PROJECT REPORT

PAC MAN

GROUP 18
CO 324
SEMESTER 5
11/05/2017

ABSTRACT

This project is done to implement game PAC MAN. Basically the game logic and the protocols have been implemented and the discussions about these implementations have been done under coming sections.

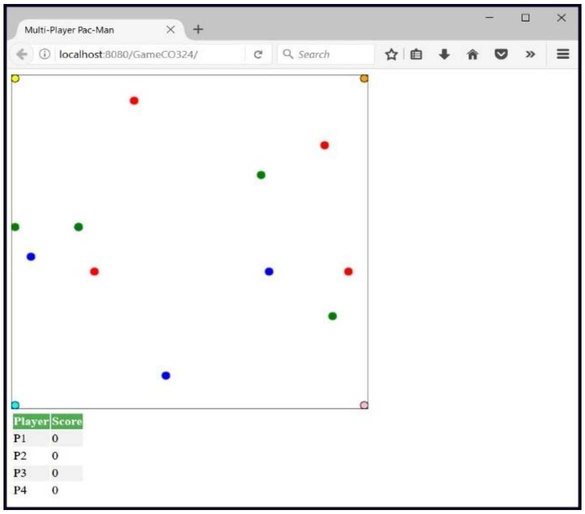
INTRODUCTION

In this project the game PAC MAN was developed and it implemented as a multi-player game with four players. A game field with 44*44 pixels used and in default mode there are 12 balls on the board (If it is needed the number of balls can be increased). These 12 balls represent in three colors Red, Green and Blue. The four players are at the four corners of the game field at the begging.

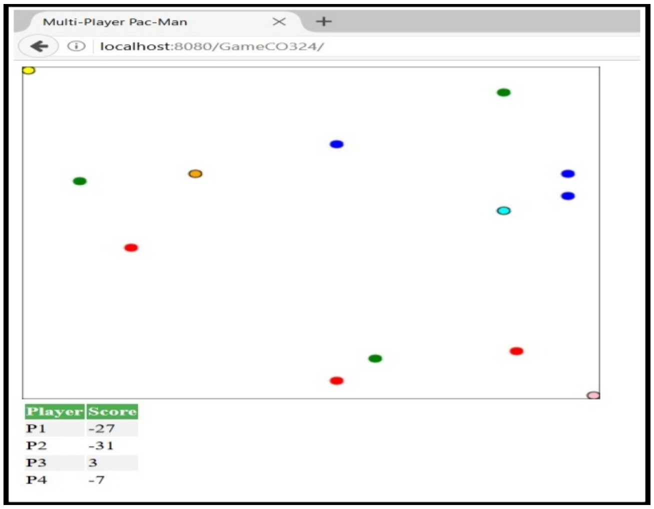
After all four players are connected the game is started and all players can move using arrow keys. If a player goes on top of a blue ball the particular player score 3 points, if it is a green ball 2 points and a player can score 1 point if it able to catch a red ball. When a player eat a ball it disappear suddenly and the relevant points are added under the relevant player. The scores of all players are displayed under the game field in each gamer's window. If two players hits together at a same time both players get reduced 1 point and both of them appears at their start corners again. At the beginning all the scores of players are equaled to zero. If a player's ball go out from the board while playing the ball of the gamer will appear at the other side (opposite direction) suddenly.

After all the balls on the board is over the game come to an end and the highest point taker at that moment is the winner. The results (points of each player) are shown in a separate HTML page and the winner also displayed.

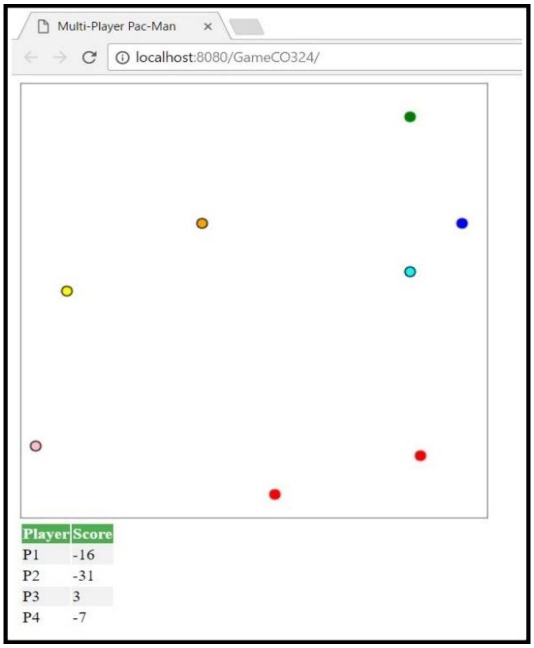
- Some screen shots of the game is given below:



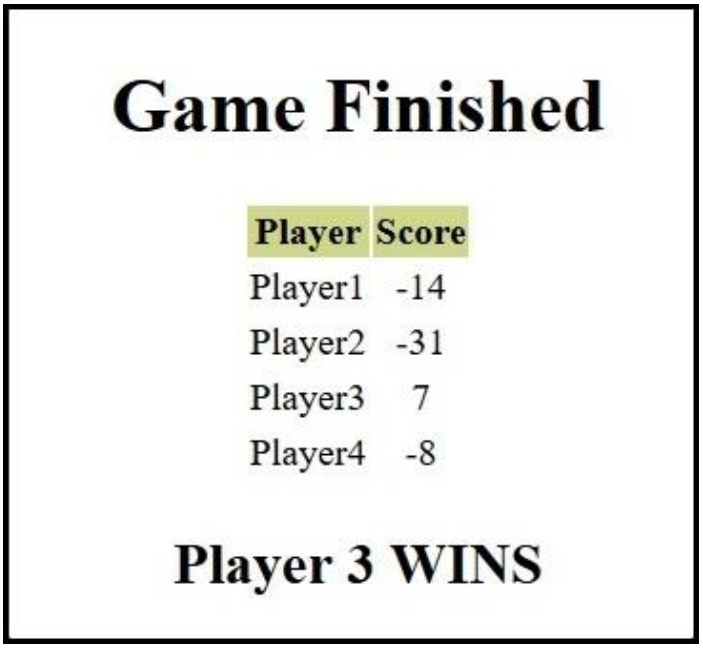
Player	Score
P1	0
P2	0
P3	0
P4	0



Player	Score
P1	-27
P2	-31
P3	3
P4	-7



Player	Score
P1	-16
P2	-31
P3	3
P4	-7



Game Finished

Player	Score
Player1	-14
Player2	-31
Player3	7
Player4	-8

Player 3 WINS

IMPLEMENTATION OF THE GAME

The protocols and the game logic was implemented separately in classes and basically the servlet handled the protocols and the both ‘board’ and the ‘players’ java classes handled the game logic separately for board side and the player side.

- Gamehandler.java

This is the servlet implemented for this game project. It controls the ‘doGet’ and ‘doPost’ methods. The purpose of the ‘doGet’ method is to display the characters at the front end according to the interruptions happen at the back bone.

When one player doing movements all other connected players can see it because it was handled in the ‘doPost’ method by adding ‘board.notifyAll()’. Also any player can’t move or start the game until all four players are connected. This method uses the methods of both board and players classes for updates.

- board.java

In this method first the positions (X and Y coordinates) of the board balls are selected randomly. The arrangement of the board balls are unique for a particular game and the same arrangement is shown for all connected players. A Hash map structure was used to store the coordinates data of the board balls and the points per one ball also added to the same Hash map. This was done by ‘DotMap()’ method in the board class. A method to remove dots when a player move on top of it also written inside the board class and it is called in the players class when needed.

- Players.java

In the players class first the marks and the X and Y coordinates of the four players are initiated and the marks are zero at the beginning and each player at a corner of the board. Then in the update method the movements of the players are handled. It recognize which arrow key is pressed and do the movement according to it. If a player’s ball go outside the game field this method take the ball inside the game field again from the opposite side. From the ‘Touch()’ method players get reduce by one point if two or more players collide at a same time. The points update by the ‘updatemarks()’ method and inside that method the remove dots method was called to remove the board ball which collide with the player’s ball. The ‘remove_dots()’ method make the needed ball’s X coordinate to 1000 and soon it disappears.

DISSCUSSION

When doing this implementation a suitable data structure should be used to store data which are updated from java classes. Hash Map is the most suitable data structure for this and user can easily add or remove elements. Also when taking the values or when accessing the data Hash map is easier than other methods.
As well as JSON is more compact and can be easily loaded in JavaScript therefore in this case use JSON to parse the values and updated position of the player.

REFERENCE

- https://www.tutorialspoint.com/json/json.html
- https://www.tutorialspoint.com/json/servlets/
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