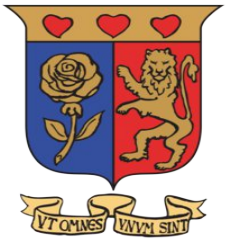


Strathmore University

SCHOOL OF COMPUTING AND ENGINEERING SCIENCES

UNIT:

MULTIMEDIA APPLICATIONS

UNIT CODE:

BBT 4101

ASSIGNMENT:

END SEMESTER PROJECT (DIGITAL RESTAURANT MENU)

STUDENT DETAILS:

Olwande James (150768)

LECTURER:

E. Edwine

PROJECT OBJECTIVES

The primary goal of this project was to design and develop an interactive digital restaurant menu that allows customers to visually browse food items with high-quality images and listen to an audio narration describing each dish. The specific objectives included:

1. Creating a user-friendly, visually appealing interface for displaying food items.
2. Integrating audio descriptions for each dish to enhance accessibility for visually impaired users.
3. Ensuring the system is responsive and works seamlessly across devices (desktop, tablet, mobile).
4. Optimizing media files (audio and images) for faster loading times without losing quality.

TOOLS USED

Tool / Technology	Purpose
HTML5	Structure of the menu pages and item details.
CSS	Styling, layout design, and responsive formatting.
JavaScript	Interactivity, including play/pause audio functionality.
Google Text-to-Speech (gTTS)	Generating MP3 audio narrations for each dish description.
Audacity	Mixing narration with background music for a professional touch.
FFmpeg	Compressing and optimizing dish images for faster loading.
VS Code	Main development environment.

DEVELOPMENT PROCESS

Step 1 – Designing the Menu Layout

- Created a main menu page displaying 24 dishes in a grid format.
- Each dish included a thumbnail image, name, and clickable link to a detail page (item.html).

Step 2 – Adding Audio Descriptions

- Wrote a short, engaging description for each dish.
- Used gTTS to convert the text descriptions into British-accent MP3 files.
- Organized the audio files in a structured directory.

Step 3 – Integrating Audio into HTML

- Added a Play/Pause button in item.html for each dish, linked to its specific MP3 file.
- Used JavaScript to ensure audio could be toggled without reloading the page.

Step 4 – Image Optimization

- Used FFmpeg to compress dish images while maintaining quality.
- Ensured images loaded quickly on mobile networks without pixelation.

Step 5 – Enhancing Audio with Background Music

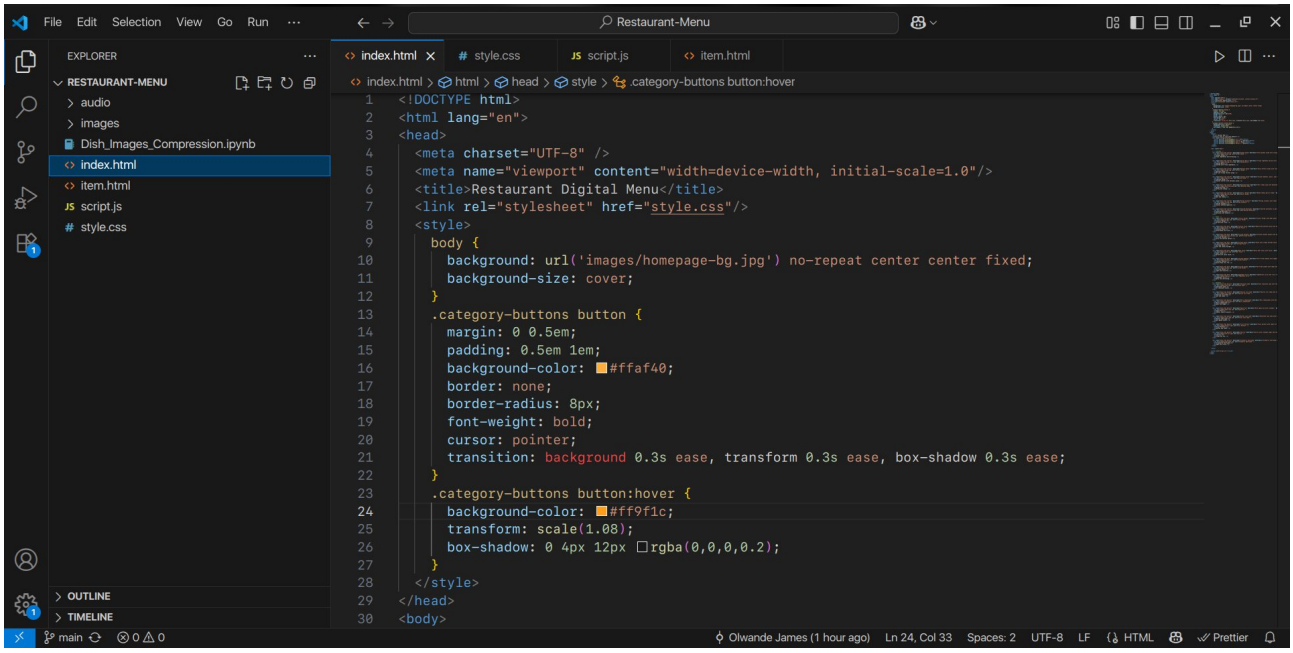
- Imported MP3 narration files into Audacity.
- Mixed with soft, non-distracting background music for a more pleasant user experience.

Step 6 – Testing & Refinement

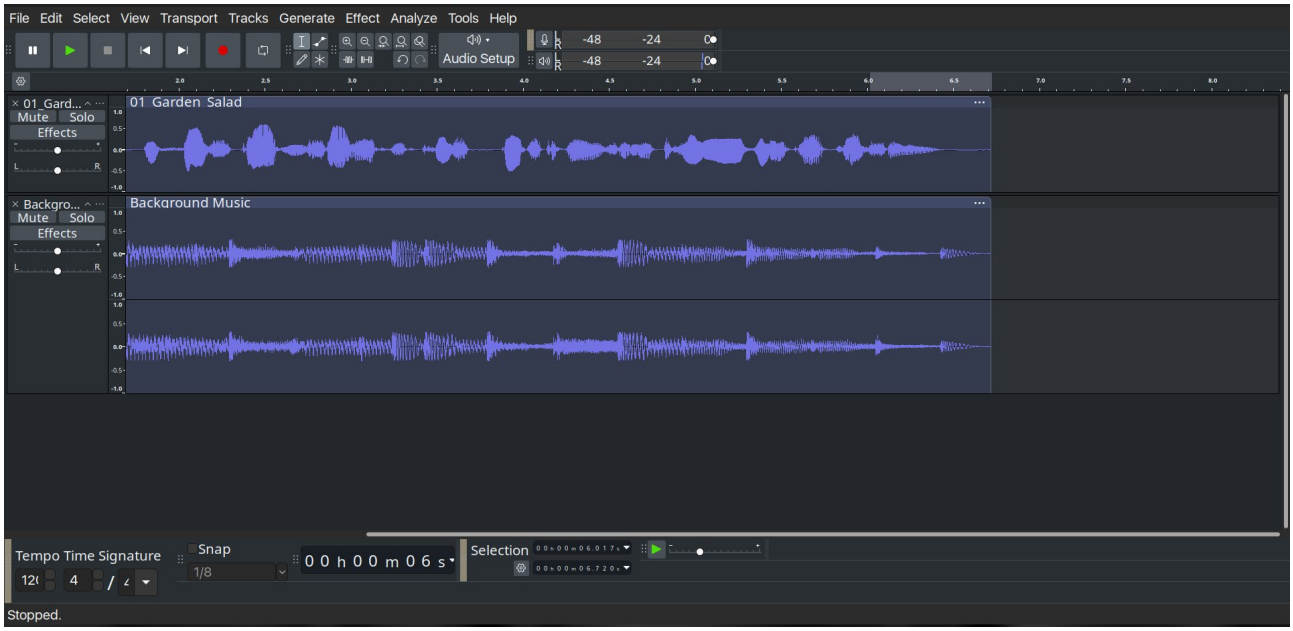
- Checked responsiveness across mobile, tablet, and desktop using Chrome Developer Tools.
- Fixed audio autoplay issues by ensuring user interaction triggered playback.

SCREENSHOTS

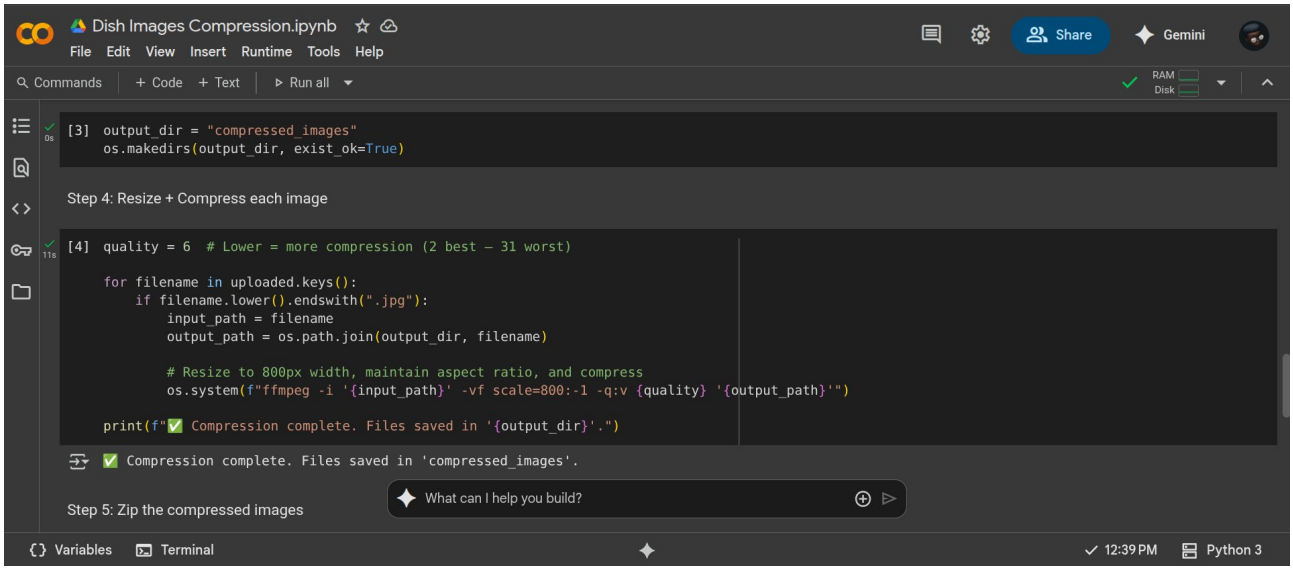
1. Website Code Screenshot (VSCode):



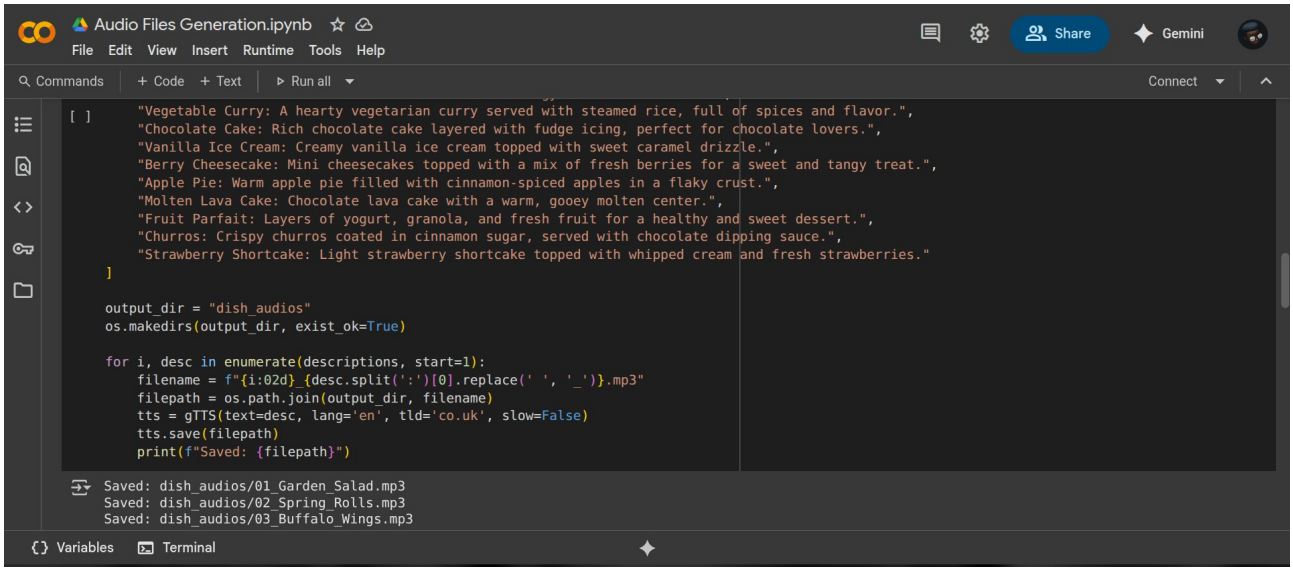
2. Audio Editing Screenshot (Audacity):



3. Image Compression Screenshot (Google Colab):



4. Audio Description Generation Screenshot (Google Colab):



CHALLENGES & SOLUTIONS

Challenge	Solution
Large image sizes causing slow loading	Compressed images using FFmpeg while keeping resolution high enough for visual appeal.
Audio not playing on mobile browsers	Added JavaScript event listeners so audio playback is triggered by a user click/tap.
Background music overpowering narration	Used Audacity to reduce background music volume by 80% relative to narration.
Organizing 24 separate audio files	Implemented a consistent file naming format (dish_name.mp3) to simplify linking in HTML.

CONCLUSION & REFLECTION

This project successfully delivered an interactive, multimedia restaurant menu that enhances customer engagement through visual and audio presentation. The addition of audio descriptions not only improves accessibility for visually impaired customers but also adds a modern, interactive touch to the dining experience.

Through this project, I gained hands-on experience in:

- Combining front-end web development with multimedia content creation.
- Using tools like gTTS, Audacity, and FFmpeg for real-world applications.
- Optimizing digital content for both quality and performance.

If implemented in an actual restaurant setting, this system could significantly enhance the customer experience, making menu navigation more intuitive, engaging, and inclusive.