CMPE 230 Systems Programming Project 3

1.Problem Description:

Aim of this project is to implement a card-matching application using QT. There are total of 30 cards and the user has 180 seconds to finish the game. Moreover there are extra 2 buttons which are New Game which starts another game, and quit. Lastly the score is also displayed in the game.

2. Implementation Details:

There are 3 classes in this project. Names and details are as follows:

✓ MainWindow

This is the main class. All necessary objects are created here. Firstly a game object is created using QApplication. Then an instance of QWidget is formed which contains QVBoxLayout that has QGridLayout. After that 30 QPushButton objects, which are used for cards of the game, are invoked and named as their index. Later all necessary connections are done, required widgets are added into grid. Lastly the QSpacerItem is added to vbox and the QWidget is shown.

✓ Control

This is the most important class which handles all the game functions. It stores the cards as a vector, total matched duos in score as an int, and has several boolean functions to maintain the flow of the game. There are 3 slots in this class.

- cardPressed is used for handling events which occur when a card is pressed. Using the booleans defined current situation of the board is grasped and the necessary updates are done.
- In delay slot when 2 cards are revealed the program waits a little for the user to see the cards. If they match they are replaced with empty string, else they are replaced back to "?". Also this slot checks whether game is over or not.
- Last slot newGamePressed is used to start a new game using resetCards function which resets booleans, replaces all the cards to "?" and shuffles them.

Apart from there slots there is a signal called stopTimer() which stops the timer.

✓ Timer

This class is implemented for the time displayed in the game. It basically stores the QTimer, a counter which starts at 0 and increases 1 in every second passed. Also it includes a label which stores a string that contains the current counter value. There are 3 slots in this class as well. First one is timerslot, this slot is used for incrementing the time. Furthermore if the time elapsed exceeds 180 seconds then it ends the game and asks the user if s/he wants to play another game or exit. Second one is newGameClicked which used for resetting the time for the new game. Third and the last one is won which is used for freezing the time when the game is won. Also there is a signal called timesUp() which is emitted when the timer reaches 180 seconds.

3. Conclusion:

Program runs as expected and does not crash. The delay required for necessary situations are considered and the program is adapted respectively. Project satisfies all the things listed in CheckList.

Project is implemented by :

Hakan BALIK & İrem Zeynep Alagöz

2018400177 – 2018400063