**CSD 4523 – 2023W**

**Python II**

**Project Part 1**

## Project Description

The goal of this project is to develop a GUI based Python image editor program with database connectivity using different advanced python library. Users will be able to crop, resize, add filters, rotate, flip, modify resolution, add blur effects, and add filter effects to photographs as well as store and retrieve those edited images from a database using the application. The program will be accessible to all users and feature a user-friendly interface. The application will also be put through testing and debugging as part of the project to make sure it functions as intended. The program is anticipated to be able to support several image types, including JPG, PNG, and GIF. To allow users to store and retrieve their altered photographs, the project will also use a database, such as SQLite.

## Introduction To Team

Table

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We will work on various project modules and present them at the final presentation.

## Project Scope

We have planned various features and functionalities for our system to be implemented using different Python’s libraries and advanced python concept. Some of the features that we have intended to include in our project are listed below:

* It will have a main container window for holding all other widgets using Python’s tkinter library.
* It will allow the user to browse the image and select the desired image showing its detailed information after selected.
* After the image gets selected, user will be able to perform different image editing activities such as:
  + Adding filter effects
  + Image Blur
  + Cropping image
  + Grayscale the image
  + Resizing the image.
  + Rotating and flipping the image
  + Reducing image resolution etc.
* There will be used different tkinter’s GUI toolkit for creating the widgets to achieve the above functionalities such as buttons, label, slider, checkbox, radio button, image, frame, message box etc.
* After the user completes the image editing, there will be the option for selecting either download the edited image or upload the edited image to database for future references.
* There will be a button for listing all the uploaded images which were saved in the database.
* Users will be able to view the detailed information of the uploaded images such as image name, uploaded date and time and uploaded image itself.
* From the list of the uploaded images, users will be able to download that image too that were saved at the database.
* Finally, user will be able to exit from the program and re-open if they want and start the same processing of selecting, editing, uploading and downloading the image.

1. Technologies

We will be using following technologies:

* Pillow python library:
  + This library will help to apply the filters to the image like blur, grayscale, resize, flip, crop, etc. This functionalities are provided by this library and we will explore other things that are available to enhance our application’s features.
* Tkinter for making gui:
  + We will provide users a graphical user interface to interact with the images which will make it easier rather than using command line interface.
  + Interaction of the gui application such as buttons, text boxes, sliders, colours, etc. will be implemented by using this library.
  + Tkinter will also provide the functions required for the desktop application like window resizing, grid box for designing the layout of the application, input boxes, system’s theme etc.
* Sqlite for the database:
  + We are using sqlite database for this simple application which will provide us basic functionalities of SQL like insert, update, delete, fetch etc.
* git for version control:
  + This will be used to share the codebase among the team members and keep track of the changes made by all and then merge them for the final application.
* OOP python:
  + This will make it easier for expandable code which means adding of the functionalities in the future will be easier.
  + Using object oriented pattern will help us from repeating the same code in multiple places.

1. Project Milestones and work distribution

We have separated our entire projects into various phases to make it simpler to understand and compare our progress with the suggested timeframe. This will allow us to track our progress moving forward and delegate work on that area or functionality to the appropriate group member. Also, it will be simpler for each group member to understand their part in each phase while developing the project.

1st Phase:

Proposed Deadline: End of Week 10

We have planned to work on the following functionalities or features upgradation in our first phase:

* Create database schema for all the relevant tables such as users, image, edits of image, image history, etc. [Basantha]
* Design wireframe for the project which will include homepage, image edit page, users page, etc. [Basantha]
* Design the main window for the user which will have buttons, labels, check boxes etc. [Sagar]
* Create a connection with the database and make class for doing the database changes. Also make the function for insert operation and fetching the data to display to the user. [Keyur]
* Make function to update the user entered data. [Basantha]
* Make function to delete the data that user wants. [Sagar]

2nd Phase:

We have planned to work on the following functionalities or features upgradation in our second phase:

Proposed Deadline: End of Week 12

* Implementing rotating and flipping the image [Basantha]
* Function for uploading the image and converting it to supported file format for the database [Sagar]
* Function for downloading the image in file format that user selects using checkboxes and if multiple options are selected then send zip compressed file [Keyur]
* Reducing image resolution and cropping the image [Sagar]
* Blur, grayscale and resize the image [Keyur]

3rd phase (Testing Phase):

We have planned to work on the following functionalities or features upgradation in our fourth phase:

Proposed Deadline: End of Week 14

➢ Test the feature of image editing such as blur, crop, flip etc. by making proper test cases. [Basanta]

➢ Test the queries to the database for fetching and editing the data by applying test cases that are likely to occur by the user. [Keyur]

➢ Test the proper working of the graphical user interface such as buttons, check box, sliders and overall layout of the application when resizing the window. [Sagar]

➢ Design presentation slides and work on dividing each part for explaining. [Sagar, Keyur & Basanta]