3);
                        guti[count].setStroke(Color.BLACK);


                        if(board[k][2]==1)
                        {
                                guti[count].setFill(Color.GREEN);

                        }
                        else
                                guti[count].setFill(Color.BLUE);

                        getChildren().addAll(guti[count]);

                        count++;

                }
        }
}
```

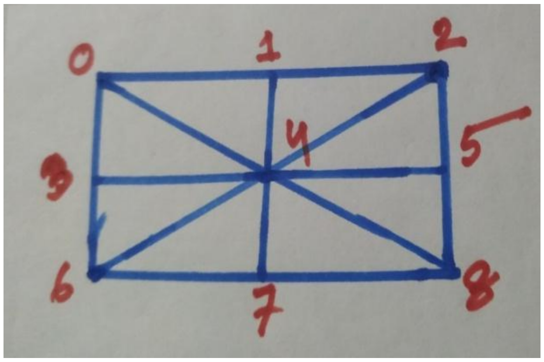


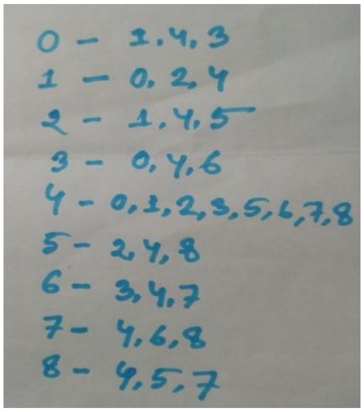
## 1.2 Challenges

**Since Ellipse's position is on the Circle's position. So, to move the Guti at the right position, I had to implement Graph. Different beads follow different paths of the Graph.**

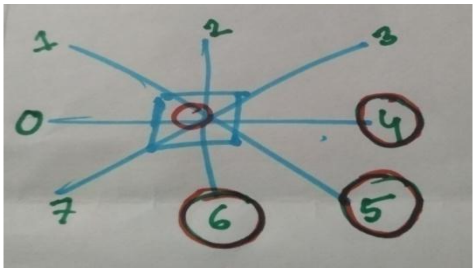
```
public void makeGraph()
{
            path[0][0]=-1;
            path[0][1]=-1;
            path[0][2]=-1;
            path[0][3]=-1;
            path[0][4]=1;
            path[0][5]=4;
            path[0][6]=3;
            path[0][7]=-1;

            path[1][0]=0;
            path[1][1]=-1;
            path[1][2]=-1;
            path[1][3]=-1;
            path[1][4]=2;
            path[1][5]=-1;
            path[1][6]=4;
            path[1][7]=-1;

            path[2][0]=1;
            path[2][1]=-1;
            path[2][2]=-1;
            path[2][3]=-1;
            path[2][4]=-1;
            path[2][5]=-1;
            path[2][6]=5;
            path[2][7]=4;
```

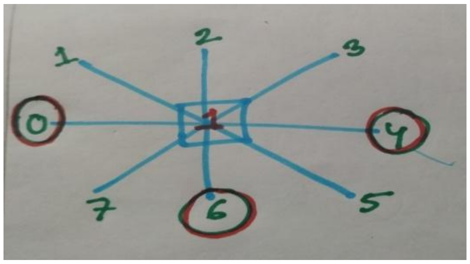
```
        path[3][0]=-1;
        path[3][1]=-1;
        path[3][2]=0;
        path[3][3]=-1;
        path[3][4]=4;
        path[3][5]=-1;
        path[3][6]=6;
        path[3][7]=-1;

        path[4][0]=3;
        path[4][1]=0;
        path[4][2]=1;
        path[4][3]=2;
        path[4][4]=5;
        path[4][5]=8;
        path[4][6]=7;
        path[4][7]=6;

        path[5][0]=4;
        path[5][1]=-1;
        path[5][2]=2;
        path[5][3]=-1;
        path[5][4]=-1;
        path[5][5]=-1;
        path[5][6]=8;
        path[5][7]=-1;

        path[6][0]=-1;
        path[6][1]=-1;
        path[6][2]=3;
        path[6][3]=4;
        path[6][4]=7;
        path[6][5]=-1;
        path[6][6]=-1;
        path[6][7]=-1;

        path[7][0]=6;
        path[7][1]=-1;
        path[7][2]=4;
        path[7][3]=-1;
        path[7][4]=8;
        path[7][5]=-1;
        path[7][6]=-1;
        path[7][7]=-1;

        path[8][0]=7;
        path[8][1]=4;
        path[8][2]=5;
        path[8][3]=-1;
        path[8][4]=-1;
        path[8][5]=-1;
        path[8][6]=-1;
        path[8][7]=-1;

}
```





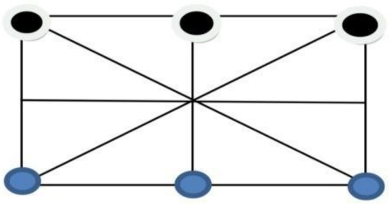
| | |
|---|---|
| 0 – | 1, 4, 3 |
| 1 – | 0, 2, 4 |
| 2 – | 1, 4, 5 |
| 3 – | 0, 4, 6 |
| 4 – | 0, 1, 2, 3, 5, 6, 7, 8 |
| 5 – | 2, 4, 8 |
| 6 – | 3, 4, 7 |
| 7 – | 4, 6, 8 |
| 8 – | 4, 5, 7 |



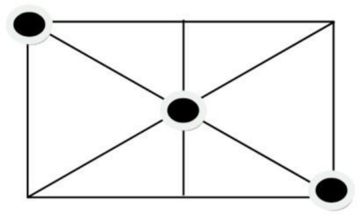


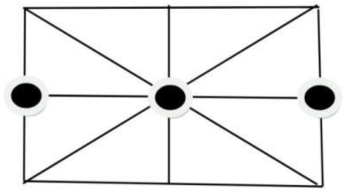
## 2. Project Overview

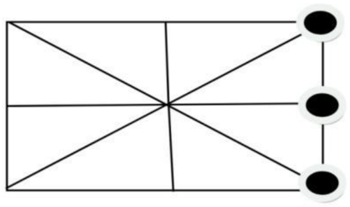
- In this project, it is planned to develop a game (generally known as ‘Teen Guti’).
- There should be 3 beads of each player in this game.
- The game will initially start like the image below:



- A player can win when all the beads are aligned in a single straight line excluding the starting line. The winning positions for player-1 may look something like these:







In this Project, Blue Guti for Player-1 and Green Guti for Player-2.

Here are the conditions for winning Blue Guti:

```
public void winCheckBlueGuti()
{
        int flag=0;

        if(board[0][2]==2 && board[1][2]==2 && board[2][2]==2)
        {
                flag=1;
        }

        else if(board[3][2]==2 && board[4][2]==2 && board[5][2]==2)
        {
                flag=1;
        }

        else if(board[0][2]==2 && board[3][2]==2 && board[6][2]==2)
        {
                flag=1;
        }

        else if(board[1][2]==2 && board[4][2]==2 && board[7][2]==2)
        {
                flag=1;
        }
        else if(board[2][2]==2 && board[5][2]==2 && board[8][2]==2)
        {
            flag=1;
        }

        else if(board[0][2]==2 && board[4][2]==2 && board[8][2]==2)
        {
            flag=1;
        }

        else if(board[2][2]==2 && board[4][2]==2 && board[6][2]==2)
        {
            flag=1;
        }

        else flag=0;


        if(flag==1)
        {
            System.out.println("Blue Win!!");
            play=false;
        }

        else ;

    }
```

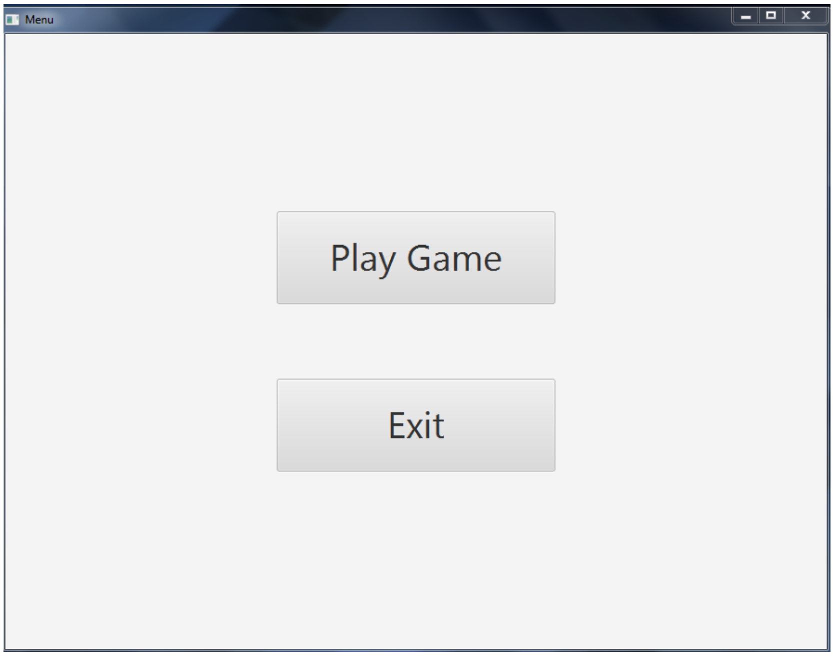
## Here are the conditions for winning Green Guti:

```
    public void winCheckGreenGuti()
    {
        int flag=0;

        if(board[6][2]==1 && board[7][2]==1 && board[8][2]==1)
        {
            flag=1;
        }

        else if(board[3][2]==1 && board[4][2]==1 && board[5][2]==1)
        {
            flag=1;
        }

        else if(board[0][2]==1 && board[3][2]==1 && board[6][2]==1)
        {
            flag=1;
        }

        else if(board[1][2]==1 && board[4][2]==1 && board[7][2]==1)
        {
            flag=1;
        }

        else if(board[2][2]==1 && board[5][2]==1 && board[8][2]==1)
        {
            flag=1;
        }
```

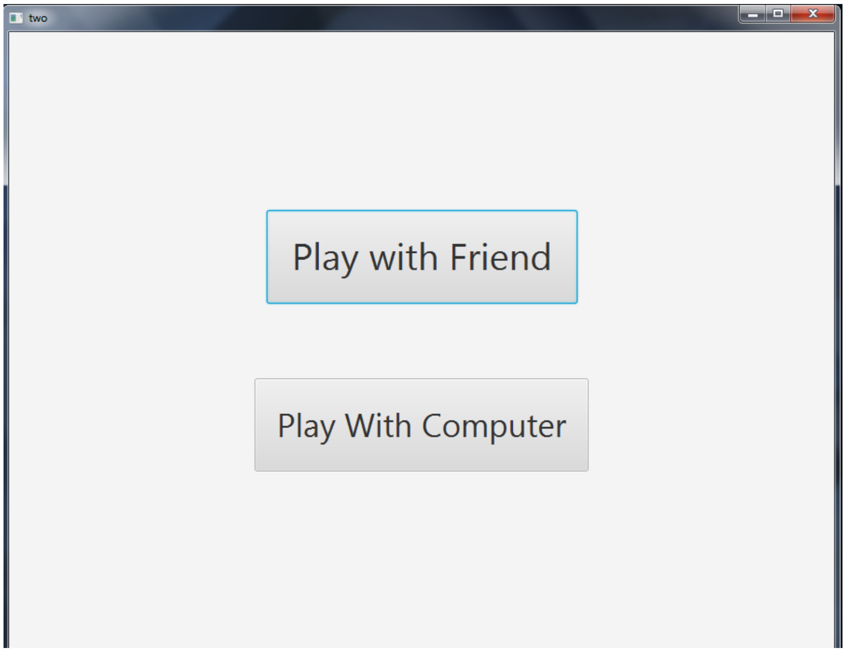
```
		else if(board[0][2]==1 && board[4][2]==1 && board[8][2]==1)
		{
			flag=1;
		}

		else if(board[2][2]==1 && board[4][2]==1 && board[6][2]==1)
		{
			flag=1;
		}

		else flag=0;


		if(flag==1)
		{
			System.out.println("Green Win!!");
			play=false;
		}

		else ;

	}
```

# 3. User Manual

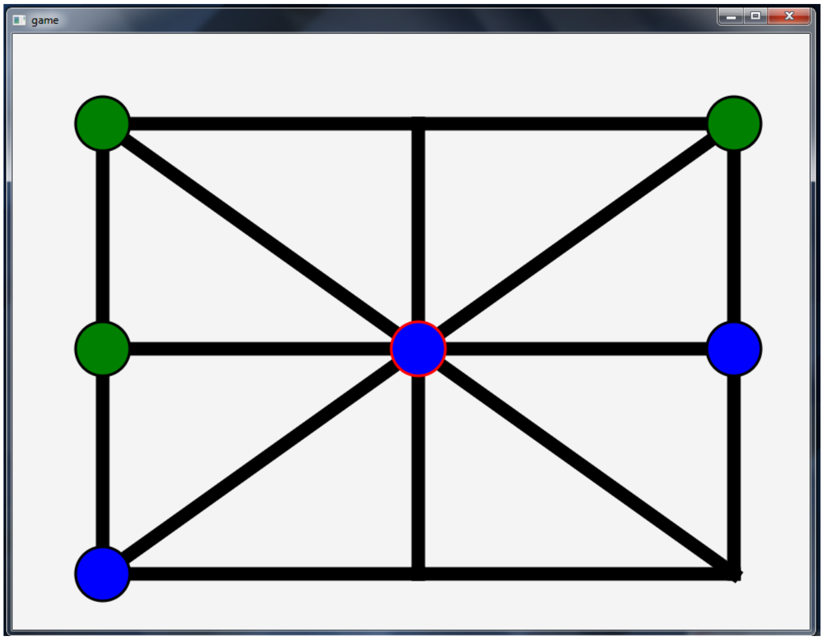
This is the first viewing stage where player can start their game.



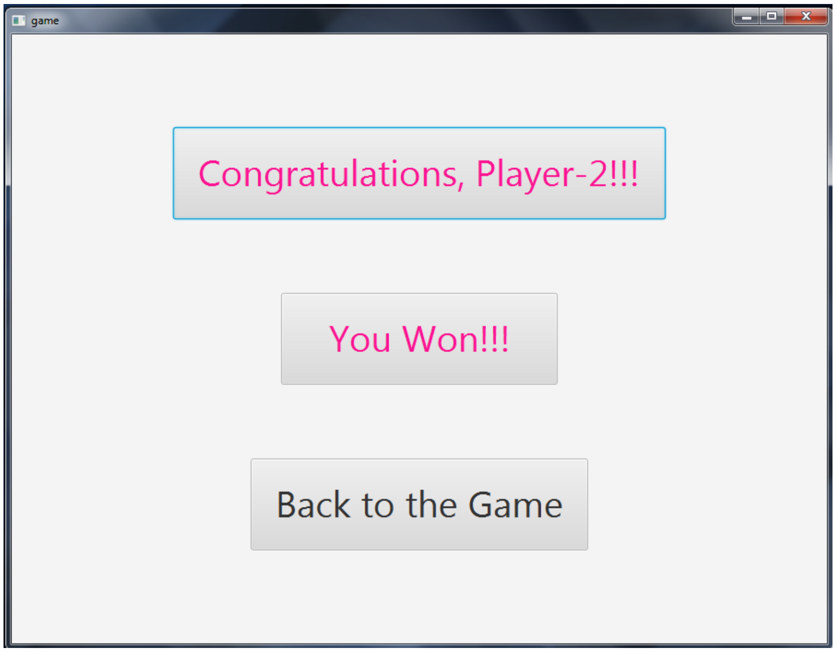
This is the stage where a player can play with Computer or play with any friend.



This is the sample scenario while they are playing.



This is the sample scenario after the game is over.



Congratulations, Player-2!!!

You Won!!!

## 4. Conclusion

This Project helps me to learn javafx deeply and improve my coding skill in java. I hope it will help me to deal with difficulties in future. This project was quite challenging and I gained a lot of experience from it. I want to thank my supervisor Dr. Mohammed Shafiul Alam Khan for guiding me a lot during this project.

## 5. Appendix

In this Project, it is planned to develop the 3-Guti game which is able to play in two players (they can play against each other) and one player can play with Computer in easy mode.

## 6. Reference

1. https://www.tutorialspoint.com/javafx/index.htm

2. https://www.youtube.com/watch?v=-fAX_idU150&list=PLrpFHrTakOxKuYA_au7QJjvv0gLPq48Us