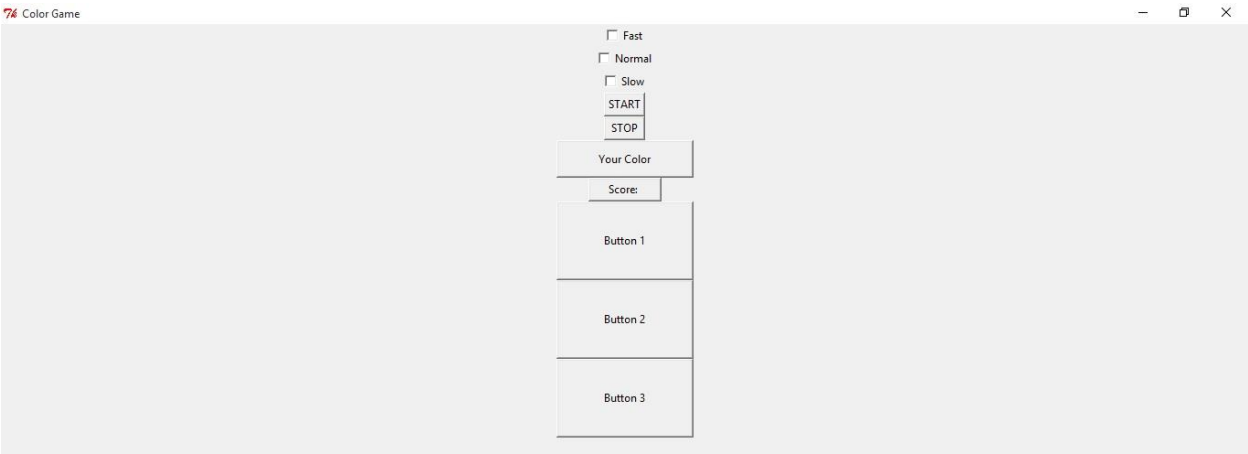
ENGR 102 Programming Practice

Practice Session (Week 3)

In this week, you are going to develop a simple color game using what you have learned so far. Please read the instructions carefully.

Part 1 (15 minutes): In this part, you are going to develop the game interface, for which a screenshot is provided below. Mainly, at the top there will be three check buttons with labels 'Fast', 'Normal', and 'Slow', which will set the game speed. Next, there will be start and stop buttons, which will start and stop the game. The next button will be used to denote the color that is randomly assigned to the player by the computer. Under the player color button, there will be a button which will be used to display the score of the player as its label. At the bottom, there will be three buttons which will be colored randomly during the game, and their labels will be set to a randomly selected value between 1 and 100.



Part 2 (45 minutes): In this part, you are going to code the game logic. When the start button is pressed, the game will assign a random color from list [red, blue, green] to the player. The button with text "Your color" should be colored with this randomly selected color. Then, Button1, Button2, and Button3 will be randomly colored with colors from the same list. Also, each of these buttons' text will be set to a random number between 1 and 100. The player's goal is to click on the button that matches his color and has the highest value (in case there are multiple buttons matching to his color) before the buttons are assigned new colors and values. Button colors and values will be updated at every X seconds where X is 0.5 if speed is set to fast, 1 if speed is set to normal, and 2 if speed is set to slow. If the user clicks on the right button before button colors and values are updated, his/her score will be increased by 10. Otherwise, his/her score will be decreased by 5. The label of score button will be updated accordingly. Clicking on stop button will stop the game, and clicking on start button will start the game from scratch as explained above.

Please see the animated gif posted on LMS that shows how the game will look like during active play.

Implementation Notes:

Some of the things that we have not covered in the class, but you may need in this exercise are listed below:

- To update the properties (e.g., text, color, etc.) of any widget (e.g., button), you need to use config method of a widget object. As an example, the following code updates the background color of a previously created button object to red:

```
button.configure(bg = 'red')
```

- After updating the colors and text of the bottom three buttons, you need to call update_idletasks method on the main class with self.update_idletasks()
- In order to set the time between coloring updates, you may use after method. Please see the following link for an example: https://stackoverflow.com/questions/2400262/how-to-create-a-timer-using-tkinter
  Here, you cannot use time.sleep() as it will freeze the whole application including your GUI.

Good luck ☺