**CSE 1142 - COMPUTER PROGRAMMING II**

**TERM PROJECT**

**“Sliding Tiles”**

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**Problem Definition**

There are sixteen tiles in the game.These tiles can be different each other.Types of tiles:starter,end,empty,empty free,pipe static and curved pipes.

Starter,end,pipestatic,pipe’s properties is specified as horizontal or vertical.Empty none tiles hasn’t got these properties.

The ball is in the starter point.If the puzzle is completed,ball starts to move to the end point.Starter,end and pipestatic tiles can not move the around.They are static position.Only the tile which is around the empty free tile,can be move.They can move horizontal or vertical.

If the user wins the part,the next level shown on the next stage.

**Implementation Details**

**Uml Diagram**

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| **Main** |
| **+moveNumber : int**  **+levelNumber : int**  **+buttonGray : Button**  **+buttonStarter :Button**  **+buttonPipeStatic :Button**  **+moves : Button**  **+level :Button**  **+playSound : Button**  **+stopSound :Button**  **+buttonArray : Button[][]** |
| **+start(primaryStage: Stage) : void**  **+Drag(buttonArray[][] :Button,row : int,column : int,root : GridPane,buttonGray : Button,buttonEnd : Button,buttonStarter : Button,buttonPipeStatic Button) : void**  **+control(button : Button,buttonStarter : Button,buttonEnd : Button,buttonPipeStatic : Button) : boolean** |

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| **TilesAndPipes** |
| +id :String  +type:String  +property:String |
| **+**starter(id : String, property String) : Button  + end(id : String, property String) : Button  + pipe(id : String, property String) : Button  + pipeStatic(id : String, property String) : Button  + empty(id : String, property String) : Button  +row(id : String) : int  +column(id : String) :int |

**DESİGN OF CODE**

1. We generated a tilesAndPipes class to hold and create our tiles.All tiles have their own methods and these methods includes image URL’s,sizes,border colors.
2. According to tile ID’s are defined their rows and columns in tilesAndPipes class.
3. We generated a Main class to create stage and read input files.
4. We converted commas to blank spaces in order to read the file with using while(has.Next()) loop.
5. The information that the program took from the file is processed and buttons are created in tilesAndPipes class and Main class located the buttons in buttonArray array.
6. We set the emptyFree,end,starter,pipeStatic tiles non-dynamically.
7. Each of elements of buttonArray is added to gridPane.
8. Each of elements of buttonArray is activated with calling the Drag method.
9. We added quit,start,moves,level,play and stop buttons to bigPane pane.
10. In Drag method,according to their locations we swapped the buttons with emptyFree buttons and removed old positions from root Pane,and added new ones.
11. We wrote a code for moves in every if statement.
12. We added a control method to check the tile which is dragged is starter,end or pipeStatic.It returns true or false.

**GROUP DIARY**

Because of the midterms,we studied from 13th to 19th April,then we decided to begin to the Project.

19.04.2019-We read the Project document and created a draft for our main plan , searched for how to do.We implemented a gridpane -to hide box in it- and we decided a different class to keep and design tiles and pipes-our aim was decreasing the code crowd-.

21.04.2019-We finished the design of our boxes base of rectangles,standed over the parts of adding images and moves.We handled taking inputs from files,with removing the commas and writing a new input file to our changes.

24.04.2019-Images added to rectangles and resized.Images edited.We tried to find a solution to adding buttons to array.

29.04.2019-Array problem is solved,printed the images to screen.

31.04.2019-We designed buttons but it couldn’t move. To find a solution we went to Research Assistant Serap,then we thought about our problem.

Remaining days-We went to Research Assistant Gozde and tried to look for a way out for our move problem.We searched many times on internet to find a solution of button move problem.We tried to solve button moving problem and we added some additional features to our project.

To do project as a team,we went to library and used teamViewer application.

**What we completed?**

-input file reading

-creating the game board

-displaying buttons

-calculating number of moves

**-**starter,end,pipestatic buttons immovable

**What we cant completed?**

-moving buttons 1+ times

-win situation

-animation

**What we struggled?**

We struggled with buttons moves,we tried to swapping arrays and then move the buttons but it doesn’t worked.Because of this problem,we couldn’t complete win and animation parts.

**Additional Functionalities**

1-We added the start button.It provides to enter a game.

2-We added the quit button.It provides to exit the game.

3-We added the sound in the game.When play button is pressed game song starts. When stop button is pressed game song stops.

**Test Cases**

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|  | First,Start Stage is shown the screen.  If the user click the “Start Game” button,the game is started.If the user click the “Quit” button ,the stage is closed. |
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| The “Moves” button shows the number of moves. | The “Level” button shows the number of levels. |

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|  | When the user click on the“Play” button  game sound starts.  When the user click on the”Stop” button game sound stops. |
|  | If the user click the “Quit” button ,the game is closed |

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| When the tiles moves,moves number increases +1. | |

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| Starter,End,PipeStatic tiles can not move in the game. | | |