CMPE 496
HUMAN COMPUTER INTERACTION

SPRING 2022 – HOMEWORK 1

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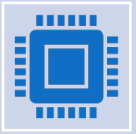2018400045

HOMEWORK DESCRIPRION

A simple object-oriented drawing editor that allows a user to create, move and erase squares, circles and lines in an interactive graphics. The program illustrates

- how to do simple object-based interactive graphics in java, VB,..
- how to use a class

MY IMPLEMENTATION

✓ Python 3.8

Tkinter: GUI framework that's built into the Python standard library

https://docs.python.org/3/library/tkinter.html

Idlelib: Tool for displaying tooltips

HOW THE APP WORKS

I create a widget of Tk that is the main window of an application.

I create a Thinkter canvas instance that is used to draw.

I create instances of 2 classes defined by me: Draw and DrawingEditor, with the canvas instance.

CLASS IMLEMENTATIONS

```python
# class that defines the editor with whiteboard, tools, icons and UI
class DrawingEditor:
    def __init__(self, whiteboard):
        self.whiteboard = whiteboard
        self.current_tool = None
        # define icons for the tools
        self.icons = [...]


        # define TK labels for the tools
        frame = Frame(width=50)
        for button in [COLOR_PICKER, LINE, SQUARE, CIRCLE]:...
        # pack the labels into a frame on the left-hand side of the editor
        frame.pack(side='left', fill='y', pady=5)


    # open color dialog and ask for color, change editor's current color
    def choose_color(self, event):...


    # change editor's current color
    # update the previous and new tool's buttons' appearance
    def choose_tool(self, event):...
```

```python
# class that defines the drawing actions on the canvas with a tool, at a coordinate x,y
class Draw:
    def __init__(self, canvas):
        self.canvas = canvas
        self.tool = LINE
        self.color = '#000000'
        self.item = None
        self.coordinates = (None, None)
        self.canvas.bind('<Button>', self.click)
        self.canvas.bind('<B1-Motion>', self.draw)

    def draw(self, event):...

    def click(self, event):...

    def choose_color(self, color):...

    def choose_tool(self, tool):...
```
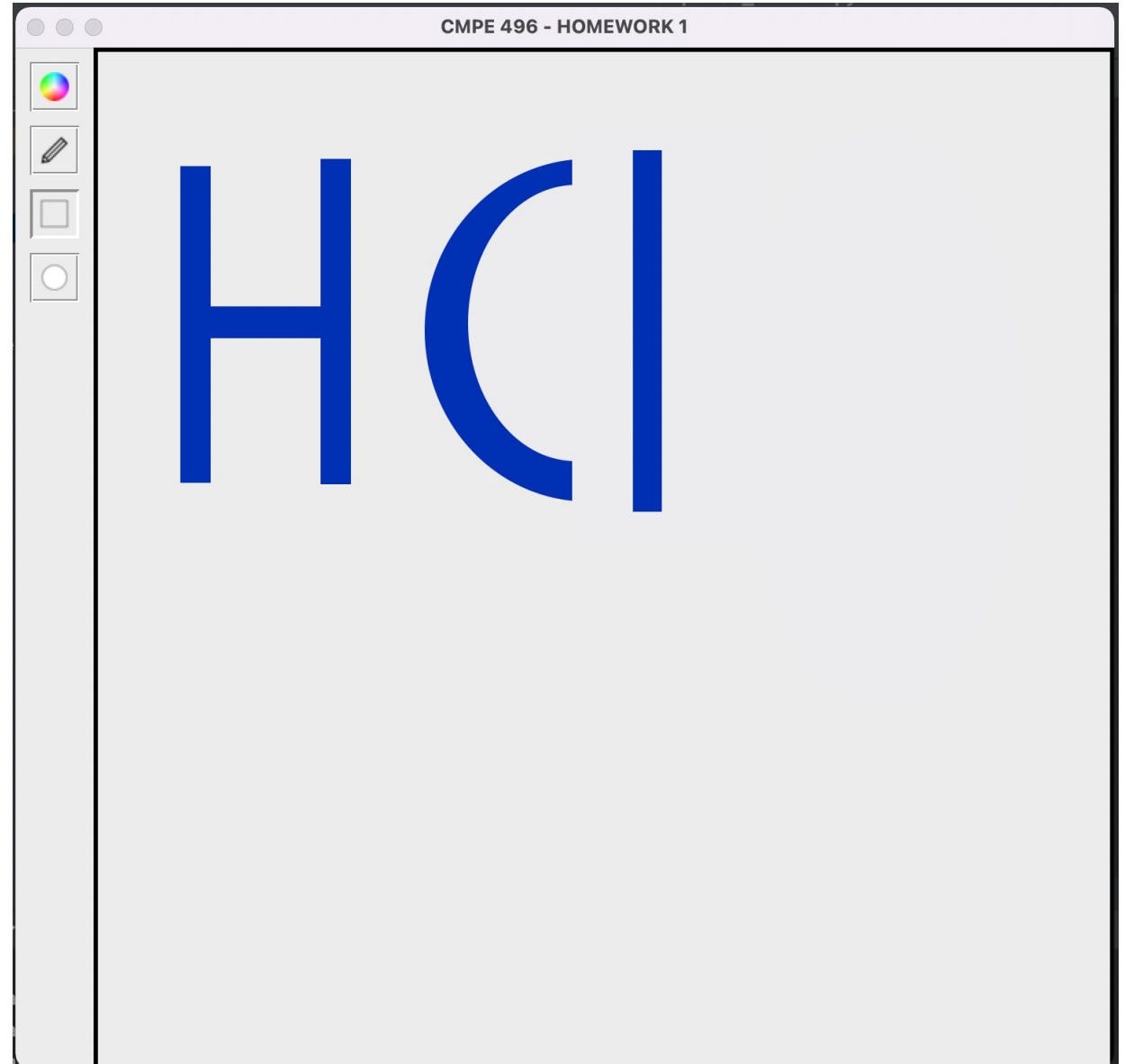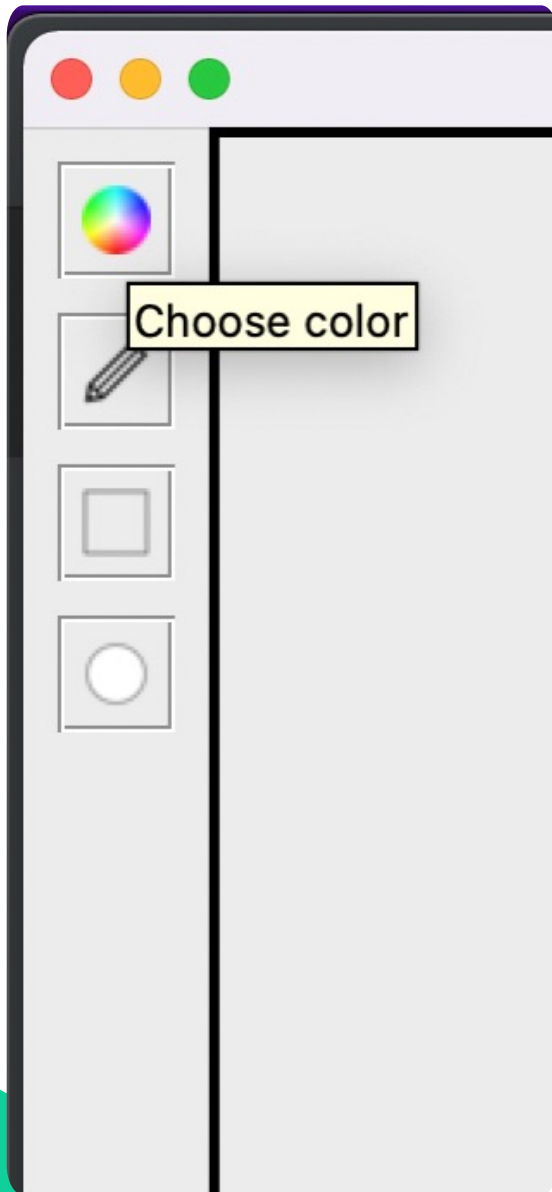
EDITOR

Aspects I paid attention to:

- Simple to use and learn

- Basic interface

- Plain

- One-click experience

HCI

FUNCTIONALITIES

Choose color

- As indicated in tooltips:
- Select color
- Draw lines
- Draw rectangles
- Draw circles

REFERENCES

- https://docs.python.org/3/library/tkinter.html
- https://realpython.com/python-gui-tkinter/
- https://docs.python.org/3/library/idle.html
- https://www.pythontutorial.net/tkinter/
- https://zetcode.com/tkinter/drawing/
- https://www.geeksforgeeks.org/python-tkinter-canvas-widget/

THANK YOU