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AUCSC 111

Oct/27/24

Lab 4


```python
import tkinter as tk

def click(event):
    text = event.widget.cget("text")
    if text == "=":
        try:
            expression = screen_var.get()
            result = eval(expression)
            screen_var.set(result)
        except Exception as e:
            screen_var.set("Error")
    elif text == "C":
        screen_var.set("")
```

```python
    else:
        current = screen_var.get()
        screen_var.set(current + text)


root = tk.Tk()
root.title("Basic Calculator")


screen_var = tk.StringVar()
screen_var.set("")


screen = tk.Entry(root, textvar=screen_var, font="Arial 20 bold",
borderwidth=4, relief="ridge", justify="right")
screen.grid(row=0, column=0, columnspan=4, ipadx=10, ipady=10)



buttons = [
    "7", "8", "9", "/",
    "4", "5", "6", "*",
    "1", "2", "3", "-",
    "C", "0", "=", "+"
]


row_val = 1
col_val = 0


for button_text in buttons:
    button = tk.Button(root, text=button_text, font="Arial 18", padx=20,
pady=20)
    button.grid(row=row_val, column=col_val, padx=5, pady=5)
    button.bind("<Button-1>", click)
    col_val += 1
    if col_val > 3:
        col_val = 0
        row_val += 1
```

Stopwatch questions:

1. Assigns the window of tkinter to root
2. "Time_elapsed" is use to keep time in seconds and "is_running" is used to start or stop the watch
3. - Function "Start" looks for Variable "is_running" and used it in the if statement, if "is_running" is False then it set "is_running" to True then run "update_time()"
   - The "start()" function chekees check if "is_running" is True if not then it will set to True
4. - "update_time()"function is used to update the time
   - the line 20 "root.after(1000, update_time)" runs the function "update_time()" after 1000 ms
5. "hours = time_elapsed //3600"
   > Gives hours by using Floor division and is divisioned by 3600 because "time_elapsed" is in seconds

   "minutes = (time_elapsed //60) % 60"
   > "Time_elapsed" is first divided by 60 to get the total number of minutes and to get the remainder "% 60" is used

   "seconds = time_elapsed %60"
   > The "% 60" operator calculates the remainder of time_elapsed when divided by 60

   We use "//" and "%" to get a whole number
6. - Function "Stop" looks for Variable "is_running" and used it in the if statement, if "is_running" is True then it set "is_running" to False
   - Its important to have the "is_running" check in the "stop" function because the "Stop" button can be clicked multiple times
7. Function "Reset" looks for Variable "is_running" and "time_elasped" then "is_running" is set to "False" and "time_elasped" set to 0. The Variable "time_label" is configured to "00:00:00" and put as a label
8. - the "command=start" part runs the function "Start"
   - The Grid uses rows and columns also padding to set the locations of numbers
9. - "root.mainloop()" loops the code and so the window "root" can stay open
   - The window would close