Jacob Lin

A290 C#

Final Proposal

* Functions
  + Setup: This is called in the initialization phrase. It will load high score data from the program directory if there exists one.
  + Start Over: A start over method will initialize all the visual component. If the user press the start over button when a game is ongoing, the game will be abandoned and the mine grid will be initialized according to the current difficulty.
  + Explode: This is called whenever the player digs a tile has mine in it. It will terminate the game and reveals the whole mine grid, stop the timer and pop up a warding dialog indicates that the player has lost the game.
  + Expand: This is called when the player digs a tile that has no mines around the it. It will be called recursively until a tile is near a mine.
  + Dig: this is a dynamically defined method for a tile. It needs to change the appearance of the tile when the player digs it or called Explode() method if it contains a mine.
  + Mark: this is also a dynamically defined method for a tile. It will mark the tile as a mine and the appearance will change accordingly.
  + endGame: this is called after the player marks the last mine and marks all mines correctly. It will stop the timer, send a pop-up window indicating victory and record a high score if necessary.
  + changeDifficulty: This is called when the user changes the difficulty level. The current game will be abandoned and the game will be initialized according to the new difficulty level.
* Invisible Objects:
  + Timer: A timer is needed to record how long the player takes to finish the game
  + The fan shape difficulty selector is hidden by default and only shows when the user presses the difficulty button.
* Events:
  + Buttons needs to respond to mouse left click and right click events. In my tile grid, these event handlers will be implemented dynamically in the constructor of tile buttons.
* External sources:
  + Images with numbers in customized font will be used to represent the score.
  + An exploding sound will be played when the player digs a tile with mine.
  + A congratulation sound may be played after the player marks all mines correctly
* Design
  + All buttons will be in flat appearance and cannot be focused, because the default blue frame around buttons are quite ugly.
  + Quit button will have a special color as background color to prevent misclicks.
  + Players may be able to change the theme of the whole app, if I have time after implementing all necessary functionalities.
  + Marked tiles, undug tiles and dug tiles will have different background for the players to differentiate them.