Course Project Specification

Introduction to Software Systems, Spring 2024

January 22, 2024

You will be making a Photo-slideshow app, a web-based application that allows users to upload a sequence of images and convert them into a cohesive video. This project will be based on HTML, CSS, JavaScript, Python, SQL and Flask to create an intuitive and user-friendly interface for uploading, customizing, and video creation.

The project is divided into 3 Phases - Frontend, Backend + Database, Python + Deployment. There will be evaluations after each phase. The project will be done in teams of 3, the Teams list based on your form response will be released on moodle shortly. One of the member from each team has to make a group on GitHub classroom with the Group number (specified in Course Teams excel file on moodle) as the Group name. Others team members have to join that group.

Objectives

- Enable users to upload a series of images.
- Convert the uploaded images into a video file format (e.g., mp4).
- Deliver a visually appealing user interface.
- Provide options for customization and adding background music.
- Create an end-to-end product.

Milestone 1: Frontend

In the Milestone 1, you will be designing the following specification.

Upload Images:

- Users can upload images in common formats (e.g., JPG, PNG).
- Support drag-and-drop functionality for ease of use.

- **Bonus:** Support functionality to upload multiple images.

Video Customization:

- Select the photos to be converted to a video.
- Functionality to add background music to the video.
- **Bonus:** Allow users to set the duration of each image in the video.
- **Bonus:** Provide options for transition effects between images.

Preview:

- Display a preview of the video as users make customization choices.
- **Bonus:** Include play, pause, and rewind controls for previewing the video.

Output Settings:

- Allow users to select the desired output video resolution and quality.

User Authentication:

- Create an user login and sign-up page.
- **Bonus:** Create an Admin screen to view all the users.

Milestone 2: Database and Backend

In this milestone, you will be filling the logic pieces to store and retrieve the uploaded medias and managing user authentication.

Flask backend

- Set up a Flask backend server to handle HTTP requests and responses.
- Implement a basic user authentication system (Use JWT tokens for storing passwords)
- **Bonus:** User gets automatically authenticated next time, after having once logged in.

MySQL Database

- Set up a MySQL database to store user information, uploaded images metadata.
- Design the database schemas for various entities e.g. user.
- Create a Preloaded library for audio files.

- **Bonus:** Implement search functionality for various media types.

Milestone 3: Python and deployment

Python

You are allowed to use any Python library for this part.

- Write Python scripts to convert the processed images into a video file.
- Add audio to the video file.
- **Bonus:** Implement image transitions.
- **Bonus:** Functionality to add multiple audios and set their respective duration, run the process when the browser is closed.

Deployment

- The exact Deployment details for your Web Application will be released shortly.

Timeline

Frontend Milestone - 22^{st} Jan to 5^{th} Feb
Backend, Database Milestone - 6^{th} Feb to 20^{th} Feb
Python, Deployment Milestone - 21^{st} Feb to 5^{th} March

The evaluation dates for each milestone will be released later.

Submission

In addition to deploying your webapp, the code submission will through GitHub Classroom. All the team-mates can collaborate through the GitHub repository. There will be a final presentation after the 3^{rd} milestone testing your final application, the dates for the same will be released later.