

# MINI PROJECT

**(2020-21)**

**“Image editor and correction”**

**Project Report**



**Institute of Engineering & Technology**

**Submitted By -**

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**Under the Supervision Of**

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**Department of Computer Engineering and Applications**  
**GLA University, 17 km. Stone NH#2, Mathura-Delhi Road,**  
**Chaumuha, Mathura – 281406 U.P (India)**

### **Declaration**

I/we hereby declare that the work which is being presented in the Bachelor of technology. Project “**Image editor and correction**”, in partial fulfillment of the requirements for the award of the *Bachelor of Technology* in Computer Science and Engineering and submitted to the Department of Computer Engineering and Applications of GLA University, Mathura, is an authentic record of my/our own work carried under the supervision of **Mohd. Amir Khan, Technical Trainer, Dept. of CEA, GLA University.**

The contents of this project report, in full or in parts, have not been submitted to any other Institute or University for the award of any degree.

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## **Certificate**

This is to certify that the project entitled “Image editor and correction”, carried out in Mini Project – I Lab, is a bonafide work by Pramod Kumar, Surendra Pratap Singh and is submitted in partial fulfillment of the requirements for the award of the degree Bachelor of Technology (ComputerScience & Engineering).

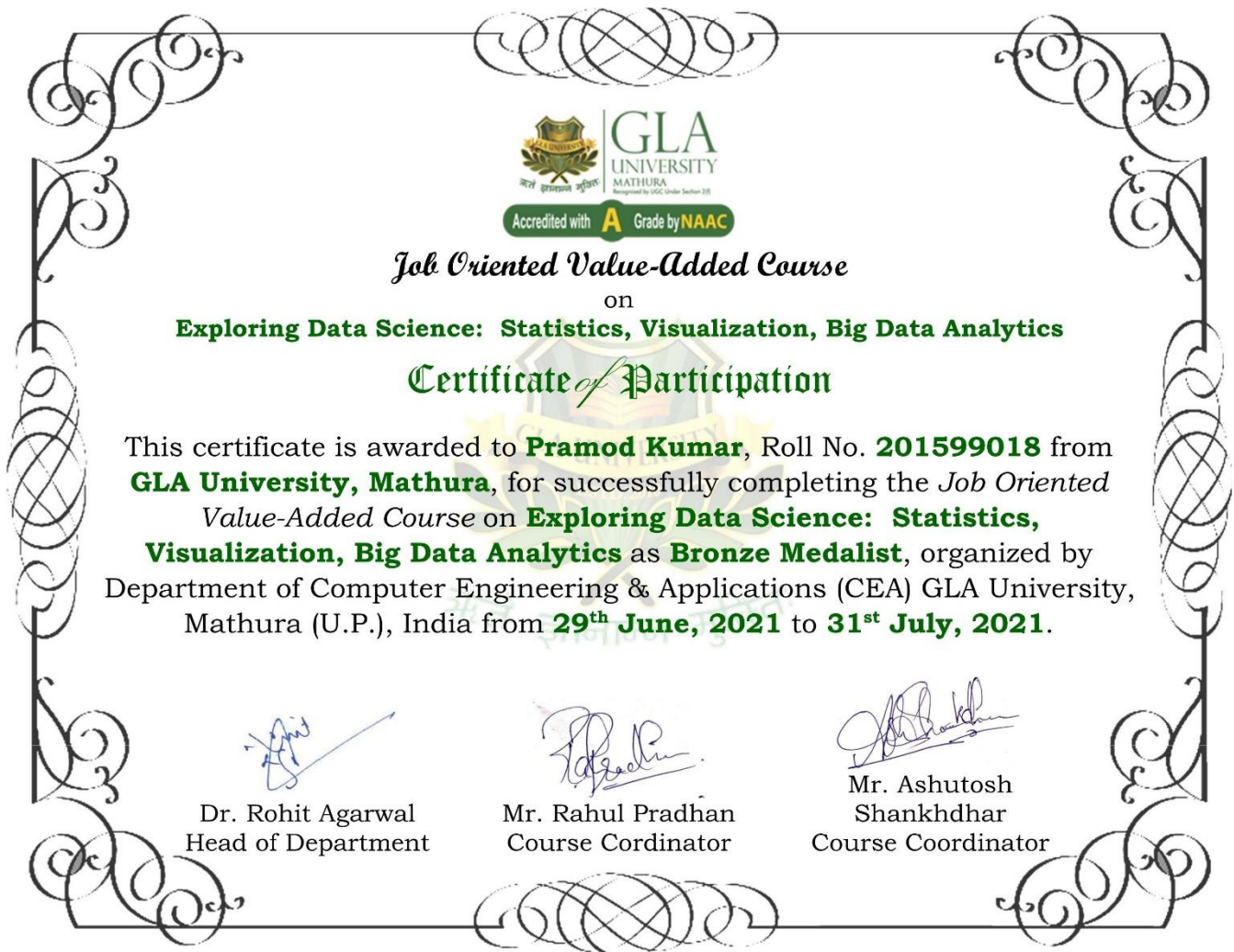
**Signature of Supervisor:**

**Name of Supervisor:** Mohd. Amir Khan

**Date:**

## Training Certificates

- **Pramod kumar**



- Pramod Kumar



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Duration Of Course : 3 Months

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## **ACKNOWLEDGEMENT**

Presenting the ascribed project paper report in this very simple and official form, we would like to place my deep gratitude to GLA University for providing us the instructor Mohd. Amir Khan, our technical trainer and supervisor.

He has been helping us since Day 1 in this project. He provided us with the roadmap, the basic guidelines explaining on how to work on the project. He has been conducting regular meeting to check the progress of the project and providing us with the resources related to the project. Without his help, we wouldn't have been able to complete this project.

And at last but not the least we would like to thank our dear parents for helping us to grab this opportunity to get trained and also my colleagues who helped me find resources during the training.

Thanking You

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## **ABSTRACT**

Image Processing includes changing the nature of an image in order to improve its pictorial information for human interpretation, for autonomous machine perception. Digital image processing is a subset of the electronic domain wherein the image is converted to an array of small integers, called pixels, representing a physical quantity such as scene radiance, stored in a digital memory, and processed by computer or other digital hardware. Interest in digital image processing methods stems from two principals applications areas: improvement of pictorial information for human interpretation; and processing of image data for storage, transmission, and representation for autonomous machine perception. Edges characterize boundaries and edge detection is one of the most difficult tasks in image processing hence it is a problem of fundamental importance in image processing. In this paper investigates different steps of digital image processing. like, a high-speed non-linear Adaptive median filter implementation is presented. Then Adaptive Median Filter solves the dual purpose of removing the impulse noise from the image and reducing distortion in the image. The Image Processing Toolbox software is a collection of functions that extend the capability of the MATLAB numeric computing environment. The toolbox supports a wide range of image processing operations on the given image.

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# CHAPTER-1

## INTRODUCTION

### 1.1 CONTEXT

The “Image Editor and Correction” has been submitted in partial fulfilment of the requirements for the award of the degree of Bachelor of Technology in Computer Science and Engineering at GLA University, Mathura supervised by Mohd.Amir khan. This project has been completed approximately three months and has been executed in modules, meetings have been organized to check the progress of the work and for instructions and guidelines.

### 1.2 OBJECTIVE

The main objective of this application is to give a information about the image to insert the image through the user it is “Image Editor and correction” which will have a lot of Image and a space to keep up the books one wants to read.

Image, size, the name of the image. After the search there will be image of related folder and one can view and more about the details of the image and can further enjoy it.

This application developed can be used at a variety of places, at location hubs and have its significance. The goal of the app was to provide a way to the edit and users to get all the images they desire to check at a particular location rather than randomly surfing the Internet.

## **1.3 EXISTING SYSTEM**

As we all now for fixing aspect ratio, dpi and images resolution people uses adobe Photoshop pixel and other high data consuming software. That consume system memory And processor as well. And check image is blur or not is manually and time taking process in bulk of images. Also checking for hard and light shadow in images is critical thing with manual process. But with our application these all checks and correct as much easier without installing any software in PC. Just need to open web application with domain and upload image and select whatever you want to change or check it'll done that within seconds

## **1.4 SOURCES**

The source of our project (including all the project work, documentations and presentations) will is available at the following link

<https://github.com/rpramod558/College-Project>

# **CHAPTER -2**

## **SOFTWARE REQUIREMENT ANALYSIS**

### **2.1 IMPACT OF IMAGE ON DAILY LIFE**

Image are considered as the best friends of Human in a real sense now a days, and it is said that they are also the best companions of humans. They play a significant role in Human's life. Image give plenty of joy to humans, and they learn a lot of things from images. They take them into a unique world of imagination and improve their standard of living.

Images help to inspire students to do hard work with courage and hope. They enrich the experience of students and sharpen their intellect.

Images increase the knowledge of students, peoples and improve their intellect. They reveal the different concepts and introduce the numerous shades of culture of the world. See image, makes students, peoples aware of the various societies and civilizations across the globe. By collecting the images students can explore the past, present and future and can solve many problems. Books inspect the clarity and creativity in Student's mind.

Images can help improve the memory of students. When students they create the images of the story and character mentioned in the book and they are able to memorize what they have things. So if students it will help them to quickly remember things.

**Security:** This emerging technology is playing one of the vital roles in the security industry. Whether it be an office, a smartphone, bank or home, security measures are an integral part in very platforms. Many security devices have been developed that includes drones, security cameras, facial recognition biometric devices,.

It naturally help them to focus on their life. This will also help them to improve their Life and they can learn more in very less time how to change life past to present. When the students feel stress-free, then they can focus on their life without any barrier.

By see different images students will be able to interact with people in their endemic language. This is very useful when students saw the images for their studies. If students know different culture then they can make new friends and easily cognate with their peoples.

Images can improve the Student's ability to think, and they are able to find the solution to problems. See the images that can builds the understanding and awareness of students in different situation.

Merged Reality: This is a fusion between virtual reality and augmented reality. To overcome the shortcomings of VR and AR, merged reality is created that delivers virtual-world experiences more dynamically and naturally. For instance, Intel's Project Alloy or Microsoft's Windows Holographic Shell, a wireless headset that allows you to bring real objects into the virtual world using 3D cameras.

## **2.2 HARDWARE AND SOFTWARE REQUIREMENTS**

### **Hardware Requirement**

- Processor : i3 7<sup>th</sup>
- Operating System :Any Operating System
- RAM : 8 GB (or higher)
- Hard disk : 256GB

### **Software Requirement**

- Software used: Sublime / vs code
- Language used : python, HTML, CSS
- Database: FILE SYSTEM
- User Interface Design : Rest API / Web page

## 2.3 MODULES

- **File uploading page with processing:** The REST API provides us a way to match URIs to various resources in our WordPress install. By default, if you have pretty permalinks enabled, the WordPress REST API “lives” at /wp-json/. At our WordPress we can access the REST API's index by making a GETrequest.
- **Rest API routes:** The REST API provides us a way to match URIs to various resources in our WordPress install. By default, if you have pretty permalinks enabled, the WordPress REST API “lives” at /wp-json/. At our WordPress we can access the REST API's index by making aGETrequest.
- **Image processing:** In order to get an enhanced image or to extract some useful information from it. It is a type of signal processing in which input is an image and output may be image or characteristics/features associated with that image..

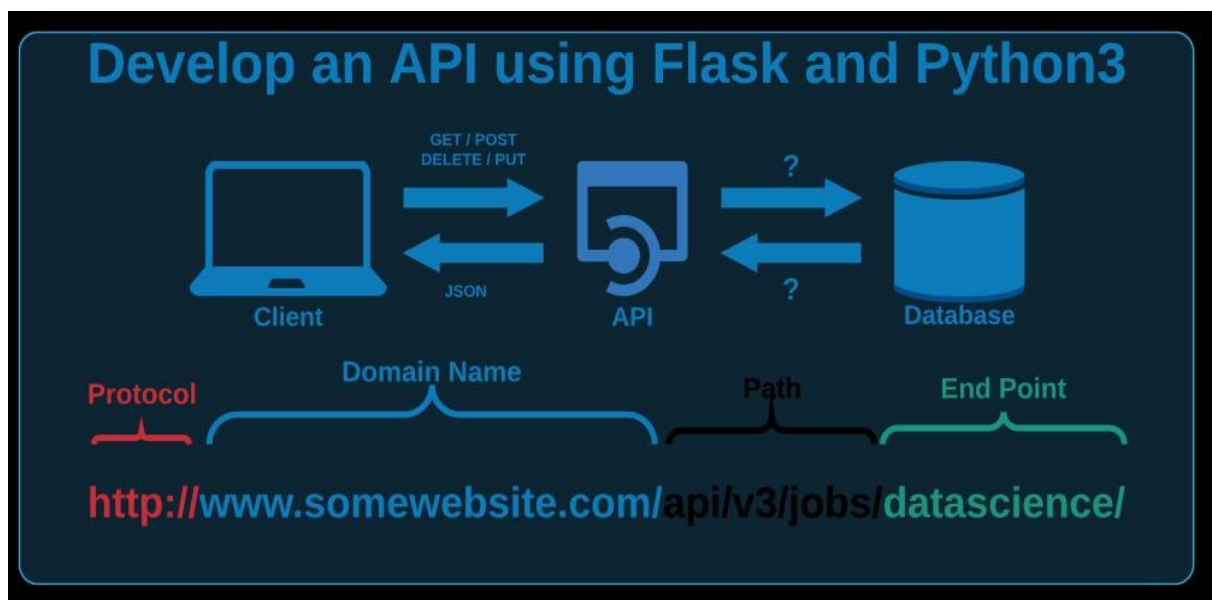
## 2.4 Image process on task flask application

Image Processing API written in Python, using the Pillow library for image manipulation and exposing the functions with the Flask framework. The API has been tested with jpg, png and bmp formats and is able to flip, rotate and crop an image, as well as blending two images, either RGB or gray scale

## CHAPTER- 3

### SOFTWARE DESIGN

#### 3.1 USE-CASE DIAGRAM:



Flask is a widely used micro web framework for creating APIs in Python. It is a simple yet powerful web framework which is designed to get started quick and easy, with the ability to scale up to complex applications.

## 3.2 Installation

### Install Flask using pip

```
(pip install Flask)
```

### Minimal Flask App

```
[from flask import Flask(__name__)@app.route('/hello/', methods=['GET', 'POST'])
def welcome():
    return "Hello World!"if __name__ == '__main__':
    app.run(host='0.0.0.0', port=105)]
```

Save this file as `app.py` (or any other filename you want) and go to terminal and type `python app.py` (i.e. `python <filename>.py` )

You should see something like this:

```
* Running on http://0.0.0.0:105/ (Press CTRL+C to quit)
```

Launch any web browser and go to `http://localhost:105/hello/` to see the app in action.

Now, let's understand the working of the code line-by-line:

```
from flask import Flask → Import the Flask class
```

```
app = Flask(__name__) → Create an instance of the class
```



`@app.route('/hello/', methods=['GET', 'POST'])` → We use the `route()` decorator to tell Flask what URL should trigger the function.

`methods` specify which HTTP methods are allowed. The default is `['GET']`

`if __name__ == '__main__':` → `__name__` is a special variable in Python which takes the value of the script name. This line ensures that our Flask app runs only when it is executed in the main file and not when it is imported in some other file

`app.run(host='0.0.0.0', port=105)` → Run the Flask application

`host` specifies the server on which we want our flask application to run. The default value for `host` is `localhost` or `127.0.0.1`

`0.0.0.0` means “all IPv4 addresses on the local machine”. This ensures that the server will be reachable from all addresses.

The default `port` value is `5000` and you can set the parameter `port` to use the port number of your choice.

## CHAPTER-4

### TECHNOLOGY USED

#### 4.1PYTHON

**Python** is an interpreted high-level general-purpose programming language. Its design philosophy emphasizes code readability with its use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

Python is dynamically-typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. It is often described as a "batteries included" language due to its comprehensive standard library.

- **Introduction:** Python is a popular programming language. It was created by Guido van Rossum, and released in 1991.

It is used for:

- web development (server-side),
  - software development,
  - mathematics,
  - System scripting.
- **Why use python**
    - Python works on different platforms (Windows, Mac, Linux, etc.).
    - Python has a simple syntax similar to the English language.
    - Python has syntax that allows developers to write programs with fewer lines than some other programming languages.
    - Python runs on an interpreter system, meaning that code can be executed as soon as it is written. This means that prototyping can be very quick.
    - Python can be treated in a procedural way, an object-oriented way or a functional way.

- **Advantages:**
- **Easy to Read, Learn and Write:** Python is a high-level programming language that has English-like syntax. This makes it easier to read and understand the code.

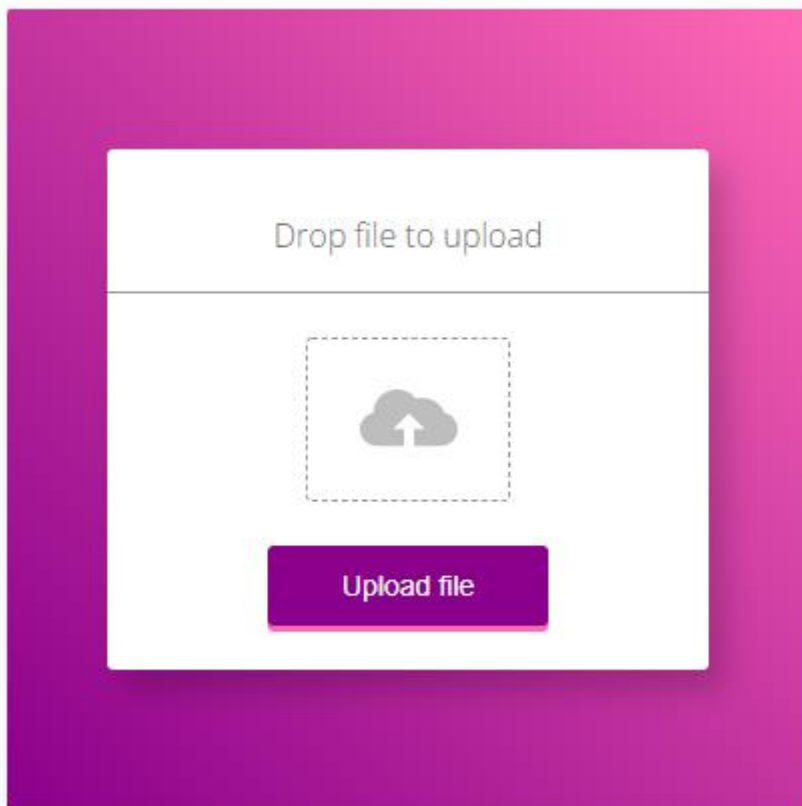
Python is really easy to pick up and learn, that is why a lot of people recommend Python to beginners. You need less lines of code to perform the same task as compared to other major languages like C/C++ and Java.

- **Improved Productivity:** Python is a very productive language. Due to the simplicity of Python, developers can focus on solving the problem. They don't need to spend too much time in understanding the syntax or behavior of the programming language. You write less code and get more things done.
- **Interpreted language:** Python is an interpreted language which means that Python directly executes the code line by line. In case of any error, it stops further execution and reports back the error which has occurred. Python shows only one error even if the program has multiple errors. This makes debugging easier.
- **Dynamically Typed:** Python doesn't know the type of variable until we run the code. It automatically assigns the data type during execution. The programmer doesn't need to worry about declaring variables and their data types.
- **Free and Open source:** Python comes under the OSI approved open-source license. This makes it free to use and distribute. You can download the source code, modify it and even distribute your version of Python. This is useful for organizations that want to modify some specific behavior and use their version for development.
- **Vast Libraries support:** The standard library of Python is huge, you can find almost all the functions needed for your task. So, you don't have to depend on external libraries. But even if you do, a Python package manager (pip) makes things easier to import other great packages from the Python package index (Pie Pi). It consists of over 200,000 packages.
- **Portability:** In many languages like C/C++, you need to change your code to run the program on different platforms. That is not the same with Python. You only write once and run it anywhere.

### **Disadvantages:**

- **Slow Speed:** We discussed above that Python is an interpreted language and dynamically-typed language. The line by line execution of code often leads to slow execution. The dynamic nature of Python is also responsible for the slow speed of Python because it has to do the extra work while executing code. So, Python is not used for purposes where speed is an important aspect of the project.

- **Not Memory Efficient:** To provide simplicity to the developer, Python has to do a little tradeoff. The Python programming language uses a large amount of memory. This can be a disadvantage while building applications when we prefer memory optimization
- **Weak in Mobile Computing:** Python is generally used in server-side programming. We don't get to see Python on the client-side or mobile applications because of the following reasons. Python is not memory efficient and it has slow processing power as compared to other languages.



**Table -1:  
User Interface**

## 4.2 BASIC TERMINOLOGY

- **Flask**: Flask is a web framework that provides libraries to build lightweight web applications in python. It is developed by **Armin Rancher** who leads an international group of python enthusiasts (POCCO).
- **Open cv**: Open CV is a Python open-source library, which is used for computer vision in Artificial intelligence, Machine Learning, face recognition, etc.
- In Open CV, the CV is an abbreviation form of a computer vision, which is defined as a field of study that helps computers to understand the content of the digital images such as photographs and videos.

The purpose of computer vision is to understand the content of the images. It extracts the description from the pictures, which may be an object, a text description, and three-dimension model, and so on. For example, cars can be facilitated with computer vision, which will be able to identify and different objects around the road, such as traffic lights, pedestrians, traffic signs, and so on, and acts accordingly.

Computer vision allows the computer to perform the same kind of tasks as humans with the same efficiency. There are a two main task which are defined below:

- **Object Classification** - In the object classification, we train a model on a dataset of particular objects, and the model classifies new objects as belonging to one or more of your training categories.
- **Object Identification** - In the object identification, our model will identify a particular instance of an object
- **Postman**: Postman is currently one of the most popular tools used in API testing. It started in 2012 as a side project to simplify API workflow in testing and development. API stands for **Application Programming Interface** which allows software applications to communicate with each other via API calls
- **JSON** stands for JavaScript Object Notation. It is an independent data exchange format and is the best alternative for XML. JSON is used for data interchange (posting and retrieving) from the server. Hence knowing the syntax and it's usability is important. JSON is the best alternative for XML and its more readable by human

- **API:** Short for Application Programming Interface. APIs are functions that developers can call on to access specific features by calling upon programs, code, and services that others have written. For example, if a developer wants to draw a button on the screen, she can insert a small bit of code that says “draw this kind of button, with this color and size and style, at this location” instead of dozens of lines of code that tells the graphics processor, in detail, exactly how to draw a button. If the application wants your location, it can use the location API to “get the device’s location” and let Google’s code handle the rest, instead of requiring the developer to build an entire location service from scratch just for her own app. There are thousands of APIs in Android, covering everything from drawing interface elements, to the cameras, to location access, to accessing storage, to 3D graphics (see: OpenGL ES) and much more.
- **HTML:** HTML is an acronym which stands for **Hyper Text Markup Language** which is used for creating web pages and web applications. Let's see what is meant by Hypertext Markup Language, and Web page.

**Hyper Text:** Hyper Text simply means "Text within Text." A text has a link within it, is a hypertext. Whenever you click on a link which brings you to a new webpage, you have clicked on a hypertext. Hyper Text is a way to link two or more web pages (HTML documents) with each other.

**Mark-up language:** A mark-up language is a computer language that is used to apply layout and formatting conventions to a text document. Mark-up language makes text more interactive and dynamic. It can turn text into images, tables, links, etc.

## **CHAPTER -5**

### **IMPLEMENTATION AND USER INTERFACE**

Image processing is the process of transforming an image into a digital form and performing certain operations to get some useful information from it. The image processing system usually treats all images as 2D signals when applying certain predetermined signal processing methods.

There are five main types of image processing:

- Find objects that are not visible in the image
- Recognition - Distinguish or detect objects in the image
- Sharpening and restoration - Create an enhanced image from the original image
- Pattern recognition - Measure the various patterns around the objects in the image
- Retrieval - Browse and search images from a large database of digital images that are similar to the original image

### **5.1 Implementation of the Image Processing:**

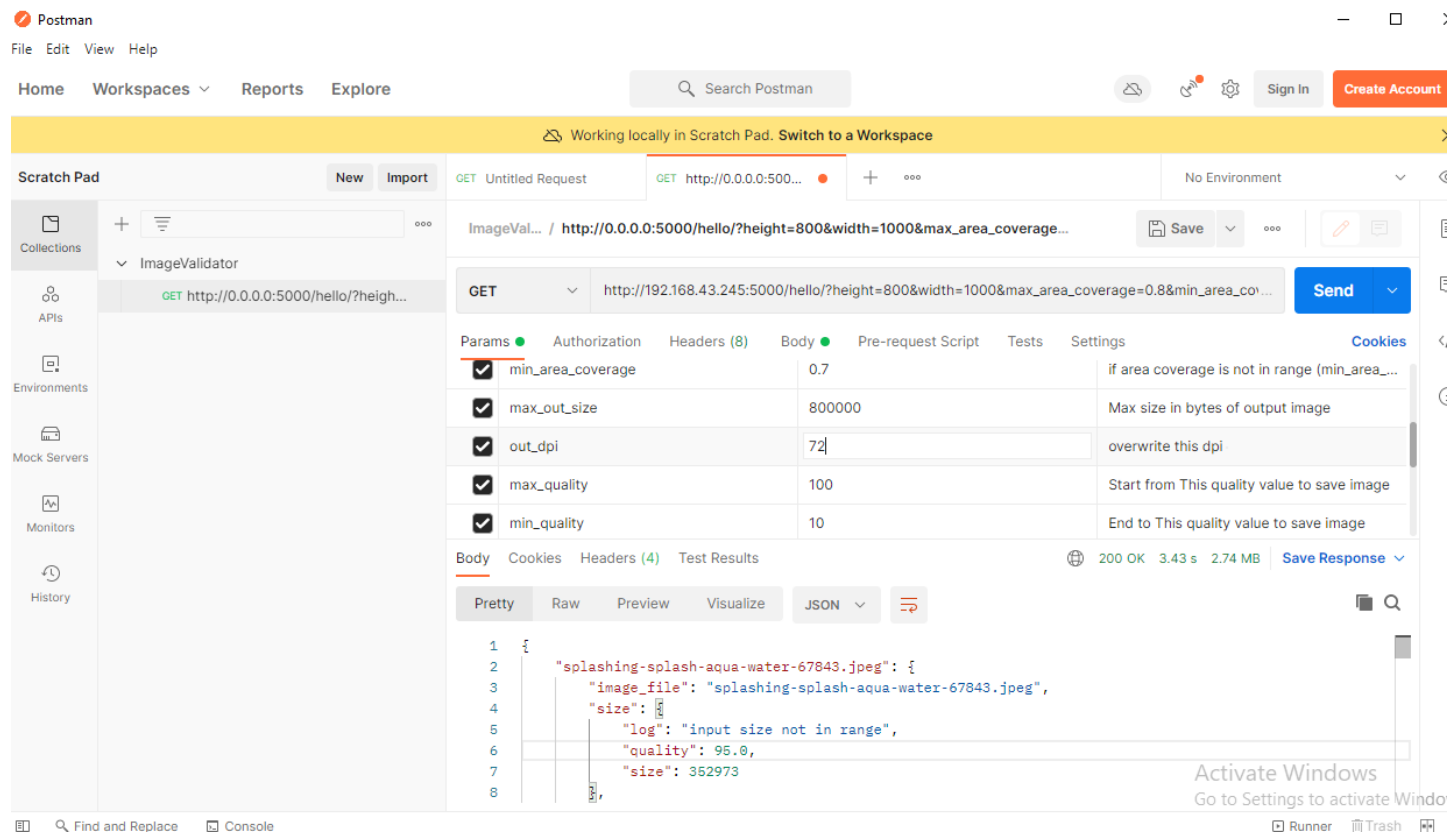
Implementation of Image processing is taken place in various phases. Firstly we build the user interface then upload the file i.e. the supporting features and connect the website with the Google API for fetch the required image. And finally we parse the Jason object to get the data in the required format and then display the result.

#### **5.1.1 Step to be followed to develop the app:**

1. Firstly we create the dash board with animated text using CSS,HTML and linked it with the MainActivity through file.
2. After that we create upload file which comprises of various phases that are mentioned below:
  - Select image: Select the various image
  - Upload image: If the select image and upload the image to perform task.

- Select size: select the size like length and width.
  - Select color: select background color related to image.
3. Now, we are going to create Select file for that purpose we have used following functionality web app:
- Fragments(Support Fragment Manager)
  - Blurring – to check the blur.
  - Center: To fix the image in center.
  - Coverage area color to match image color.
  - Correction log is scaled.
4. .Creating fragment for each of the resize item. Our items are:
- Size
  - Quality
  - Background
  - Color match
  - Data
  - Complete image.
5. Now we have created various activities like Coloring, resize and many more.
6. In this step we connect our app with the API using Postman.
7. After that we parse the JASON object that we have received as a response for our query to get the data in the standard form.
8. Now we add data (that we have received from Google API) to the own directory. .
9. In the description Activity there are various functionality. Some of them are mentioned below
- Create new directory
  - Save image that we have resize
  - Delete: it will add the image to the favorite's that you can see to later.





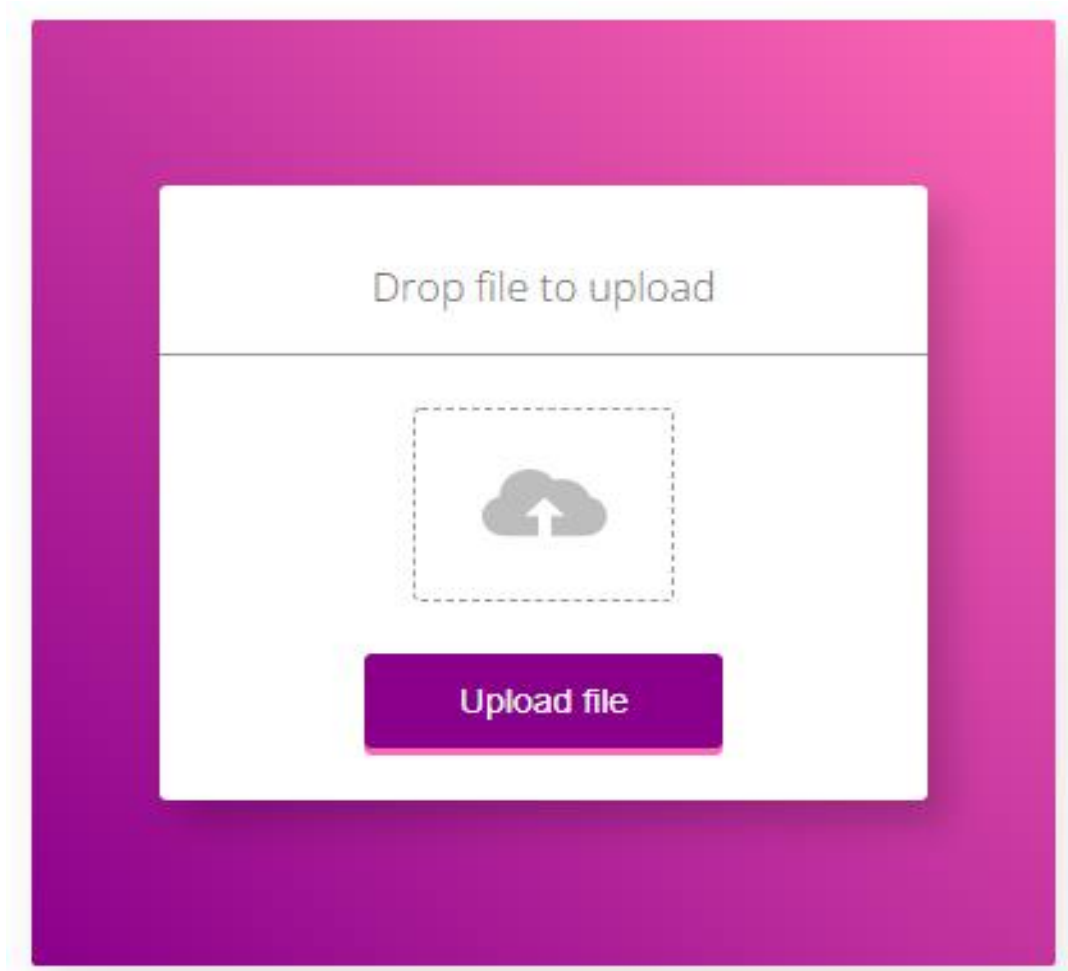
**Figure-6: Flow Chart**

### 5.1.2 Step to be followed by the user

1. Firstly, we have click the image panel that we have select.
2. Then, we have the select the image to perform. which consists of following steps
  - Select Image : for new User
  - Reset the function that we have change the image
  - Upload image
3. After that, we made a home activity of our image process app which includes various functionality
  - Profile Fragment: To check the image.
  - Dashboard Fragment: To select the image and upload.
  - Favorite: to set your image like own interest.
  - About App: Information about the app.
4. In Dashboard fragment we also include the search for image user depend and upload
5. After that list of image according to your search will appear
6. Select the image according to your choice.
7. Then the description image of the processing will appear. It comprises of the following things:
  - Size.
  - Blurring
  - Centering
  - Resize
  - Coloring
  - Background
  - Aspect ratio
8. If you want to add the image into favourites then in the description page Add to Favourites option is also given. You can see the image that are added in the favourites changes image
9. Now you can enjoy the image of your favourite interest.

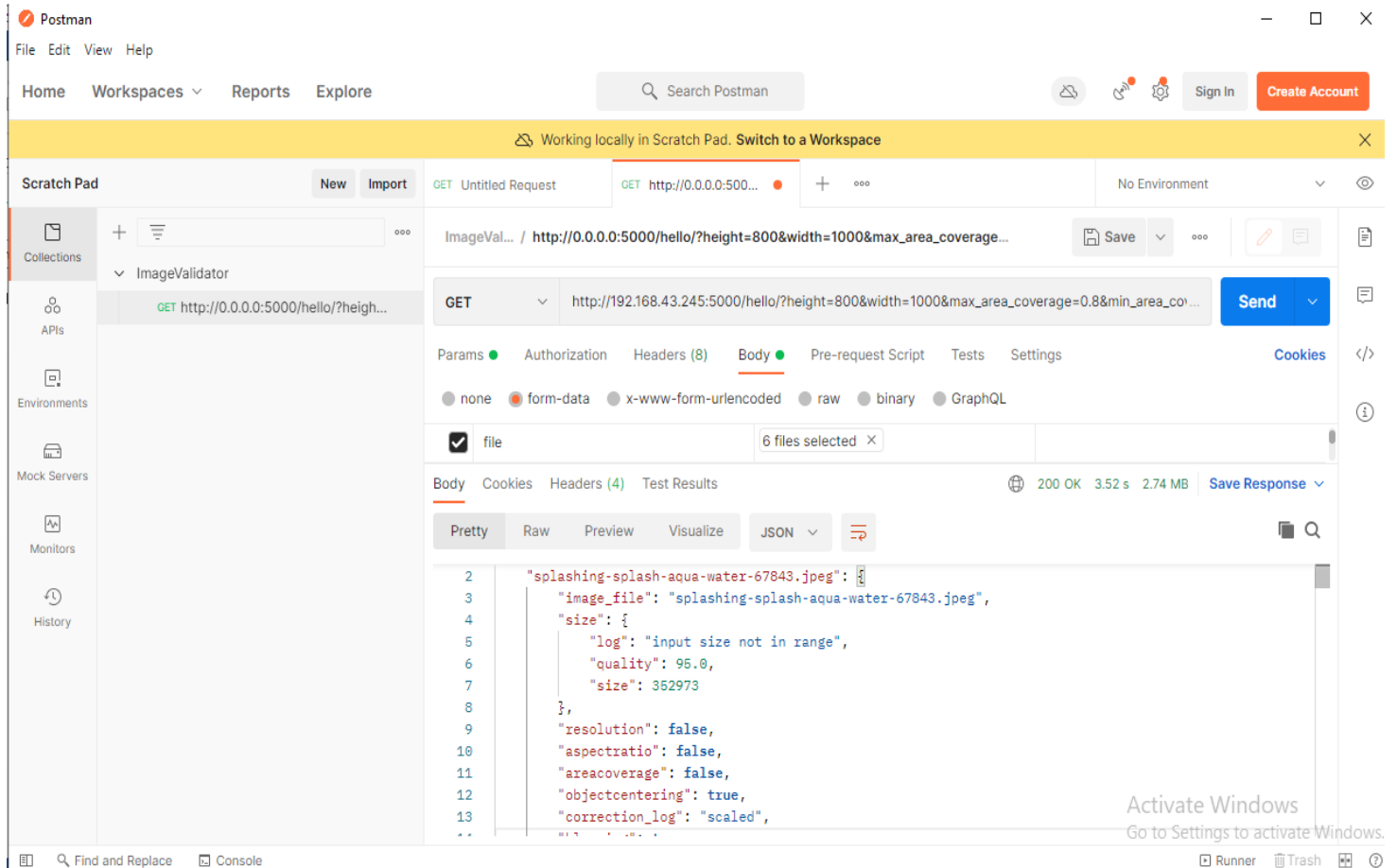
## 5.2 User Interface

- **Splash Screen**



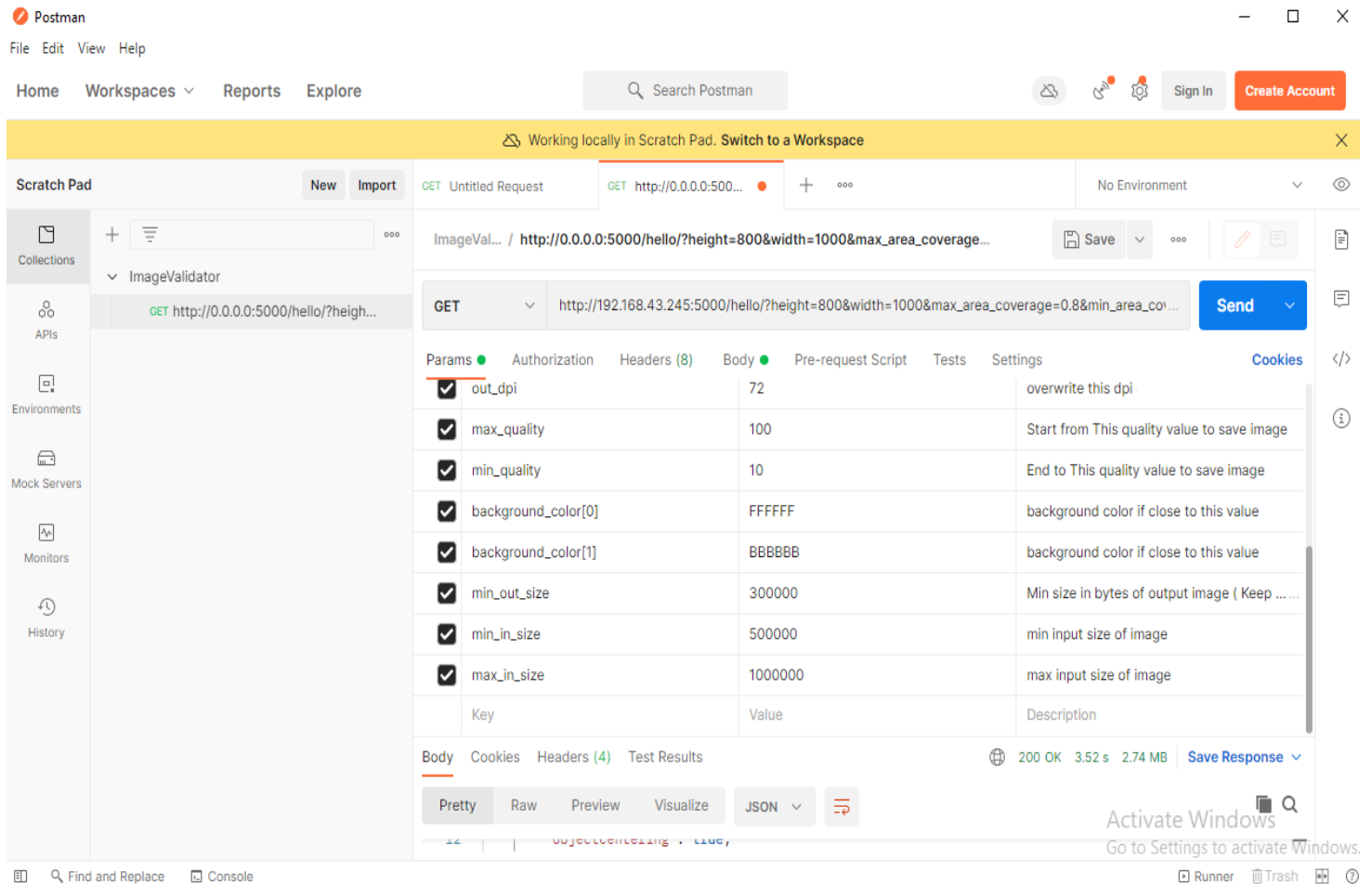
**Figure-: Interface Screen**

- **Run Page**



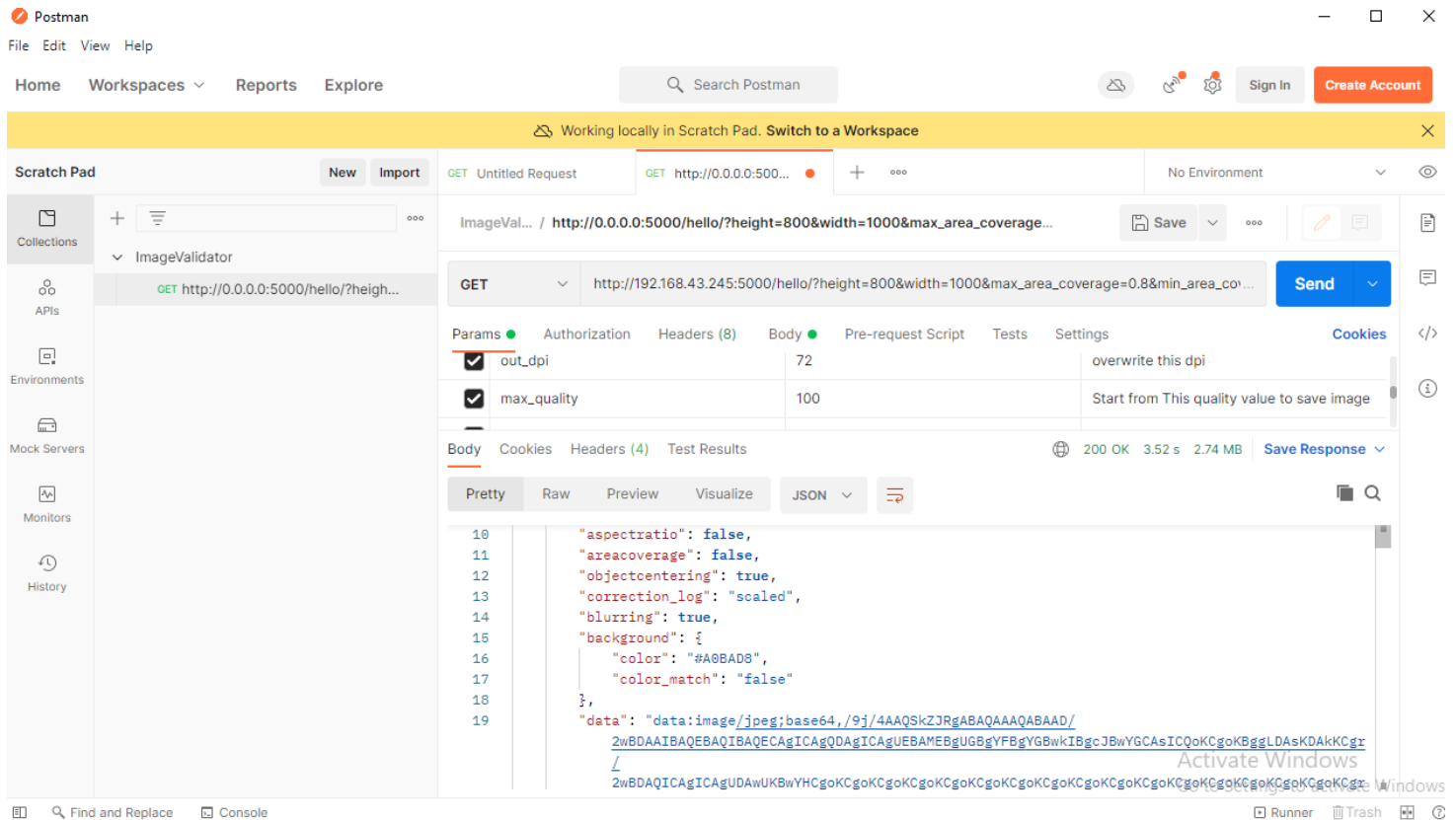
**Figure-: Run project in postman**

- **Postman functionality**



**Figure-: Postman function in different states**

- Project run in postman different output



### Figure-: Different output

## ➤ Postman connect to

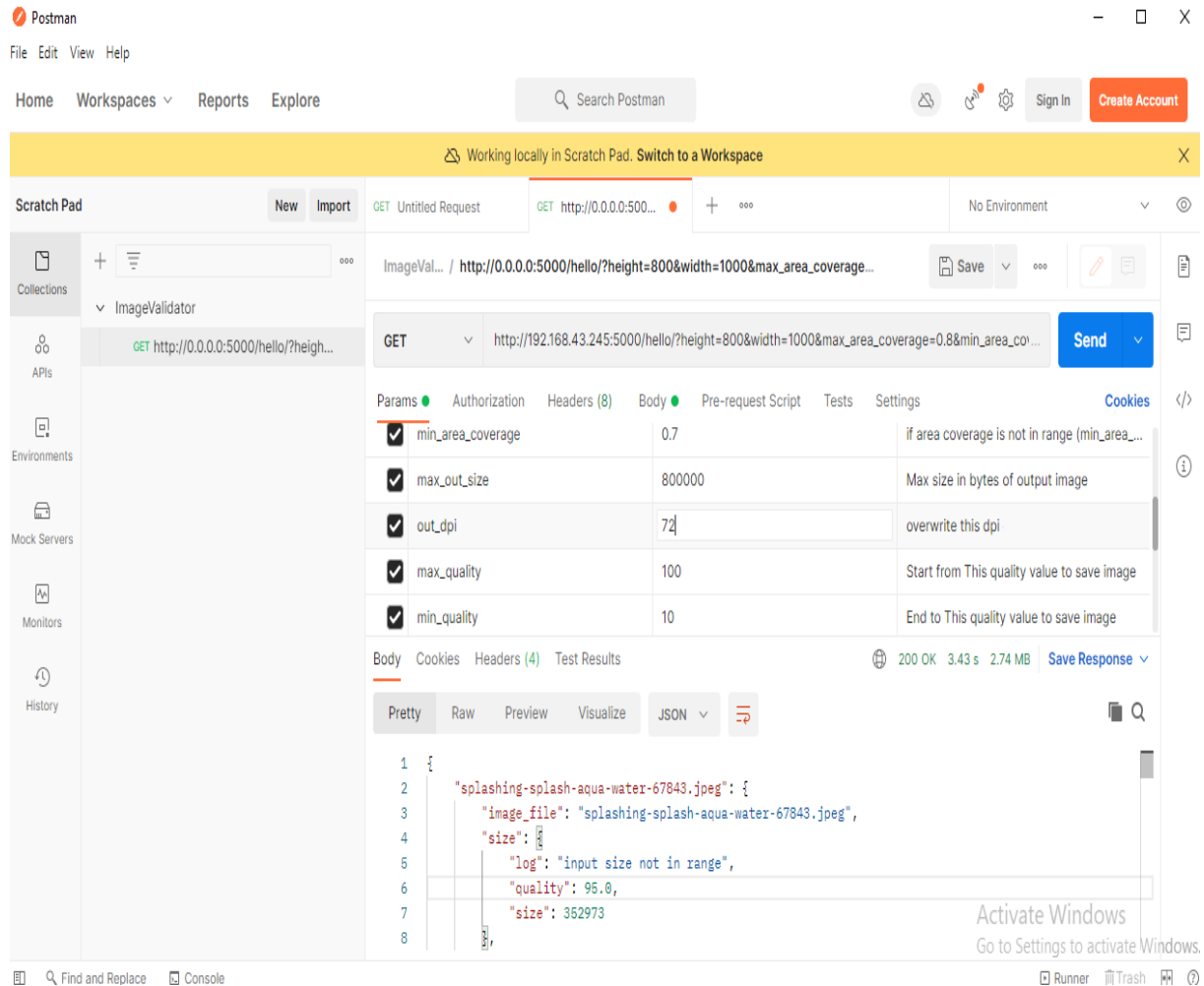


Figure: postman connect

- **Favorite's Page**

Image without editing:



- **Dimensions of the image**  
**1920 x 1272**
- **Width**  
**1920 pixels**
- **Height**  
**1272 pixels**



- **Image editing:**

- **Dimensions of the image**  
**1280 x 1080**
- **Width**  
**1280 pixels**
- **Height**  
**1080 pixels**
- **Bit depth**  
**24**
- **Horizontal resolution**  
**96 dpi**
- **Vertical resolution**  
**96 dpi**



- **Image without editing**

- **Dimensions of the image**  
**2160 x 1920**
- **Width**  
**2160 pixels**
- **Height**  
**1920 pixels**



### **Image editing:**

- **Dimensions of the image**  
**1280 x 1080**
- **Width**  
**1280 pixels**
- **Height**  
**1080 pixels**
- **Bit depth**  
**24**
- **Horizontal resolution**  
**96 dpi**
- **Vertical resolution**  
**96 dpi**





**Set the background frame related to the image color:**



# CHAPTER - 6

## TESTING

Once source code has been generated, software must be tested to uncover as many errors as possible before delivery. It is very important to work the system successfully and achieve high quality of software. Testing include designing a series of test cases that have a high likelihood of finding errors by applying software-testing techniques.

System testing makes logical assumptions that if all the parts of the system are correct, the goal will be successfully achieved. The system should be checked logically. Validations and cross checks should be there. Avoid duplications of record that cause redundancy of data.

In other Words, Testing is the process of evaluating a system or its component(s) with the intent to find whether it satisfies the specified requirements or not. It is executing a system in order to identify any gaps, errors, or missing requirements in contrary to the actual requirements.

The flask framework includes an integrated testing framework that helps you test all aspects of your application and the api tools include tools for setting up and running test applications. Whether you are working in python with ADT or working from the command line, the SDK tools help you set up and run your tests within an emulator or the device you are targeting.

There are different types of testing some of them are listed below:

### 6.1 Installation Testing:

There are one types of software on an computer device i.e., the applications which are installed later by the user.

For the above, installation testing is carried out by our teammates. It is ensuring smooth installation of the application without ending up in errors, partial installation etc.

### 6.2 Unit Testing

It focuses on smallest unit of software design. In this we test an individual unit or groups of inter related units. It is often done by programmer by using sample input and observing its corresponding outputs. In this testing technique we are primarily focuses on

- Loop methods and function is working fine or not.
- Misunderstood or incorrect Arithmetic precedence
- Incorrect Initialization

**Unit Testing of the app:**

Test cases	Description	Expected Outcome	Result
1	Start Page – Launch Screen	Should display splash screen with animated text	Pass
2	Image select screen	Should display image column where you need to fill the image	Pass

3	Upload Image screen	Should display Upload screen And ask for your details.	Pass
4	Set detail	Should Receive detail and to change the image size etc.	Pass
5	Create folder	Those image are change is in that folder	Pass
6	View images	Should display the images in properly	Pass

**Table 1: Unit Testing of Bookopedia**

### **6.3 User Testing**

User testing is the process through which the interface and functions of a website, app, product, or service are tested by real users who perform specific tasks in realistic conditions. The purpose of this process is to evaluate the usability of that website or app and to decide whether the product is ready to be launched for real users.

This app was tested by our team mates and friends who are using different Images (and having different size and dimensions) also tested on different emulator to check its performance and it seems to be working fine and users of this app are satisfied with the facilities and performance of the app and like the way how the app is worked.



## **6.4 Performance Testing**

In this type of testing we have checked the performances of our application under some peculiar conditions are checked. Those conditions include:

- Low memory in the device.
- The battery in extremely at a low level.
- Poor/Bad network reception.

Performance is basically tested from ends the application server end. Our app is also performing well in this phase of testing as well. And we are getting positive feedback from user of our app.

## **6.5 Compability Testing**

This application was tested and used on different devices . The application worked fine and is stable. The application worked fine in portrait mode and there isn't any problem with compatibility.

On all types of testing (that we have performed above) our performing well on our app i.e. image editing and correction.

## **CHAPTER -7**

### **CONCLUSION**

Proposed 'Image editor and correction' App is an web application that will allow users to edit the image and correction, size or dimensions. This application takes in a user input and the API with the user input and gets a list of image based on the users upload image. Processing result will contain a list of image with following details: size of the image, dpi, average, dimensions. To get the information of the particular folder user can click the upload button and then will be taken to the new image where description and other information related to the image will be select to change. Users can also add the image to the favorite's to change.

This application has wide range of scope in the upcoming era. It is possible to arrange the hard copies of every images so this type of application can reduce the barrier to get any time at any place in a very effective, productive way. For peoples who are interested in editing and correction the image can use this application and keep all the images they want to edit from at one place and can create their own personal folder . Even individual image to editing stores can have own temp folder is also creating by this application can gain number of members who can editing the image by your own interest.

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