

[Pick the code]

ARITHMETIC OPERATIONS WITH GUI

Group 2

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1.Student and Project Details

Student Details

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Project Details

Project Name: Arithmetic Operations with GUI

Major: Automation of Artificial Intelligence

Lecture's Name: Mr. Zhu Xinjun

2. Introduction

Introduction to the Program

The program consists of four arithmetic operations that can be applied to two images selected by the user.

The four Arithmetic Operations are Addition, Subtraction, Multiplication and Division.

Python was used as the programming language and PyCharm was the IDE that was used.

Included below are the attachments for the code used to develop this program

Objectives of the Project

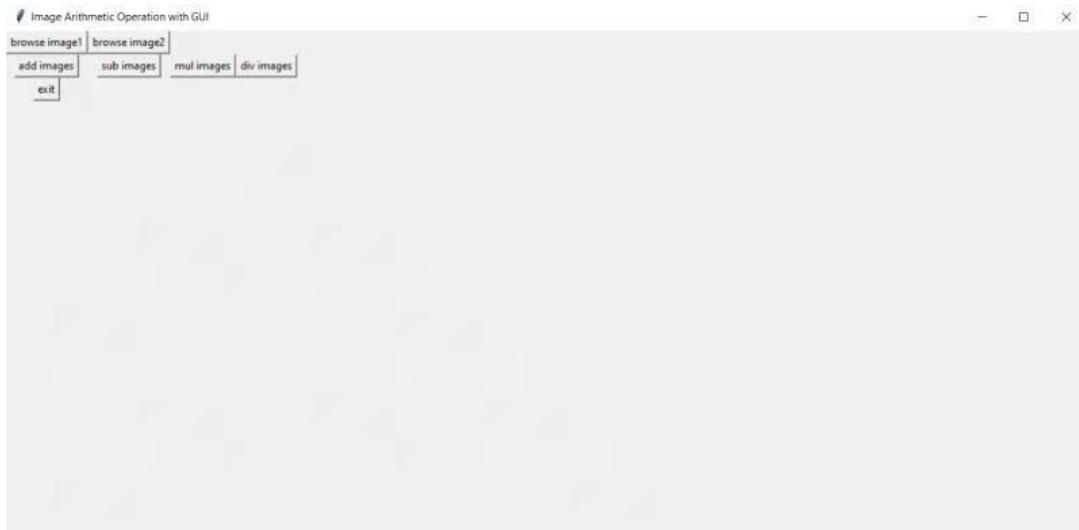
- Using Arithmetic Operations for two images

3.The Proposed Function of the Program

- 1.Browse Image 1** – browse the first image
- 2.Browse Image 2** – browse the second image
- 3.Add Images**– adds the browsed images
- 4.Sub Images**– subtracts the browsed images
- 5.Mul Images** – multiplies the browsed images
- 6.Div Images** – divides the browsed images

4. The Program

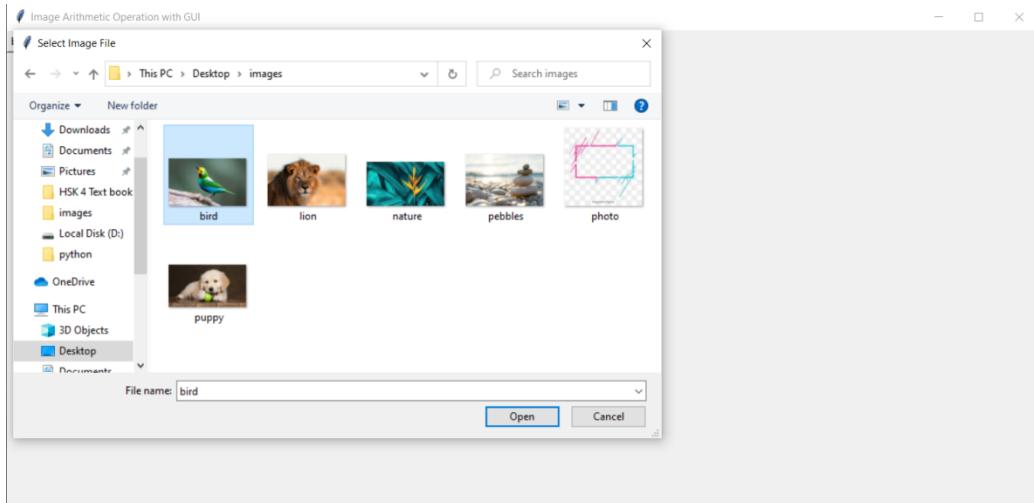
Main page



```
button1 = Button(window, text="Browse Image A", command=showimage).grid(row=1, column=1)
button2 = Button(window, text="Browse Image B", command=showimage2).grid(row=1, column=2)
button3 = Button(window, text="Add Images", command=addImages).grid(row=3, column=1)
button4 = Button(window, text="Sub Images", command=subImages).grid(row=3, column=2)
button5 = Button(window, text="Mul Images", command=mulImages).grid(row=3, column=3)
button6 = Button(window, text="Div Images", command=divImages).grid(row=3, column=4)

button7 = Button(window, text="Exit", command=lambda: exit()).grid(row=5, column=1)
```

Browse Image 1



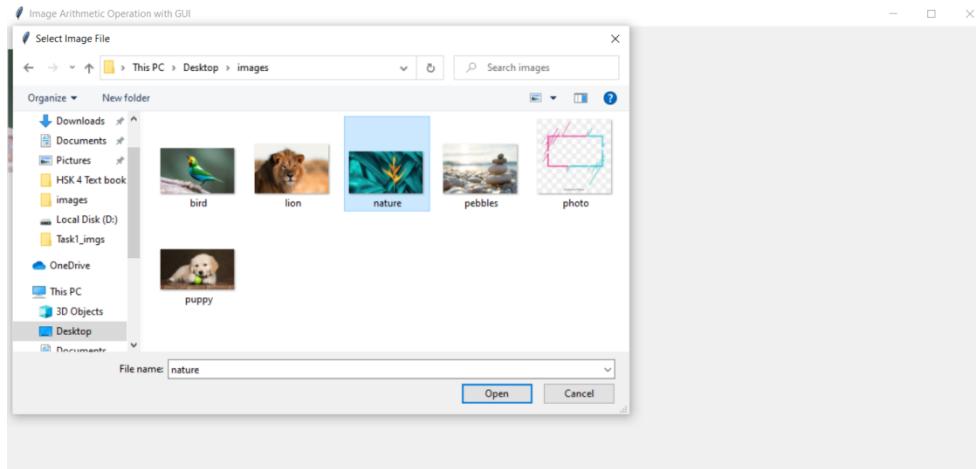
```
def showimage():

    fln = askopenfilename(initialdir=os.getcwd(), title="Select Image File")
    img1 = Image.open(fln)
    img1 = img1.resize((300, 150), Image.ANTIALIAS)
    global img01
    img01 = img1

    img1 = ImageTk.PhotoImage(img1)
    label1 = Label(window, image=img1)
```

```
label1.image = img1  
label1.grid(row=2, column=1)
```

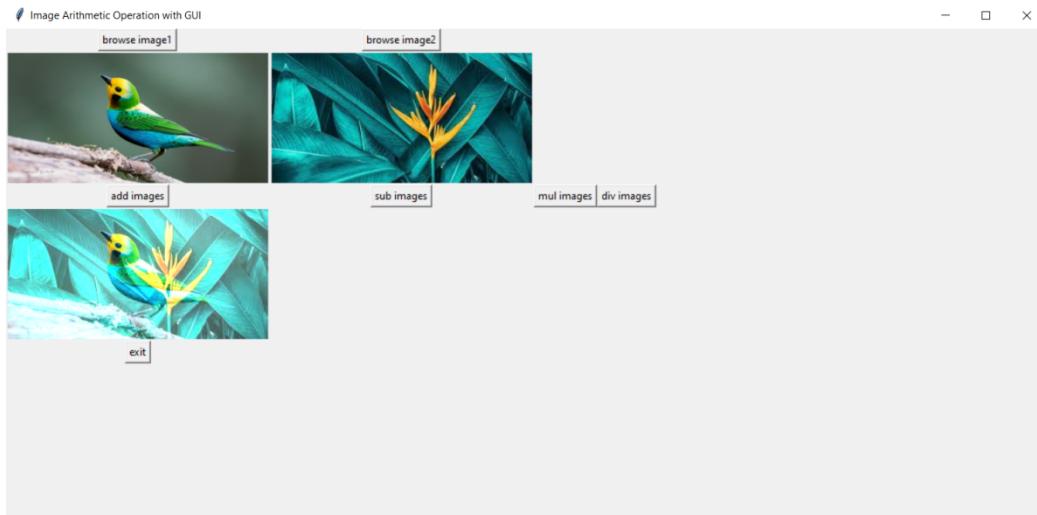
Browse Image 2



```
def showimage2():  
  
    fln = askopenfilename(initialdir=os.getcwd(), title="Select Image File")  
    img2 = Image.open(fln)  
    img2 = img2.resize((300, 150), Image.ANTIALIAS)  
    global img02  
    img02 = img2
```

```
img2 = ImageTk.PhotoImage(img2)
label2 = Label(window, image=img2)
label2.image = img2
label2.grid(row=2, column=2)
```

Add Images



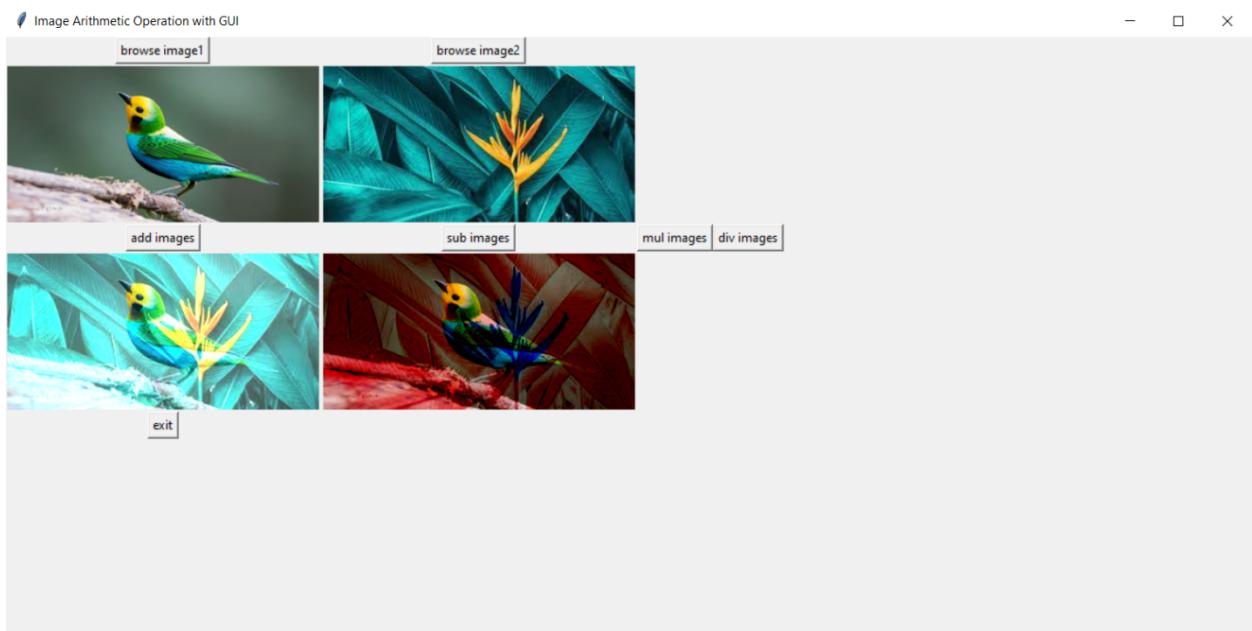
```
def addImages():
    src1 = np.array(img01)
    src2 = np.array(img02)

    dst = cv.add(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label3 = Label(window, image=img)
    label3.image = img
    label3.grid(row=4, column=1)
```

Subtract Images

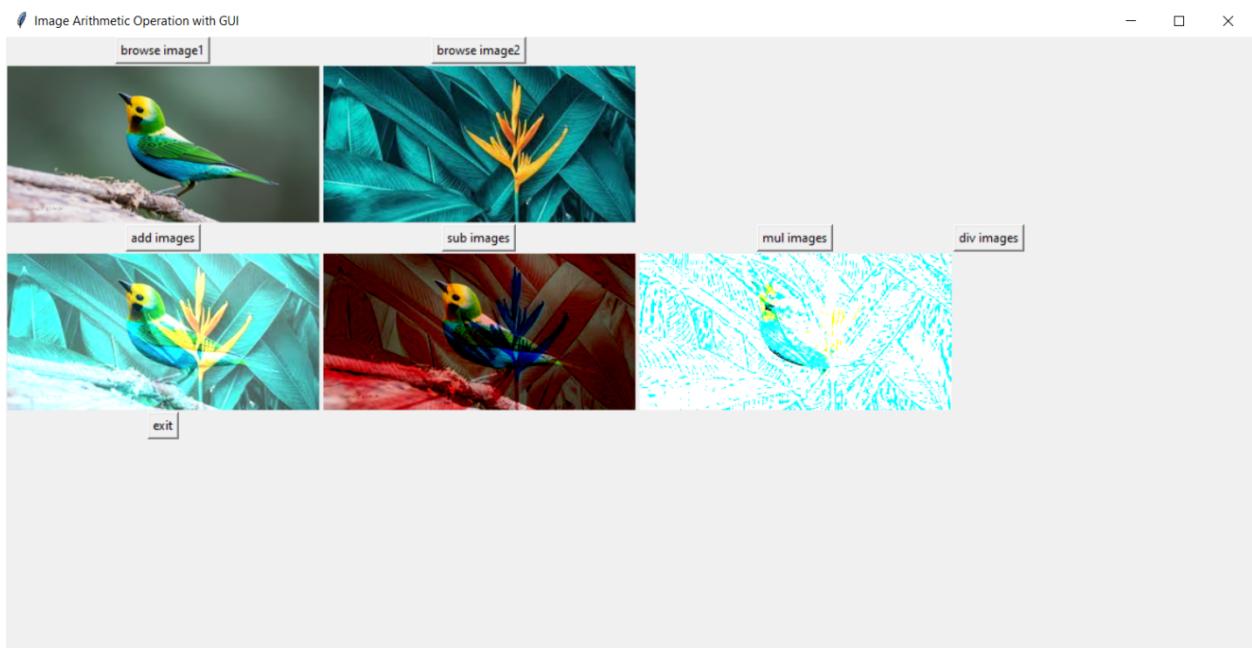


```
def subImages():
    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.subtract(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=2)
```

Multiply Images

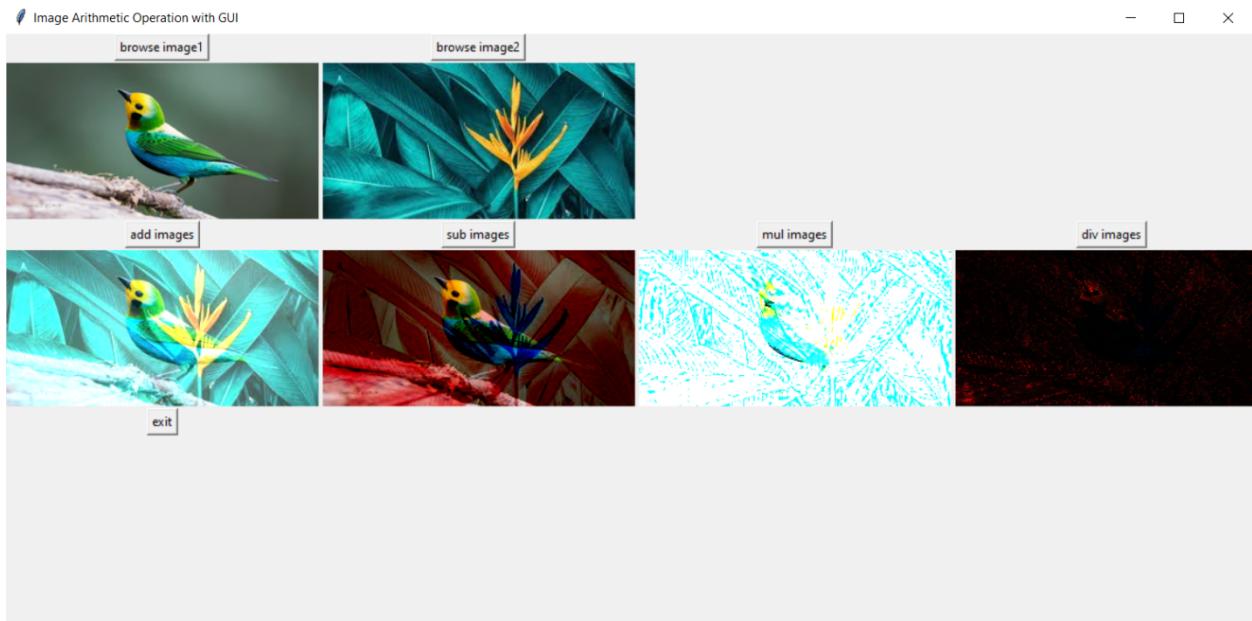


```
def mulImages():
    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.multiply(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=3)
```

Divide Images



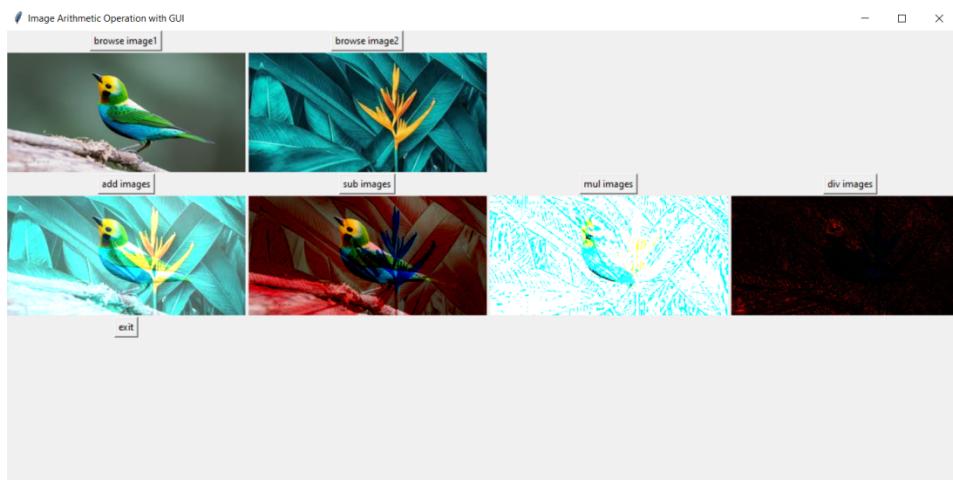
```
def divImages():

    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.divide(src1,src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=4)
```

5. The Final Result



Code

```
from tkinter import *
import os
from PIL import Image, ImageTk
import cv2 as cv
```

Code Continued

```
from tkinter.filedialog import askopenfilename
import numpy as np
window = Tk()
img01 = ""
img02 = ""

def showimage():
    fln = askopenfilename(initialdir=os.getcwd(), title=("Select Image File"))
    img1 = Image.open(fln)
    img1 = img1.resize((300, 150), Image.ANTIALIAS)
    global img01
    img01 = img1

    img1 = ImageTk.PhotoImage(img1)
    label1 = Label(window, image=img1)
    label1.image = img1
    label1.grid(row=2, column=1)

def showimage2():
    fln = askopenfilename(initialdir=os.getcwd(), title=("Select Image File"))
    img2 = Image.open(fln)
    img2 = img2.resize((300, 150), Image.ANTIALIAS)
    global img02
    img02 = img2

    img2 = ImageTk.PhotoImage(img2)
    label2 = Label(window, image=img2)
    label2.image = img2
    label2.grid(row=2, column=2)

def addImages():
    src1 = np.array(img01)
    src2 = np.array(img02)

    dst = cv.add(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label3 = Label(window, image=img)
    label3.image = img
    label3.grid(row=4, column=1)
```

```

def subImages():
    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.subtract(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=2)

```

Code Continued

```

def mulImages():
    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.multiply(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=3)

def divImages():

    src1 = np.array(img01)
    src2 = np.array(img02)
    dst = cv.divide(src1, src2)

    im = Image.fromarray(dst)
    img = ImageTk.PhotoImage(image=im)

    label4 = Label(window, image=img)
    label4.image = img
    label4.grid(row=4, column=4)

button1 = Button(window, text="Browse Image A", command=showimage).grid(row=1,
    column=1)
button2 = Button(window, text="Browse Image B", command=showimage2).grid(row=1,
    column=2)
button3 = Button(window, text="Add Images", command=addImages).grid(row=3,
    column=1)
button4 = Button(window, text="Sub Images", command=subImages).grid(row=3,
    column=2)

```

```
button5 = Button(window, text="Mul Images", command=mulImages).grid(row=3, column=3)
button6 = Button(window, text="Div Images", command=divImages).grid(row=3, column=4)

button7 = Button(window, text="Exit", command=lambda: exit()).grid(row=5, column=1)

window.geometry("1200x600")
window.title("Image Arithmetic Operation with GUI")

window.mainloop()
```