**CSE 1142 - COMPUTER PROGRAMMING II**

**TERM PROJECT**

**“Road of Tiles”**

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**Problem Definition**

The main goal of the game is to bring the tiles to the right place and complete the path of the ball.

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, vertical,01,10,11 or 00.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  +moves : Button  +level :Button  +playSound : Button  +stopSound :Button  -tilesStart : ArrayList<Tile>  -tiles : Tile [][]  +i , j :int  -tilePressedX : double  -tilePressedY : double  -tileReleasedX : double  -tileReleasedY : double  +db : Dragboard  +clipboard , cb : ClipboardContent  -win : boolean  -file : FileReader  -levelFileNames : String[] |
| +start(primaryStage : Stage):void  +findTile(x : double,y : double,find : Tile[][]):Tile  +change(pressed : Tile,released : Tile, tileArray Tile[][]):Tile[][]  +win(winTiles : Tile[][],levelNum : int):boolean |

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| **Tile** |
| -id : int  -type : String  -property : String |
| +Tile()  +Tile(id : int,type : String,property : String)  +getImage():Image  +start(primaryStage : Stage) : void  //Getters and setters |

**How our code executes?**

First of all,we generated a class of Tile.Tile class takes id,property and type variables and returns the image with adjusted sizes and we specified the features of each image.We hold the values that taken from the level input file.

In Main method,for our opening screen,we adding Start And Quit buttons and then added them to the scene.

Then,we read the file,without commas,that files can be chosen from user input.Line by line,we added tiles with their features to the tilesStart arraylist.After that,we converted one-dimensional tilesStart arraylist to 2-D tiles array to draw the gridPane easily.

We created a draggable arraylist.For showing the images we added them to pane and to make them draggable we add them to the draggable arraylist.

We used DragEvent from JavaFX2 to drag images.In the for loop we declared source and target imageViews from draggable arrayList.If the type of the image is End,PipeStatic or Starter it cannot move.In setOnDragDetected,we took the coordinates of pressed tile from the event.getScene method.In setOnDragDropped, we took the coordinates of released tile from the event.getScene method.We added pressed and released tiles to change arraylist to swap them in the change method.In setOnDragDone,the move of the tiles are completed.We are checking the win situation with win() method.If the return value is true,then show the Congrats label to the user.

The rest of the code, we added quit,start,moves,level,play and stop buttons to bigPane pane,then show them in window.

In findTile method,we trying to find the place of images in tiles Array with the coordinates we get.

In change method,we swapping contents of released and pressed tiles in tiles Array.

In win method,we check the win situation non-dynamically.

Finally,our code launchs.

**What we completed?**

-input file reading

-creating the game board

-displaying tiles

-calculating number of moves

**-**starter,end,pipestatic tiles are immovable

-moving tiles

-win situation

**What we cant completed?**

-passing to the next level

-animation

**What we struggled?**

We tried to pass next level but we couldn’t do it.We have not enough time for animation issue.

**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.

4-After level completed,we added a congrats message.

**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. |
|  | We can show each level,and according to moves move is increasing,and level value is changing according to the level. |
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|  | At the end of the level,this message shows. |