|	**Lembar Kerja Mahasiswa** **Mata Kuliah Pengolahan Citra Digital Praktik (203311-20)** **Program Studi Informatika** **Fakultas Sains & Teknologi – Universitas Teknologi Yogyakarta**

Identitas Mahasiswa

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Kelompok Prak	**Kel. I**

Soal 1.

Berdasarkan demo di kelas, buatlah GUI untuk fungsi *convert to grayscale* dan *convert to binary* sehingga pengguna dapat menggunakan fungsi dengan lebih mudah.
Adapun layout GUI seperti pada gambar di bawah!
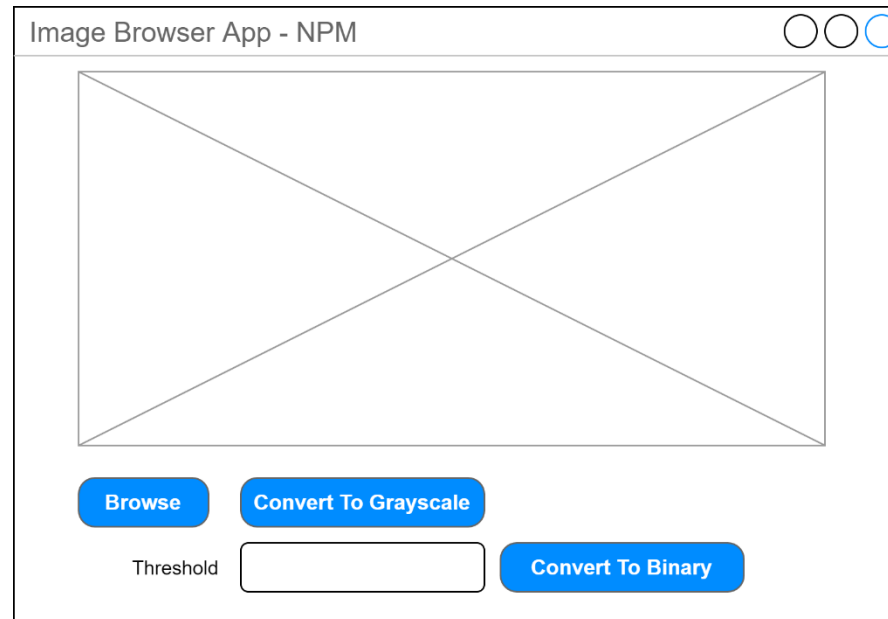
Hasil Script

//tuliskan script python Anda di sini

```
# 5200411488 - Arieska Restu Harpian Dwika

import cv2
```

```python
import numpy as np
import matplotlib.pyplot as plt
import matplotlib.image as mpimg
from tkinter import *
from tkinter import filedialog
import os
import tkinter as tk
from PIL import Image, ImageTk


def browseImage():
    global fln

    fln = filedialog.askopenfilename(initialdir=os.getcwd(), title="Select Image File",
                                     filetypes=(
                                         ("JPG File", "*.jpg"),
                                         ("PNG File", "*.png"),
                                         ("All Files", "*.*"))
                                     )

    img = Image.open(fln)
    imgTk = ImageTk.PhotoImage(img)
    lblImg.configure(image=imgTk)
    lblImg.image = imgTk

def rgb2Gray():
    global fln

    img = Image.open(fln)

    for x in range(img.size[0]):
        for y in range(img.size[1]):
            r,g,b = img.getpixel((x,y))
            r = (r * .299)
            g = (g * .587)
            b = (b * .114)
            sum = int((r+g+b))
```

```python
                img.putpixel((x,y), (sum, sum, sum))

    imgTk = ImageTk.PhotoImage(img)
    lblImg.configure(image=imgTk)
    lblImg.image = imgTk

def rgb2BinaryBtn():
    global fln

    imgBinary = Image.open(fln).convert('L')
    pxBinary = imgBinary.load()

    horizontal = imgBinary.size[0]
    vertical = imgBinary.size[1]

    for x in range(horizontal):
        for y in range(vertical):
            if pxBinary[x, y] < int(thresh.get()):
                pxBinary[x, y] = 0
            else:
                pxBinary[x, y] = 255

    imgTk = ImageTk.PhotoImage(imgBinary)
    lblImg.configure(image=imgTk)
    lblImg.image = imgTk

    sliderBinary.set(thresh.get())
    thresh.delete(0, END)

def rgb2BinarySlider(e):
    global fln

    img = cv2.imread(fln, cv2.IMREAD_GRAYSCALE)
    thresh = int(sliderBinary.get())
    ret, imgBinary = cv2.threshold(img, thresh, 255, cv2.THRESH_BINARY)

    imgTk = opencv2Tkinter(imgBinary)
```

```python
        lblImg.configure(image=imgTk)
        lblImg.image = imgTk

def opencv2Tkinter(img):
    imgPill = Image.fromarray(img)
    imgTkinter = ImageTk.PhotoImage(imgPill)
    return imgTkinter


if __name__ == '__main__':
    root = Tk()
    fln = None

    frmBtn = Frame(root)
    frmBtn.pack(side=BOTTOM, padx=15, pady=15)

    lblImg = Label(root)
    lblImg.pack()

    btn = Button(frmBtn, text="Browser Image", background="lightblue", activebackground='#0275D8', padx=2, pady=2, font="Normal 10",cursor="hand2", command=browseImage)
    btn.grid(row=0, column=0)

    btnGray = Button(frmBtn, text="Convert to Grayscale", background="lightblue", activebackground='#0275D8', padx=2, pady=2, font="Normal 10",cursor="hand2", command=rgb2Gray)
    btnGray.grid(row=0, column=1)

    btnExit = Button(frmBtn, text="Exit", background="#F47174", activebackground='red', padx=4, pady=2, font="Normal 10",cursor="hand2", command=lambda: exit())
    btnExit.grid(row=0, column=2)

    txtBinary = Label(frmBtn, text="Threshold", font="Normal 10")
    txtBinary.grid(row=1, column=0)

    thresh = Entry(frmBtn, font="Normal 10", bd=3)
    thresh.grid(row=1, column=1)
```

```python
    btnBinary = Button(frmBtn, text="Convert to Binary", background="lightblue", activebackground='#0275D8', padx=2, pady=2,
font="Normal 10",cursor="hand2", command=rgb2BinaryBtn)
    btnBinary.grid(row=1, column=2)

    sliderBinary = Scale(frmBtn, from_=0, to=255, orient=HORIZONTAL, length=255, cursor="hand2", command=rgb2BinarySlider)
    sliderBinary.grid(row=2, column=0, columnspan=5)



    root.title("Image Browser App - 5200411488")
    root.geometry("1280x720")
    root.mainloop()
```

Hasil Running – setelah button Convert To Grayscale di-klik

//paste-kan tampilan aplikasi Anda di sini
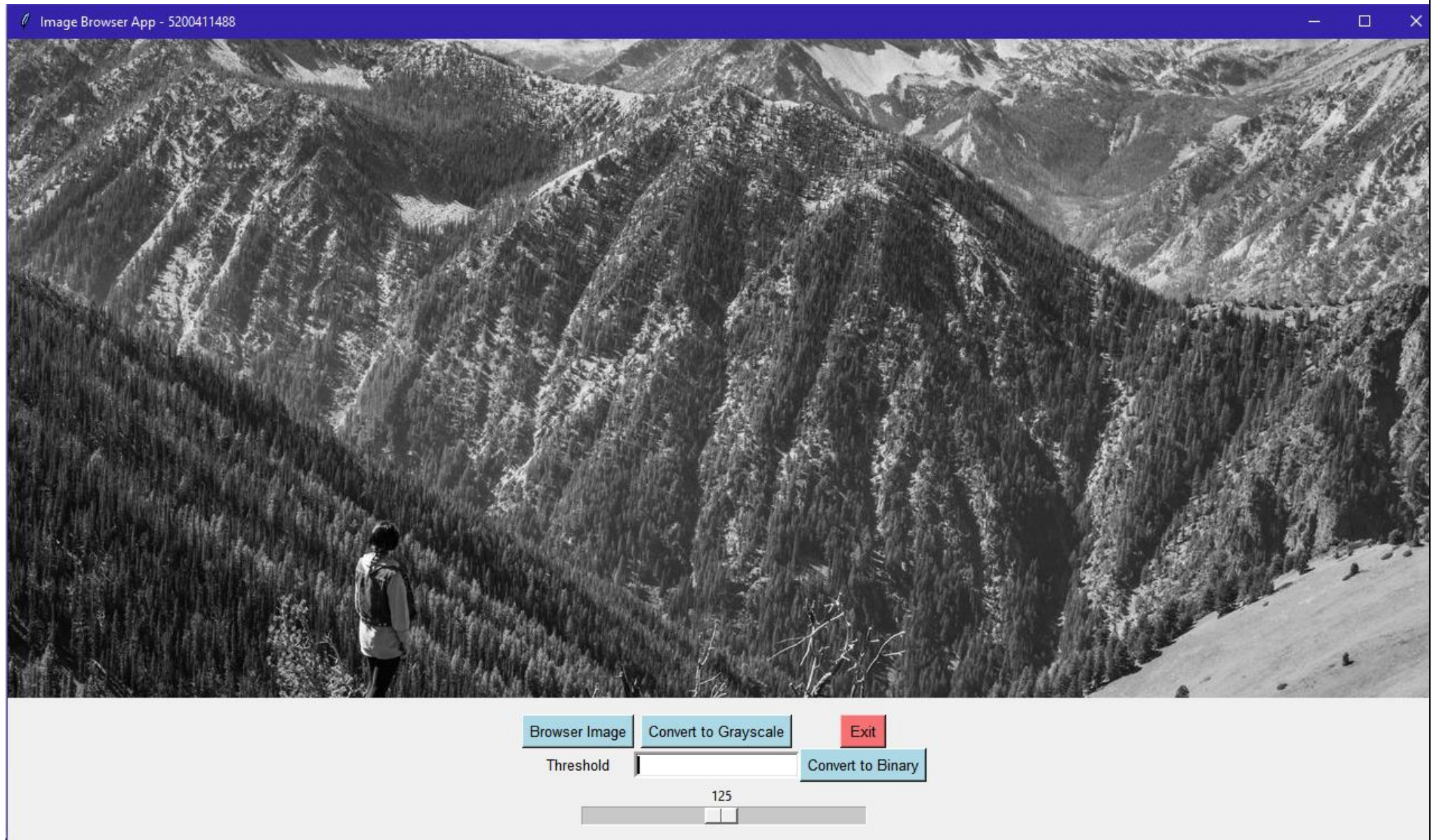
Hasil Running – setelah button Convert To Binary di-klik

//paste-kan tampilan aplikasi Anda di sini