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KLE TECHNOLOGICAL UNIVERSITY, VIDYANAGAR HUBLI-580031



School Of Computer Science and Engineering

Scripting Languages Lab

Open ended Experiment

Title of OEE: Image processing

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Introduction

The most basic operations performed on images are resize, rotate, transpose, flip and so on. Since the topic was to develop an application based user friendly interface and to perform the transpose of matrix and to change the size of the matrix, so we decided to design a python program to perform these operations and to make it user friendly GUI is built upon python program.

For image processing PIL library is included and for the GUI tkinter library is included. The images are considered as 2d matrix so various built in functions in PIL library like transpose and resize performs various operations on 2d matrix and generates the processed image. Tkinter provides various opportunities to generate a GUI platform for performing the operations.

Test Plan

Problem Statement:

To generate graphical user interface for performing different operation on 2d array like Transpose and Resize

Assumption:

1. The user has to browse for the required image.
2. The input for resizing the image should be in pixels.

Constraints:

1. The image is saved with the name followed by the action performed on it.
2. The image is opened in the default browser
3. The image resolution should be a in number format and should be less than 2000 X 2000 and should be greater than 0 X 0.

Test Cases:

Test case no:	Sample input	Expected output
1.	Resize:1920 X 1080 Save	Processed image is displayed Processed image is saved
2.	Transpose save	Processed image is displayed Processed image is saved
3.	Rotate 90 ⁰ save	Processed image is displayed Processed image is saved
4.	Resize: (no input) X (no input)	Error message "Please enter the values"
5.	Resize:(hello) X(hi)	Error message "Please enter the numeric values"
6.	Resize:9999 X 99999	Error message "index out of range"
7.	Resize: (-800) X (800)	Error message "index out of range"

Description of OEE

The topic given to us was to develop an application based user-friendly interface and to perform the transpose of matrix and to change the size of the matrix, so we decided to design a python program to perform these operations and to make it user friendly ,a GUI is built upon python program.

To perform various image-processing operations we used PIL library. The various built in function that we used from PIL are

1. Image.open() - Used to open an image from the file explorer
2. Image.save() - Used to save an image at specified location
3. Image.show() - Used to show the image
4. Image.transpose() - Used to perform operations like flip, rotate using
transpose of a matrix
5. Image.resize() - Used to change the size of Image by changing the size
of the matrix

To create graphical user interface we used tkinter library. The various built in function that we used from tkinter are

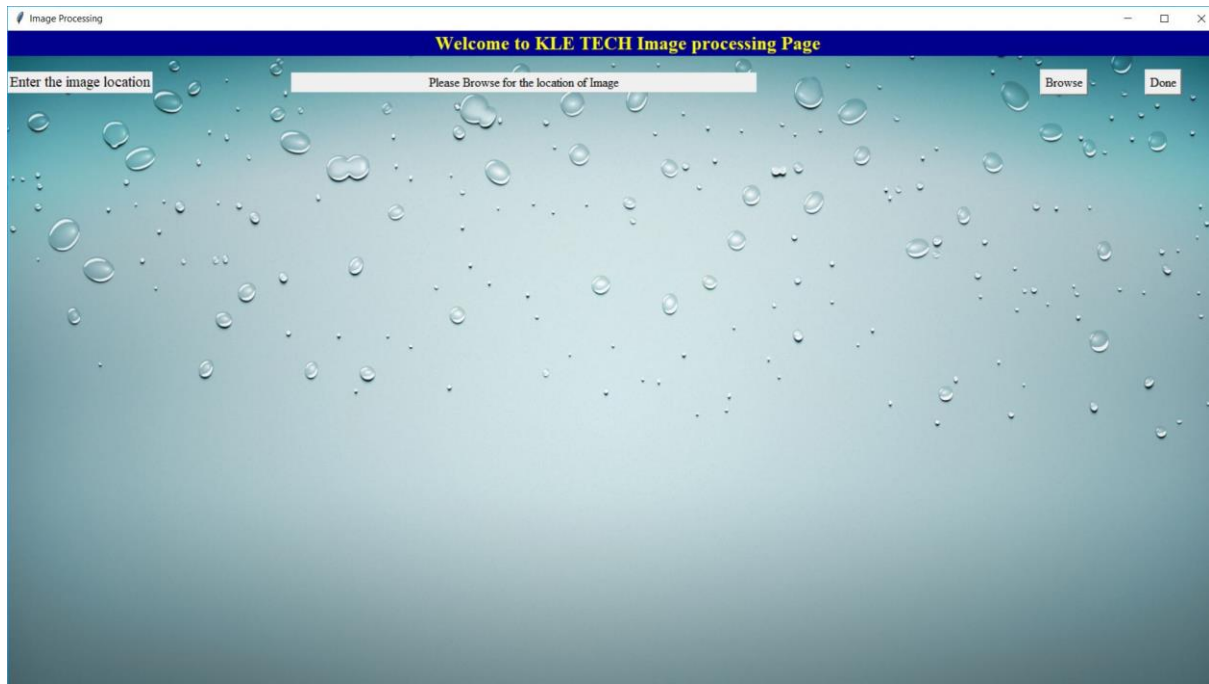
1. Tk() - To create window
2. Button() - To create Buttons on the window
3. Label() - To insert text on the window
4. grid() - Converts the whole window into coordinate system and places the objects
accordingly
5. Entry() - To create a label where user can give the input

We also imported tkinter.filedialog and tkinter.messagebox for browsing an image and displaying message box.

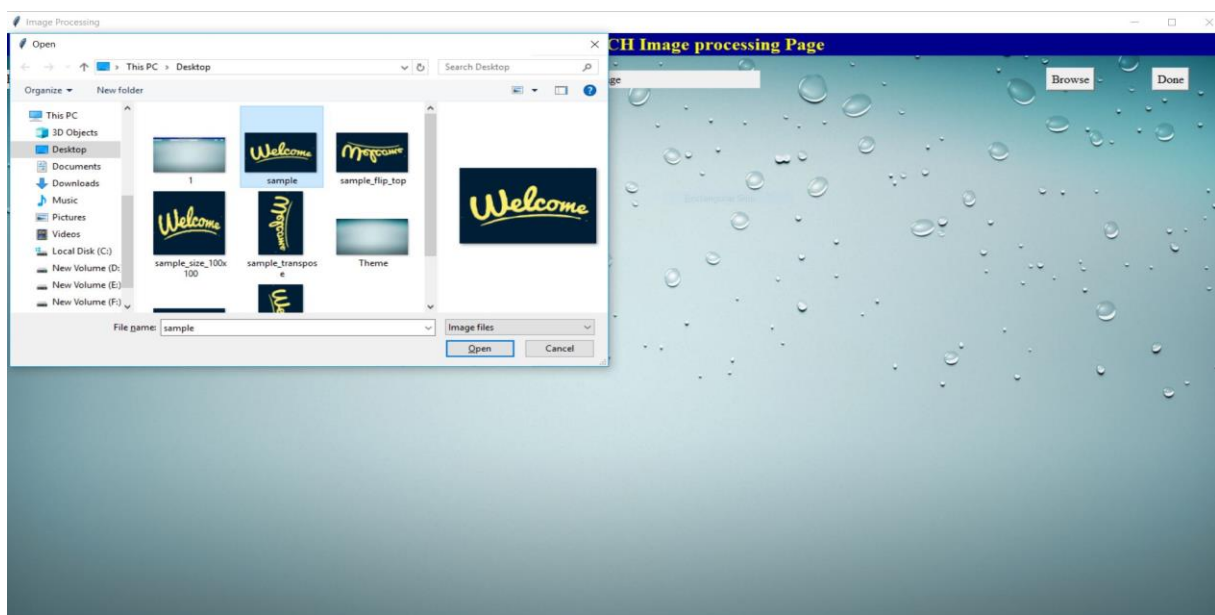
Thus, we used these library to develop a python program, which can interact with the user graphically and can perform operations such as Transpose, Flip (Top-Down), Flip (Left-Right), Rotate 90, Rotate 180, Rotate 270, and Resize on the required image.

Sample Result:

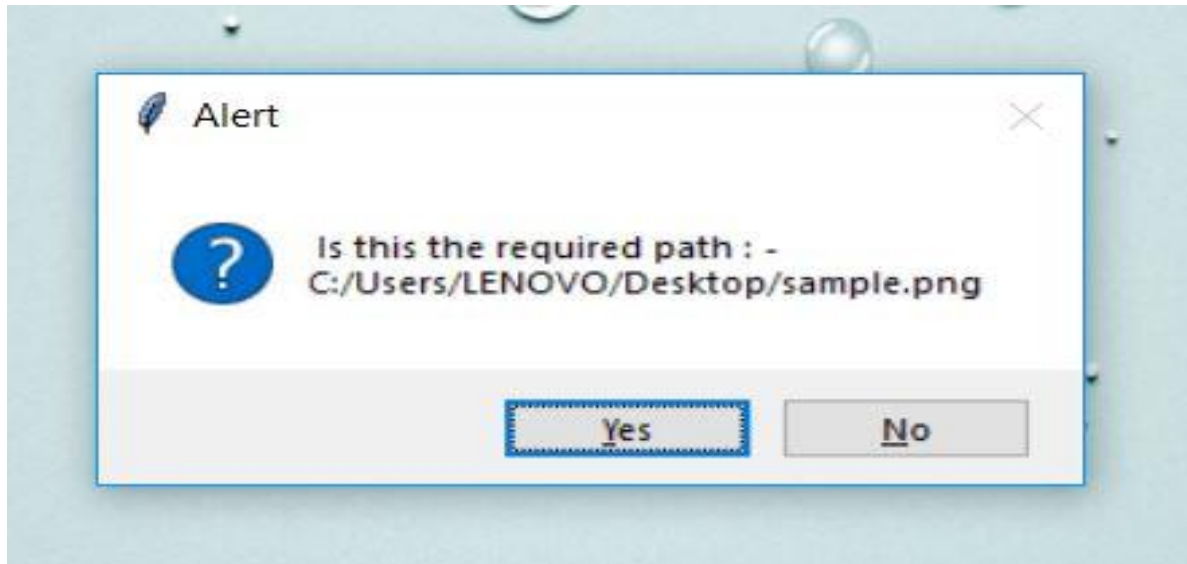
Step 1



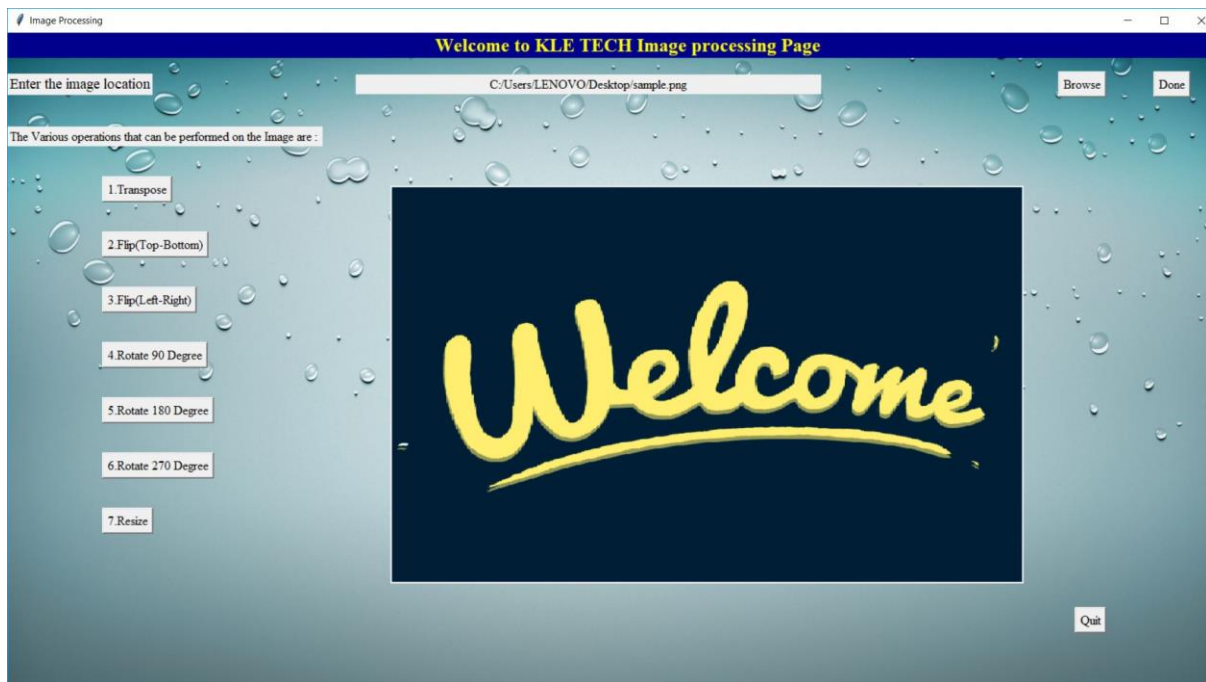
Step 2



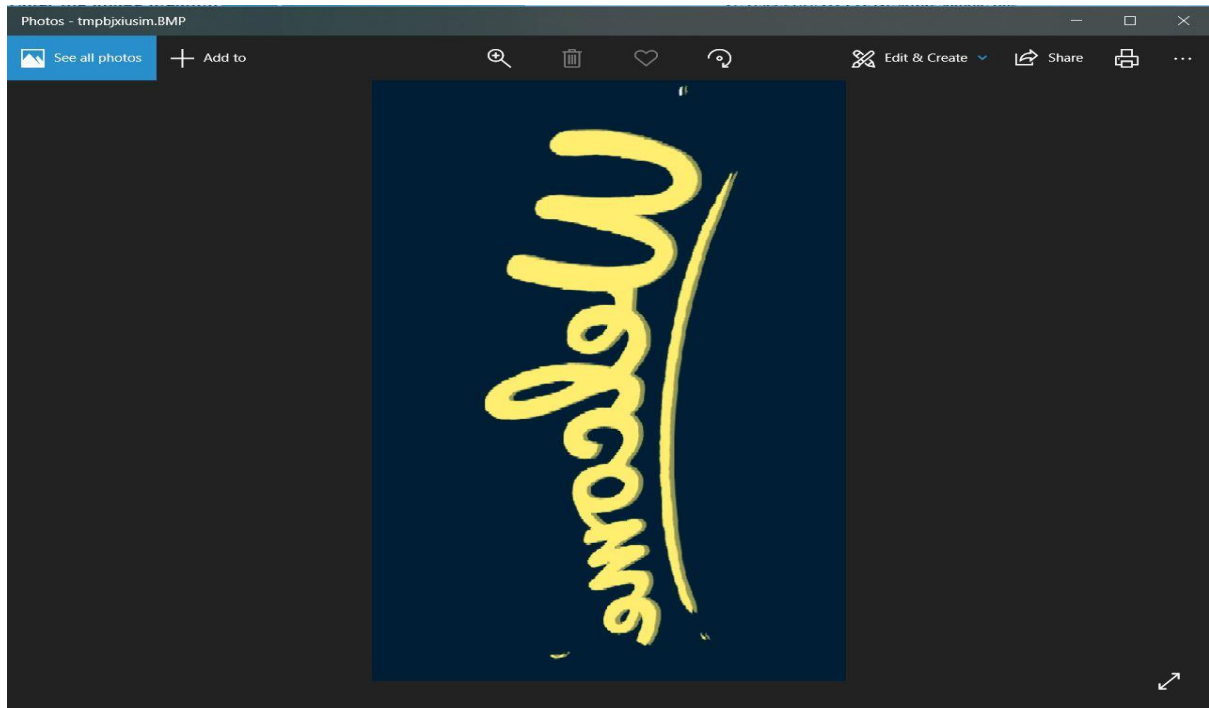
Step 3



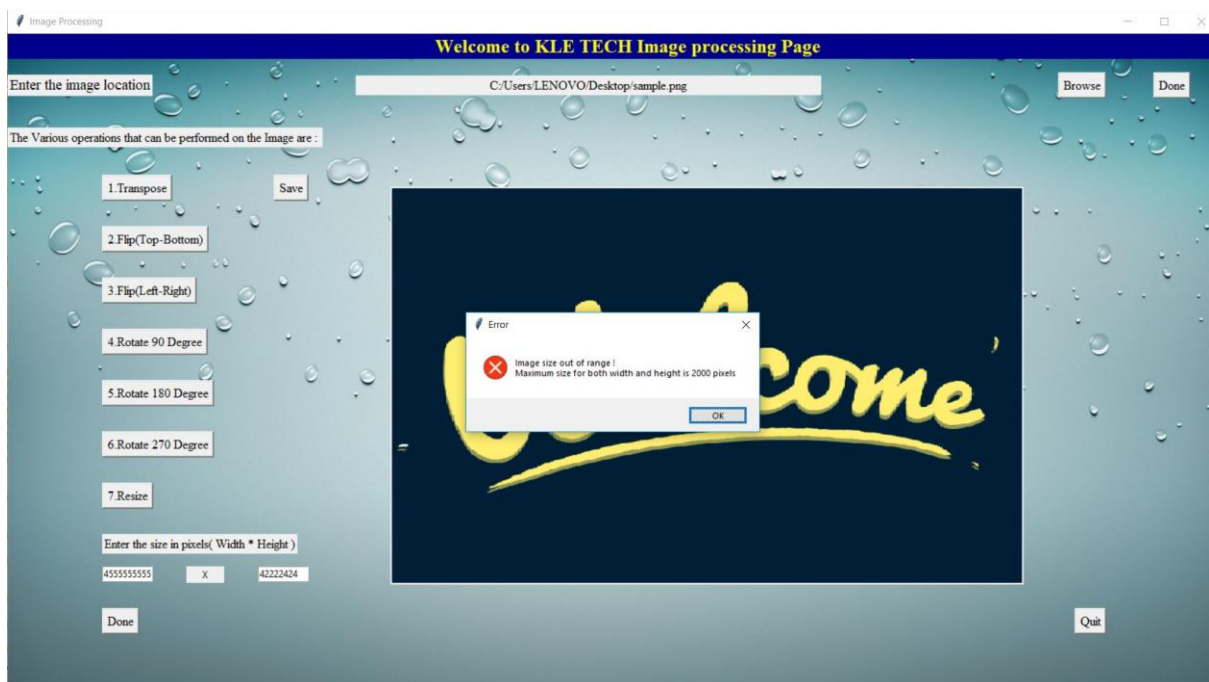
Step 4



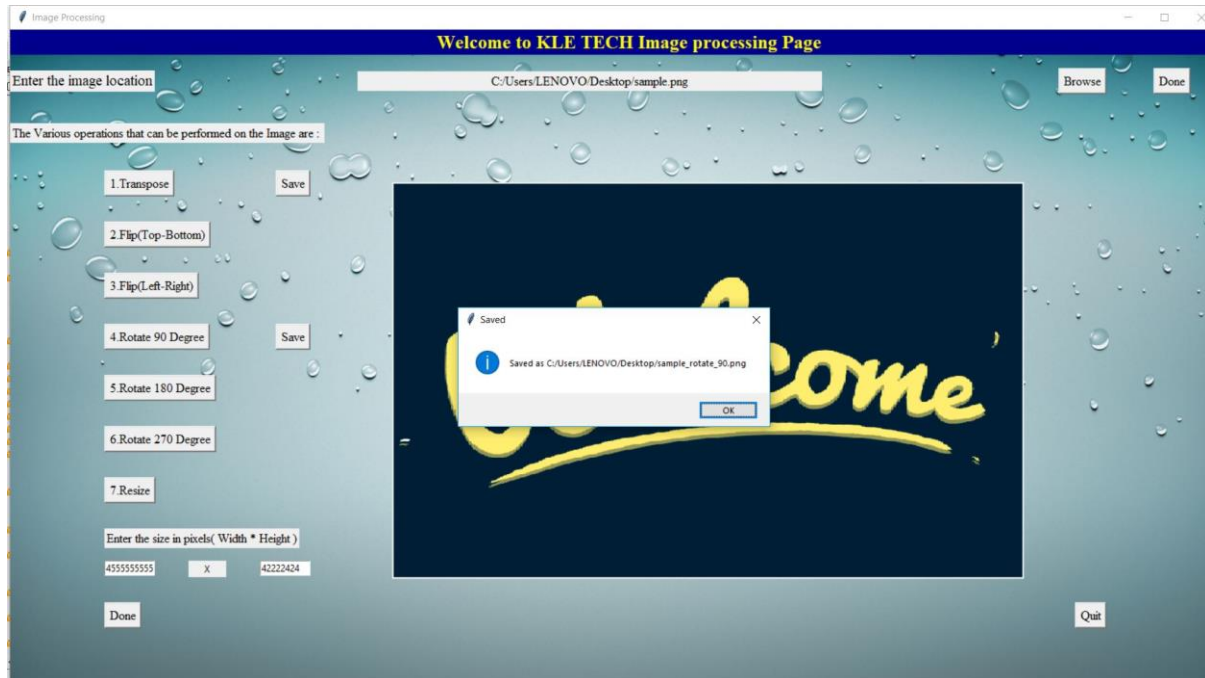
Step 5



Step 6



Step 7





References

1. <https://www.pythonforbeginners.com/gui/how-to-use-the-python-imaging-library>
2. <https://docs.python.org/2/library/tkinter.html>
3. <https://www.geeksforgeeks.org/python-gui-tkinter/>
4. https://www.youtube.com/watch?v=RJB1Ek2Ko_Y
5. <https://www.youtube.com/watch?v=6Qs3wObeWwc&t=357s>