CSE 535 Mobile Computing Project 1

Project Group 5

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Introduction:

The goal of this project was to create an Android mobile application that allows users to click an image and upload it to a server. The project is divided into two parts:

- Frontend - Developing an Android application that allows users to click an image with their mobile device's back camera, assign it to a category of their choice from a dropdown menu and then upload it to a server.
- Backend - Creating a Flask server on the local machine that receives the photo with its category and helps in storing the accepted photo based on the user-selected category.

Android Application:

- The Android application includes functionality for capturing an image, categorizing it, and uploading it to the server via REST API. The application was developed using Android Studio with Java programming language.
- Apart from camera permission, it also requires external storage read and write permissions to temporarily store the captured image and internet permissions to upload the image to the backend web server.
- It also uses additional packages, retrofit and okhttp3, which provide methods and interfaces to make an HTTP post request asynchronously.

Application control flow:

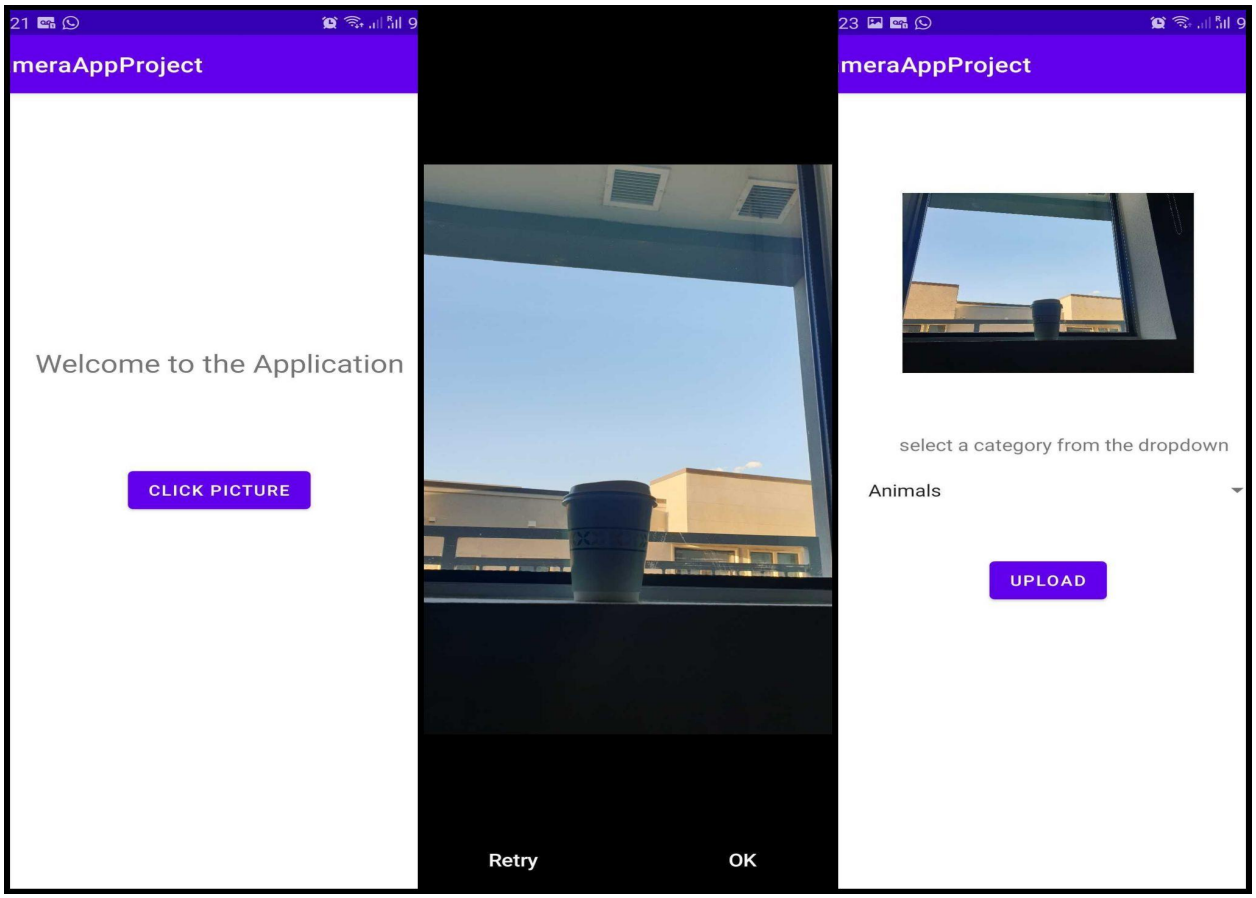
- The landing page of the application provides the user an option to click a picture. Clicking on the 'Click Picture' button on the landing page triggers a standard intent to launch the camera app to capture an image from the back camera and then store it in a temporary image file in the external storage directory.
- After capturing the image, the user is provided with a choice to proceed with the captured image or to discard it and recapture a new image.
- On proceeding with the captured image, the application redirects to the upload image page by triggering a new intent. The location of the captured image in the external directory is also passed as part of the intent so that it can be used to upload the image to the server.
- A thumbnail of the captured image is also displayed on the upload image page, along with a dropdown menu to select the category of the image(which is populated through a fixed list of strings).

- Upon assigning the category and clicking the upload button, the application sends a POST request to the server asynchronously using the retrofit library, along with the image file and the category as request parameters. If the request is successful, a success alert dialogue box is displayed; otherwise, a failed alert dialogue box is displayed.

Backend Flask Server:

The server provides an API for uploading images to the server's filesystem. The API takes the image file as a multipart input along with the category and then stores the provided image file in a directory on the file system corresponding to the category provided (creating new directories if necessary). The server also performs some validations on the input before processing the request and returns a failed response in the case of invalid input parameters.

Screenshots of the application:



References

1) https://developer.android.com/
2) https://square.github.io/retrofit/
3) https://developer.android.com/training/camera/photobasics