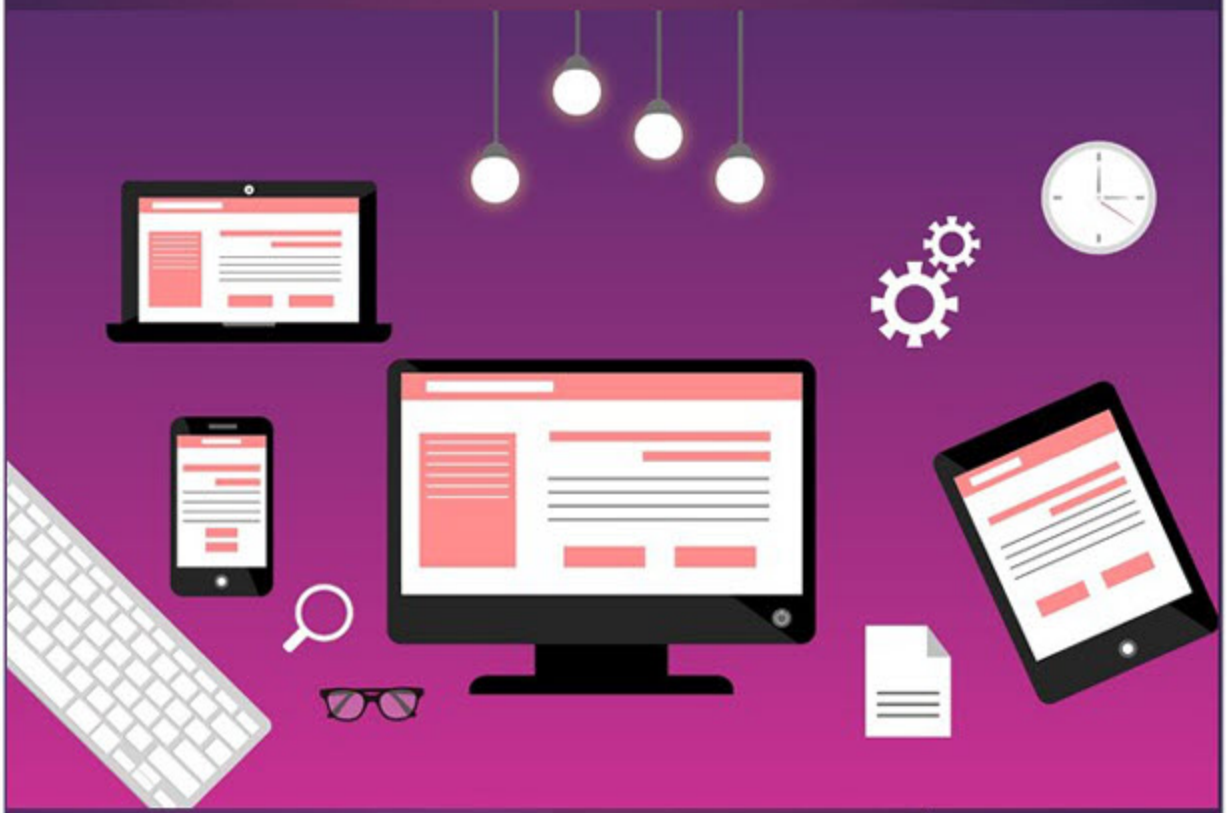
eProject Guide

Build Responsive NextGen Websites



CSS3

HTML5

React JS

eProject Guide - Build Responsive NextGen Websites

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First Edition - 2023

Preface

The eProject guide provides all the necessary information to students in developing a solution for the work process. Important functionalities required in the application are explained. Students have to understand the workflow and design the project accordingly.

The project specification is organized in following order:

Introduction provides information related to the software industry. Process flow, suggested modules of the application and their description are also dealt with in the introduction.

Documentation describes different formats for collecting and maintaining the information. These can be used as guidelines.

Case Study provides source of information that can be used by the students while developing the project.

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INDUSTRY BEST PRACTICES

SYNC WITH THE INDUSTRY

Introduction to the Book

The best way to learn something is to apply its principles and then, to test them. Similarly, the best way to evaluate the knowledge you gained is to test its application through project work. This eProject Guide, which has been prepared following the best practices in the industry, will help you to have the experience of going through a live project and will teach you the essentials of successful development of IT projects.

The eProject Guide will help you to:

- Analyze a project
- Design the specifications of the project
- Develop the solution
- Maintain disciplined documentation for the work done
- Work in groups

The ability to work in a group is a very vital quality for anybody desiring to join the software industry. Your project group will consist of 3-4 members. The Faculty will assign you to a project group and select the Leader for the Group (Group Leader).

This eProject Guide reiterates the commitment of eProjects Team in keeping up its tradition of providing innovative, career oriented professional education.

Religiously following the given systematic approaches in this book would prepare the students to get the real life experience of handling projects, as the practices listed here have been extracted from the current industry norms. Thus, such an exercise would prepare you for joining the software development industry.

Wishing you the very best.

eProjects Team

Contents

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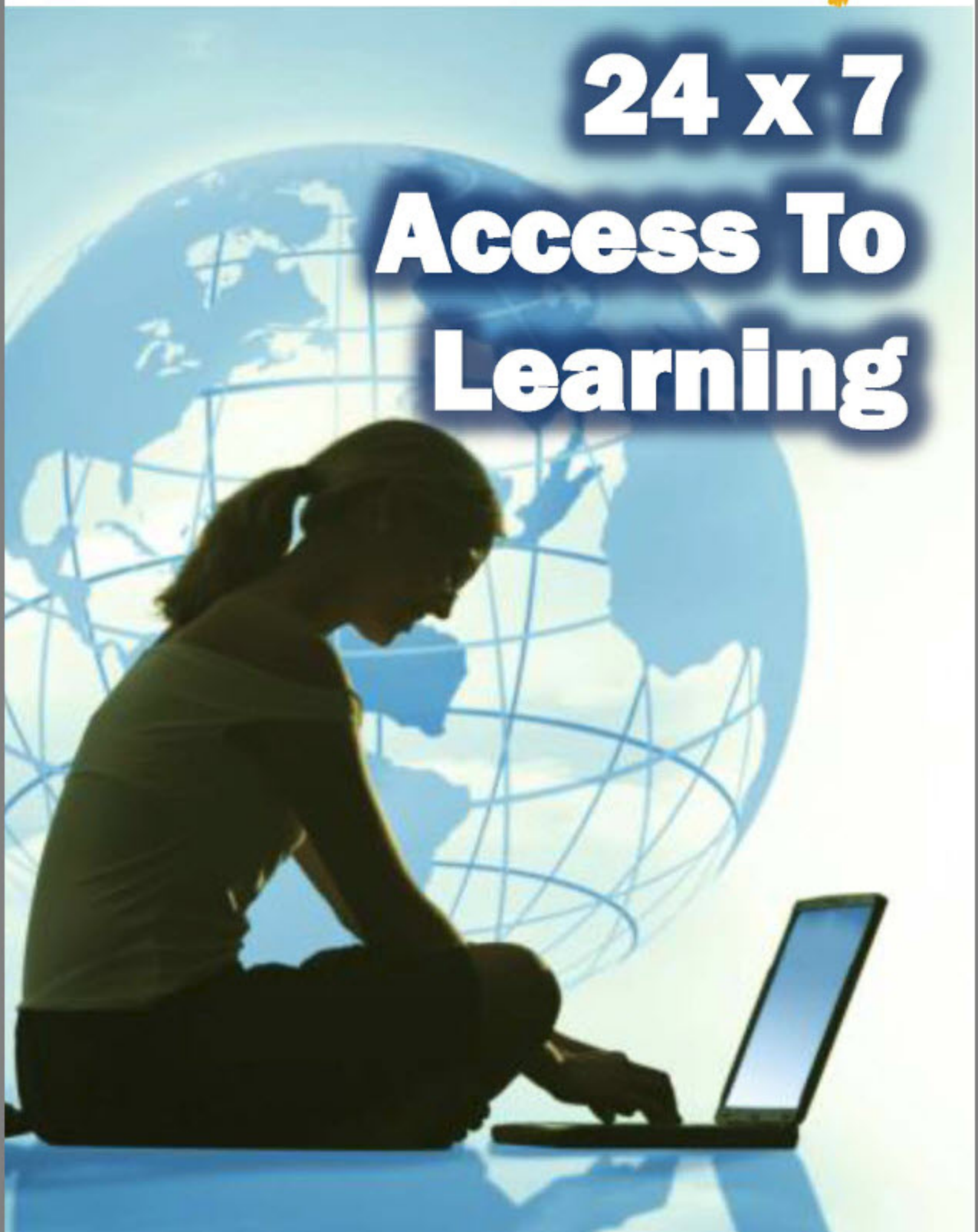

1. Introduction

1.1 Team

Implementation of any new computerized system involves a team of people. An ideal team consists of following members:

- Project Manager: The Project Manager coordinates the project. Apart from being knowledgeable about software, the person chosen as the Project Manager must have good writing skills. A Project Manager must have enough experience in this field so that he/she can be successful in managing the implementation. He/she is involved not only in team management, but also in activities such as resource allocation, project planning, reporting, and so forth; all of which form a part of the responsibilities.

- Project Leader: The Project Leader leads the project team. A Project Leader essentially decides which tasks are to be performed by each team member and how much time should be allotted to each project development phase.

- Analyst: The analyst studies the requirements of the system and defines the problem. The analyst determines the inputs, outputs, and processes involved in transforming those inputs into outputs. The analyst acts as the 'Technical Expert' and studies the technologies that are to be implemented to develop the project.

- Developer/Programmer: The developer builds the user interface according to the specifications prepared by the analyst. Next, the developer builds a prototype of the system. After receiving client approval on the prototype, the developer adds the necessary code to make the prototype a full-fledged system.

- Tester: The tester tests the functionality of the application. Test data is used to check if the program is able to execute without causing any errors. Test data may be live data extracted from existing records in the system or dummy data. The tester also verifies the integrated application's functionality with test data.

- Implementation Engineer: The Implementation Engineer ports the final product to the Client's computers. The Implementation Engineer will ensure that the installation process has been carried out accurately, and hands over the system to the client.

- Maintenance Engineer: The maintenance engineer is responsible for taking care of or maintaining the system that has been built. Maintenance includes extending troubleshooting support and performing software upgrades in case of changes in the external system.

1.2 Tips for a Good Application

The seven basic steps for creating an effective application are as follows:

1. Define your target audience
2. Organize your concepts, information, and material
3. Create a directory structure
4. Implement storyboarding – prepare a sketch of contents, sequence, and layout of the forms you intend to create
5. Build a prototype of your application

6. Test the prototype and implement the required changes

7. Deploy the application on the server, if applicable

Before designing an application, you must first conceptualize the application. The goals and the objectives must be clearly defined. Think about what the application goals and missions may be to inform, promote, educate, research and report, or to simply entertain. These goals must be defined and should be in line with the company's values and mission.

Annexure A shows a case study of a project.

1.3 Project Objectives

Develop a Web application based on the problem specifications given

Design a professional-looking Graphical User Interface (GUI) for the application

Integrate all the modules to form a complete solution

1.4 Project Deliverables

Following are the deliverables that have to be submitted on the completion of the project:

- Complete Application
- User Manual
- Installation Guide

1.5 Project Conduct

During project development, three meetings would be held within the team.

- First Meeting

In this meeting, students should discuss the eProject Specification. They are required to work upon:

- Problem Statement
- Table/File Structure
- Program/Code Specifications
- Reports to be generated

➢ Review of First Meeting

After the first meeting, students will review and discuss the details of the meeting. They will check if the structure is correct and the forms are designed as per the design specifications.

➢ Second Meeting

In this meeting, students will discuss the design. They have to consider the following:

- Understanding of the problem
- Design of the forms
- Validations required

➢ Review of Second Meeting

After the second meeting, students will review and discuss the details of the meeting. They will check whether the design of forms are correct and proper verification and validation rules are being implemented.

- Third Meeting

In this meeting, students will discuss and present the final application. They will consider the following:

- Implementing all the specifications mentioned in the previous meetings
- Form Design
- All the required validations
- Integrating all the project modules such as the forms, reports, and so forth
- User Manual and Installation Guide

2. Steps for a Great Project

- Analyze and understand the user requirements.
- Do the detailed analysis for the project.
- Identify the resources available.
- Plan and maintain a schedule for various activities to be done in the project.
- Check and test all modules.
- Document each and every detail.

Documentation Section

In this section, we will look into various formats used for documenting the project.

This section contains different formats, which can also be referred to, in Annexure A, in the case study.

Students can use their own additional formats in the project documentation.

3. Documentation Section

This format can be used as the first page of your project report, duly signed by the Center Academics Head.

This is to certify that

Mr./ Ms _____

Has successfully Designed & Developed

_____

Submitted by:

_____

Date of Issue:_____

Authorized Signature:_____

3.1 Problem Definition

In this form, you can define the problem statement. You can design a pointwise list of the requirements as mentioned in the ePROJECT SPECIFICATION.

Problem Definition:

3.2 Customer Requirement Specification (CRS)

Client:

Business/Project Objective:

(can address organization/business overview, products, concerns, and expectations from the system)

Inputs provided by the Client:

- Inputs to the System
- Outputs from the System
- Process Involved in the System
- Expected Delivery Dates
- List of Deliverables

Hardware Requirements:

Software Requirements:

Scope of the Work (in brief):

3.3 Architecture and Design of the Project

You can provide the Architecture and Design for your eProject in this format.
You can refer to Annexure A Case Study to understand the use of Architecture and Design of the Project.

3.4 Data Flow Diagram

A Data Flow Diagram (DFD) is a graphical representation of the flow of data.

You can provide the Data Flow Diagrams for your eProject in this format.
You can refer to Annexure A Case Study to understand the use of Data Flow Diagrams.

3.5 Flowchart

A flowchart is a graphic representation of an algorithm or a process.

You can provide the flowcharts for your eProject in this format.
You can refer to Annexure A Case Study to understand the use of flowcharts.

3.6 Entity Relationship (ER) Diagram

Entity Relationship is used to describe information required and/or the type of information that is to be stored in the database.

You can provide the Entity Relationship Diagrams for your eProject in this format.

3.7 Database Design/Structure

Table is a set of data elements (cells) that is organized, defined, and stored.

Using this format, you can provide the Table Structure for your eProject in this format. You can refer to Annexure A Case Study to understand the use of Table Structures.

3.8 Task Sheet

Project Ref. No.:		Project Title:	Activity Plan Prepared By:	Date of Preparation of Activity Plan:			
Sr. No.	Task			Actual Start Date	Actual Days	Team Mate Names	Status

Form No. 5/eProjects/TS/Ver 1.0/1 of 1

3.9 Checklist of Validations

Option	Validated
Do all numeric variables have a default value of zero?	
Does the administrator have all the rights to create and delete the records?	
Are all the records properly fed into the appropriate database?	
Have all the modules been properly integrated and are completely functional?	
Have all the Design and Coding Standards been followed and implemented?	
Is the GUI design consistent all over?	
Is the navigation sequence correct through all the forms/ screens in the application?	
Is exception handling mechanism implemented in all the screens?	
Are all the program codes working?	

3.10 Submission Checklist

Sr. No.	Particulars	Yes	No	NA	Comments
1.	Are all the users able to search for a particular record?	Yes			
2.	Are all the old records properly saved and retrieved when required?	Yes			
3.	Have all the modules been properly integrated and are completely functional?	Yes			
4.	Are the GUI contents devoid of spelling mistakes?	Yes			
5.	Is the application user-friendly?	Yes			
6.	Is the project published properly into a setup file?	Yes			

Annexure A: CASE STUDY

A music school Jazz Musicals offers a variety of music classes to the music lovers. They plan to launch a Website for their potential customers to enable them to view the classes and their schedule. Along with the registration, Jazz Musicals want that users who visit the site should be able to learn more about musical instruments.

Since the target users for this site may browse it using a variety of devices/gadgets, it is essential that the Website conforms to responsive UI/UX principles.

As per Jazz Musicals, they want following sections on their Website:

- Classes section that allows users to view classes.
- Music-Information section for showcasing musical instruments and music related theory.
- Blog section that has news and articles about the music industry.

Classes Section:

The classes section should include details about the music classes the school offers, such as class descriptions (type and level of classes), schedule, and fee. On the Website, users should be able to search for available classes by type of classes, level of classes, and time slot of classes. Users should also be able to sort the information about the classes based on the criteria that they select.

Music-Information Section:

The information section includes information on instruments, accessories, books, and software. Each category should have a separate page with a list of products, easy navigation, and text that is both descriptive and illustrative. The purpose is to share information about musical instruments, music related books, and accessories with music lovers. The software part will have information on various music related software. Users should also be able to sort the information based on the criteria they select.

Blog Section:

The Website should have extra features including a blog section that has music-related news and articles.

About Us Section:

This section will have details about the Music school run by Jazz Musicals.

- Business
- Management Team
- Expertise

Contact Us Section:

This section will have address of the school, phone number where users can contact them, and email for contact. There can also be a form where users can submit their query/feedback.

The task of Website development is outsourced to Xtreme Software Solutions.

Proposed Solution

The team at Xtreme Software Solutions decides to develop the Website using technologies that will ensure ease of navigation and consistent design.

Main focus of the team is to develop Website that makes it easier for users to register for classes and also search for information on music. Overall, the Website design should be a success if the client reports increased engagement and better user experience and responsiveness.

The Website should have a modern and clean design with the branding based on logo and color themes also based on logo and other branding items used by client. Navigation is to be made easy for users so that they can easily access all the features of the Website.

Xtreme Software Solutions decides to use following technologies for the Website:

- HTML5 and Figma for the layout or the basic structure
- CSS3 to improvise the look and feel of the Website
- JavaScript and ReactJS for scripting

Project Specifications

The Website will be designed as a Single Page Application (SPA). The primary markup language used to develop the Website will be HTML5. CSS3 will be used for visual appearance including entire look and feel of the pages, the navigation bar for various sections, the position of the logo, the look and feel of the forms controls, and so on.

Figma can be used for designing the UI/UX aspects of the site.

JavaScript and ReactJS would handle all the scripting related requirements. For example, fetching information placed in JSON files for classes, information, and blogs on to the Website. It also handles the information that would be placed within DIV tags of HTML 5 and so on.

To ensure that Website scales properly on different screen sizes, optimize the images to reduce their size, which improves the loading time as the Website has heavy information related to music. Use CSS3 to create a flexible grid system, which makes it easier to organize the content and ensures that it looks great on any device.

All these technologies should also work together to ensure that the site is responsive.

The Website will have following functionalities:

➢ Home Page: The homepage would have logo on top left corner and underneath that, there would be a navigation bar where different options for Classes, Information, Blog, About Us, and Contact Us would be present. These are navigation points for the three sections. On clicking each of these, user will navigate to respective dashboards.

- ✓ Classes: Classes section has list of all classes that Jazz Musicals is offering. A user can view these details.
    - o View classes
    - o Search classes
    - o Sort classes based on the criteria selected by the user

Classes information can be displayed in tabular format.

- ✓ Music Information:
  - o View information related to the following:
    - Musical instruments
    - Music related books
    - Music related software

Musical instruments and books information can be displayed as Image gallery with description of each item.

Music related software can be displayed as a list of software with description and links for each.

- o Sort information about the instruments, books, and software based on criteria selected.

- ✓ Blog:
  - o View Blogs

- ✓ About Us

- o Business – Brief information on the business of the musical school
- o Management Team – Brief profile of directors
- o Expertise – Brief information on the expertise of the school in the music industry

- ✓ Contact Us

- o Address
- o Phone Number
- o Email

Optionally, a form can be displayed here to accept query/feedback from users. The action on submitting the form will be beyond the scope of the project. This project can only accept the form inputs.

ACKNOWLEDGEMENT

I would like to acknowledge all those who have given moral support and helped me make the project a success.

I wish to express my gratitude to the eProjects Team at the Head Office, who guided and helped me. I would also like to express my gratitude to all the staff members of my center for not only providing me with the opportunity to work with them on this project, but also for their support and encouragement throughout the process.

I also express my sincere gratitude to my project guide at the organization, for his/her valuable guidance and support for the completion of this project.

And finally, I would like to offer many thanks to all my colleagues for their valuable suggestions and constructive feedback.

Customer Requirement Specification (CRS)

Client: Jazz Musicals

Business/Project Objective:
(Can address Organization/Business Overview, Products, Concerns, and Expectations from the System)

➢ List of inputs to the system

Inputs would include criteria for search and criteria for sort as specified by user. Inputs can also be form inputs in the Contact Us section.

➢ List of outputs expected from the system

Outputs would include list of classes that are being offered by the Jazz Musicals, information about music, and blogs.

➢ Overview of processes involved in the system

Some of the processes are:

- Classes
- Music Information
- Blog

➢ Hardware and software required for implementing the project

The hardware required would be a system with Intel Core i5 Processor or higher, 8 GB RAM or above, Color SVGA and 400 GB Hard drive space. The software required include Windows 10 or higher, Notepad++, HTML, CSS3, JavaScript, Figma, and ReactJS. In order to run the Website, a modern Web browser is required. To fetch JSON based information from files to the Website, Node.js may be required while interacting with React JS.

➢ Acceptance criteria for the project

- Three options for navigation, Classes, Music Information, and Blog
- Easy sort and search
- Responsiveness
- Easy navigation across all sections
- Look and feel as per branding

Architecture and Design of the Project

Figure 1.1 displays the application architecture.

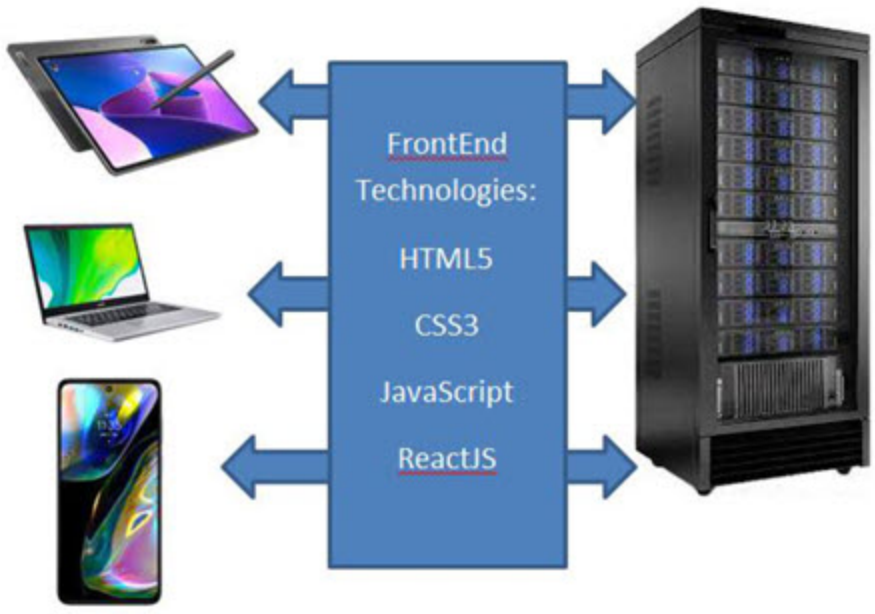

Figure 1.1: Application Architecture

Data Flow Diagram (DFD)

Figure 1.2 displays the DFD of the application.

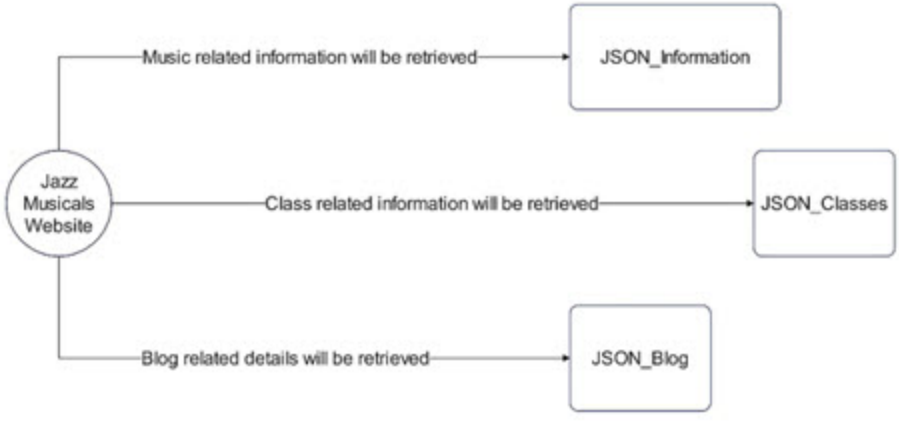

Figure 1.2: Context Level Diagram (Level 0 DFD)

Entity Relationship (ER) Diagram

Not applicable as there are no Entities in this system.

Database Design

Not applicable as there is no database in this system.

Flowchart

Figure 1.3 displays the flowchart for the application.

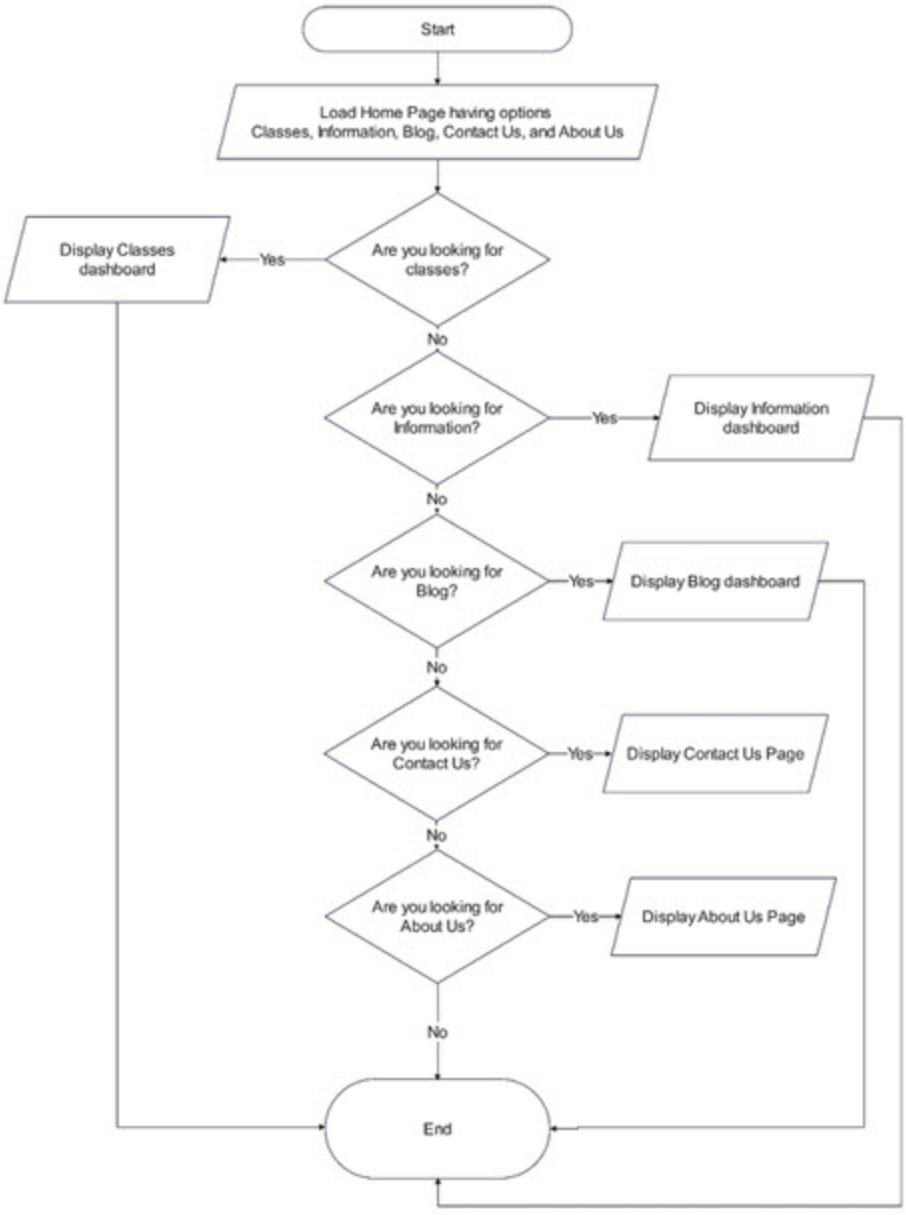

Figure 1.3: Flowchart for the Application

Additional Resources

https://upmostly.com/tutorials/how-to-display-json-data-in-react-table
https://www.makeuseof.com/react-generate-table-from-json
https://www.codingninjas.com/codestudio/library/table-in-react-js