



**TRAINING REPORT**

**OF**

**SUMMER TRAINING, UNDERTAKEN**

**AT**

**SOLITAIRE INFOSYS**

**ON**

**PYTHON WITH DJANGO**

**SUBMITTED IN PARTIAL FULFILLMENT OF THE DEGREE**

**OF**

**BACHELOR OF TECHNOLOGY**

**IN**

**Computer Science and Engineering**

**Submitted By:**  
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**Roll No.: 12001079**

**DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING**  
**PUNJABI UNIVERSITY**  
**PATIALA - 147002**

**Date: 03.05.2024**

**TO WHOM IT MAY CONCERN**

This is to certify that **Mr. Prince S/O Sh. Sanjeev Kumar** is bearing University/College Roll No. **12001079** from **Punjabi University, Patiala** is pursuing his 6 Months project training under the session **3<sup>rd</sup> Jan 2024 to 3<sup>rd</sup> May 2024** at Solitaire Infosys Pvt. Ltd. towards partial fulfillment of his academic requirement.

He is working on project **"Swiftbuy(Shopping Ecommerce)"** in **Python with Django**.

We wish candidate success for all the future endeavors.

**Thanks & Regards**



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**Solitaire Infosys Pvt. Ltd**

Simple  
Creative  
Innovative

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**DEPARTMENT OF COMPUTER SCIENCE &ENGINEERING  
PUNJABI UNIVERSITY, PATIALA**

**CANDIDATE'S DECLARATION**

I “PRINCE” hereby declare that I have undertaken Summer training at “INFOSYS SOLITAIRE” during a period from Jan5,2024 to May5,2024 in

partial fulfilment of requirements for the award of degree of B.Tech (Department of Computer Science & Engineering) at Punjabi University, Patiala. The work which is being presented in the training report submitted to Department of Computer Science & Engineering) at Punjabi University, Patiala is an authentic record of training work.

Signature of the Student

The summer training Viva–Voce Examination Python with Django has been

held on \_\_\_\_\_ and accepted.

Signature of Examiner

## **Abstract**

During my training at Solitaire Infosys Pvt Ltd, I gained hands-on experience in a variety of programming languages and technologies including HTML, CSS, JavaScript, Bootstrap, MySQL, Python, Tkinter, and Django. Through practical projects and assignments, I honed my skills in web development and software engineering.

One of the significant projects I worked on during my training was the development of an e-commerce marketplace similar to Amazon. This project involved utilizing my knowledge of front-end technologies like HTML, CSS, and JavaScript for designing a user-friendly interface. Additionally, I implemented back-end functionalities using Python, Django, and MySQL for database management. The training also incorporated Tkinter for creating interactive graphical user interfaces (GUIs) for a minor project.

This experience not only enhanced my technical proficiency but also provided valuable insights into software development methodologies, database management, and UI/UX design principles. The project's scope encompassed user authentication, product listings, shopping cart management, order processing, and administration functionalities, showcasing a comprehensive understanding of full-stack web development.

The skills and expertise acquired during this training period have equipped me with a strong foundation in software development, making me well-prepared to tackle complex projects and contribute effectively to the industry.

## ACKNOWLEDGEMENT

Firstly I would like to express our gratitude and appreciation to Himanshu Agarwal (Head of Department). I am equally grateful to the faculty members who sorted out many problems and gave us the guidance.

I would also like to thank **Ms. Chahat Arora** who is the trainer in Solitaire Infosys Pvt. Ltd. for their consistent guidance on each and every step of my project.

I will definitely say that **Solitaire Infosys Pvt. Ltd.** has assisted me to up skill myself exponentially, and would recommend others as well to be its interns as in my opinion it is one of the best training providers in the state.

I would also like to express my deepest sense of gratitude to the whole team of Solitaire Infosys Pvt. Ltd., for their valuable help they have rendered throughout the training process.

Without their push and directions, this project would have not been complete. Their continuous support and motivation made this project possible.

**PRINCE**

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## About the Company

SOLITAIRE INFOSYS is a leading Software and Web Application Development Company, based in Patiala (Punjab) that provides high-quality comprehensive services to enterprises across a wide range of platforms and technologies. Their major areas of expertise are in providing quality, cost-effective software or web development services.

### Services Offered:

- IT Consulting, Software Design & Prototyping
- Custom Software Development, Software Testing & QA Services
- Web Application Development, Application Support & Software

### Maintenance

- Web Designing Solutions (Graphics, Brand & Logo Designing)
- Web Development Solutions (PHP, .Net, HTML, C++, Java)
- Mobile Application Development (Android, IOS)
- Internet Marketing (SEO, SEM, SMM)

### Location:

<b>India</b>	<b>India</b>	<b>Canada</b>	<b>USA</b>
SCO 8-9, FF, Factory Area, Near Hotel Flyover, Patiala (Pb) 147001.	C-110, Industrial Area Phase-VII, Mohali, India.	Unit 97. 23238 TWP 522, Sherwood Park ABT8B1H5, Canada	24981 Owens Lake CIR Lake Forest, CA 92630-2522, USA.

Expertise: Specializing in Software and Web Application Development with a focus on excellence.

### Services Offered:

- IT Consulting
- Software Design and Prototyping
- Custom Software Development
- Software Testing and QA Services
- Web Application Development
- Ongoing Application Support and Maintenance

### Quality Assurance:

Rigorous testing methodologies for reliable, secure, and high-performance software.

#### Web Designing Solutions:

- Graphics, Brand, and Logo Designing
- Creating visually appealing online presence

#### Web Development Technologies:

Php, Python, React

#### Mobile Application Development:

- Expertise in Android and iOS platforms
- Delivering user-friendly and innovative mobile solutions

#### Internet Marketing Services:

- Search Engine Optimization (SEO)
- Search Engine Marketing (SEM)
- Social Media Marketing (SMM)
- Holistic approach for a robust digital presence and effective audience reach.

#### Solitaire Infosys Pvt. Ltd.:

- Acclaimed IT service provider globally.
- Established in 2011 by a dynamic duo.
- Dedicated to contributing to the development of businesses worldwide.

#### Client Interaction and Understanding:

- Socializes with clients for a profound understanding of their business.
- Collaborates in building websites and applications tailored to their needs.

#### Years of Service:

- Proudly serving clients for over seven years.
- Founded with a shared aim and zeal.

#### Client-Centric Approach:

- Clients receive world-class services.



- Team works on client projects with dedication, treating them as their own.

#### Key Principles:

- Every project delivery embodies respect, creativity, quality, transparency, and teamwork.
- Holds an edge in the league through a client-focused mindset.

#### Experience and Expertise:

- Over seven years of experience and continual growth.
- Capable of accelerating organizational service processes.

#### Distinctive Qualities:

- Excellent customer satisfaction.
- Cost-effective solutions.
- Unparalleled innovative skills.

#### Conclusion:

They stand as a beacon of excellence in the IT service industry. With a client-centric approach and a commitment to delivering high-quality solutions, they successfully satisfied clients globally. The dynamic leadership, combined with years of experience, has positioned Solitaire Infosys as a trusted partner in the ever-evolving world of IT. The dedication to respect, creativity, quality, transparency, and teamwork ensures that each project is a testament to the company's commitment to excellence. As they continue to grow, it remains a reliable choice for businesses seeking innovative and cost-effective IT solutions.

# 1.INTRODUCTION

## 1.1Technology

### 1.1.1 Python

Python is a high-level, versatile programming language known for its readability and simplicity. Created by Guido van Rossum in the late 1980s, Python has gained immense popularity due to its ease of use, extensive libraries, and a vibrant community. This document provides an overview of Python, highlighting its key features and characteristics.

### 1.1.2 System requirements of Python

Hardware Requirements:	Software Requirements:
<ol style="list-style-type: none"><li>1. Processor (CPU):<ul style="list-style-type: none"><li>• Any modern processor should be sufficient.</li><li>• Python is not highly demanding on CPU specifications.</li></ul></li><li>2. Memory (RAM):<ul style="list-style-type: none"><li>• Minimum: 256 MB</li><li>• Recommended: 1 GB or more.</li><li>• The actual requirements depend on the complexity of your Python programs.</li></ul></li><li>3. Storage:<ul style="list-style-type: none"><li>• Minimum: 500 MB of free disk Space.</li><li>• Additional space for libraries, dependencies, and your projects.</li></ul></li></ol>	<ol style="list-style-type: none"><li>1. Operating System:<ul style="list-style-type: none"><li>• Python is compatible with various operating systems, including:<ul style="list-style-type: none"><li>• Windows</li><li>• macOS</li><li>• Linux/Unix</li></ul></li></ul></li><li>2. Python Interpreter:<ul style="list-style-type: none"><li>• Download and install the latest version of the Python interpreter from the official Python website: Python Downloads</li></ul></li><li>3. Dependencies:<ul style="list-style-type: none"><li>• Some Python libraries or frameworks may have specific requirements. Check the documentation for any additional dependencies related to your projects.</li></ul></li><li>4. Development Environment (Optional):<ul style="list-style-type: none"><li>• You can use any code editor or integrated development environment (IDE) of your choice. Popular choices include:<ul style="list-style-type: none"><li>• Visual Studio Code</li><li>• PyCharm</li><li>• Jupiter Notebooks</li></ul></li></ul></li><li>5. Virtual Environment (Optional but recommended):<ul style="list-style-type: none"><li>• Consider using virtual environments to manage dependencies for different projects. You can create virtual environments using <b>virtualenv</b> or <b>venv</b>.</li></ul></li></ol>

### **1.1.3 Features of Python**

#### **Readability:**

Python's syntax is clear and easy to understand, making it an excellent choice for beginners and experienced developers alike. The use of indentation to define code blocks enhances readability and enforces a clean coding style.

#### **Extensive Libraries:**

Python boasts a vast standard library that simplifies complex tasks. Modules for data manipulation, web development, machine learning, and more are readily available, reducing development time and effort.

#### **Dynamic Typing:**

Python is dynamically typed, allowing variables to be assigned without explicit type declarations. This flexibility enhances code readability and reduces the chance of errors.

#### **Cross-platform Compatibility:**

Python is platform-independent, enabling code written on one platform to run seamlessly on others. This feature promotes flexibility and facilitates collaboration across different operating systems.

#### **Object-Oriented:**

Python supports object-oriented programming (OOP) principles, allowing developers to organize code into classes and objects. This paradigm promotes code reuse, modularity, and maintainability.

#### **Interpreted Language:**

Python is an interpreted language, meaning that code is executed line by line, facilitating debugging and development. The absence of a compilation step streamlines the development process.

#### **Community Support:**

Python has a vibrant and active community. Developers worldwide contribute to open-source projects, share knowledge, and provide support, fostering a collaborative and inclusive environment.

### **1.1.4 Applications:**

#### **1. Web Development:**

- Frameworks like Django and Flask are widely used for building web applications.
- Python can be used for both server-side and client-side scripting.

#### **2. Data Science and Machine Learning:**

- Libraries like NumPy, Pandas, and Scikit-learn make Python a popular choice for data analysis and machine learning.
- Frameworks like TensorFlow and PyTorch are extensively used for deep learning.

#### **3. Scientific Computing:**

- Python is used for scientific and numerical computing with libraries like SciPy and Matplotlib.
- Jupyter notebooks make it easy to perform interactive computing.

#### **4. Automation and Scripting:**

- Python is great for writing scripts and automating repetitive tasks.
- It's commonly used for system administration, file manipulation, and process automation.

#### **5. Game Development:**

- Pygame is a popular library for developing simple games in Python.
- Unity, a popular game development engine, supports Python for scripting.

#### **6. Desktop GUI Applications:**

- Tkinter and PyQt are used for creating graphical user interfaces (GUIs) for desktop applications.

#### **7. Network Programming:**

- Python is used for network programming and building networked applications.
- Libraries like socket are commonly used for networking tasks.

#### **8. Databases:**

- Python has libraries like SQLAlchemy for working with databases, and it supports various database systems.

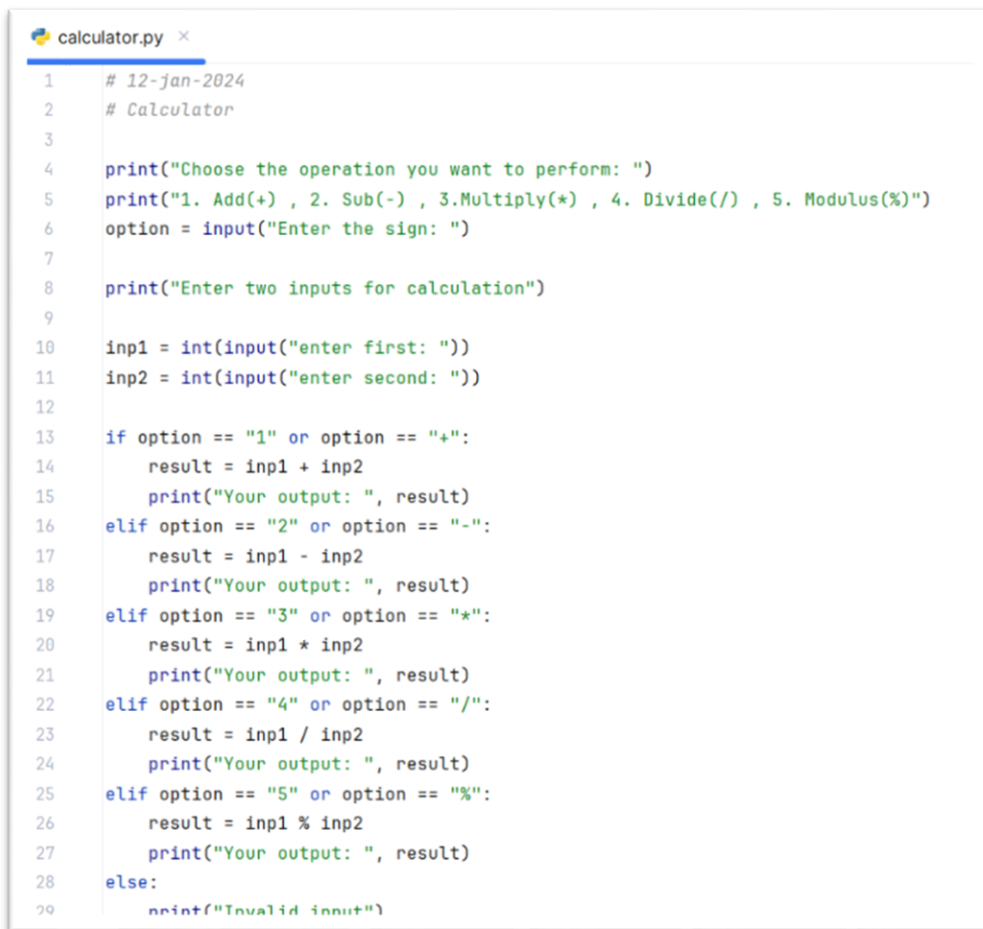
#### **9. DevOps and Automation:**

- Python is widely used in DevOps for tasks like configuration management, deployment automation, and infrastructure as code.

## 10.Natural Language Processing (NLP):

- Python has libraries like NLTK and spaCy for working with human language data.
- It's used in chatbots, language translation, and sentiment analysis.
- 

Ex: Calculator



```
calculator.py x
1  # 12-jan-2024
2  # Calculator
3
4  print("Choose the operation you want to perform: ")
5  print("1. Add(+) , 2. Sub(-) , 3.Multiply(*) , 4. Divide(/) , 5. Modulus(%)"
6  option = input("Enter the sign: ")
7
8  print("Enter two inputs for calculation")
9
10 inp1 = int(input("enter first: "))
11 inp2 = int(input("enter second: "))
12
13 if option == "1" or option == "+":
14     result = inp1 + inp2
15     print("Your output: ", result)
16 elif option == "2" or option == "-":
17     result = inp1 - inp2
18     print("Your output: ", result)
19 elif option == "3" or option == "*":
20     result = inp1 * inp2
21     print("Your output: ", result)
22 elif option == "4" or option == "/":
23     result = inp1 / inp2
24     print("Your output: ", result)
25 elif option == "5" or option == "%":
26     result = inp1 % inp2
27     print("Your output: ", result)
28 else:
29     print("Invalid input")
```

Fig 1.1

## **1.2 About GUI**

### **1.2.1 Introduction to Tkinter in Python**

#### **Basics:**

Tkinter overview:

- Tkinter is the standard GUI (Graphical User Interface) toolkit that comes bundled with Python.
- It provides a set of tools for creating graphical interfaces for desktop applications.

Cross-Platform Compatibility:

- Tkinter is platform-independent, making it suitable for developing GUI applications that can run on different operating systems.

Simple and Lightweight:

- Tkinter is known for its simplicity and ease of use, making it a great choice for beginners.
- Despite its simplicity, Tkinter is powerful and can be used to create complex GUI applications.

Integration with Python:

- As Tkinter is part of the Python standard library, it integrates seamlessly with other Python modules and libraries.

## **1.2.2 Features and Advanced Concepts**

### **Key Features of Tkinter**

#### **1. Simplicity and Readability:**

- Tkinter's syntax is straightforward and easy to read, promoting code clarity.
- Ideal for rapid GUI application development.

#### **2. Customization and Styling:**

- Tkinter allows developers to customize the appearance of widgets through styling options.
- Themes and styles can be applied to enhance the visual appeal of the GUI.

#### **3. Access to Tkinter Dialogs:**

- Tkinter includes pre-built dialog boxes for common tasks like file selection and message display.
- Simplifies handling user input and providing feedback.

#### **4. Support for Internationalization:**

- Tkinter supports the creation of multilingual applications, facilitating global reach.

### **Advanced Concepts**

#### **Canvas Widget for Drawing:**

1. Tkinter's canvas widget enables developers to draw shapes, lines, and images.
2. Useful for creating interactive and visually appealing graphics.

#### **Integration with Other GUI Libraries:**

3. Tkinter can be integrated with other GUI libraries, extending its capabilities.
4. Examples include ttk (Themed Tkinter) for more modern-looking widgets.

#### **Threading and Asynchronous GUIs:**

5. Tkinter applications can benefit from threading to manage concurrent tasks without freezing the GUI.
6. Asynchronous programming techniques enhance responsiveness.

## 1.2.3 Overview of Tkinter Widgets

### Introduction to Widgets

- **Definition:**
  - Widgets are the fundamental elements used to build the graphical user interface (GUI) in Tkinter.
  - Each widget represents a specific GUI component, such as buttons, labels, entry fields, and more.
- **Common Widgets:**
  - a. Label:**
    - i. Displays static text or an image on the GUI.
  - b. Button:**
    - i. Triggers an action when clicked, such as running a function or command.
  - c. Entry:**
    - i. Allows users to input single-line text.
  - d. Text:**
    - i. Supports multi-line text input and display.
  - e. Checkbutton:**
    - i. Represents a binary choice, allowing users to toggle between selected and deselected states.
  - f. Radiobutton:**
    - i. Presents a set of options where users can select only one.
  - g. Listbox:**
    - i. Displays a list of items for users to choose from.
  - h. Scrollbar:**
    - i. Enables scrolling within widgets like Listbox or Text.
  - i. Canvas:**
    - i. Provides a drawing surface for creating graphics and shapes.
- **Widget Hierarchy:**
  - Widgets are organized in a hierarchical structure with the main window as the parent.
  - Children widgets are placed inside the main window



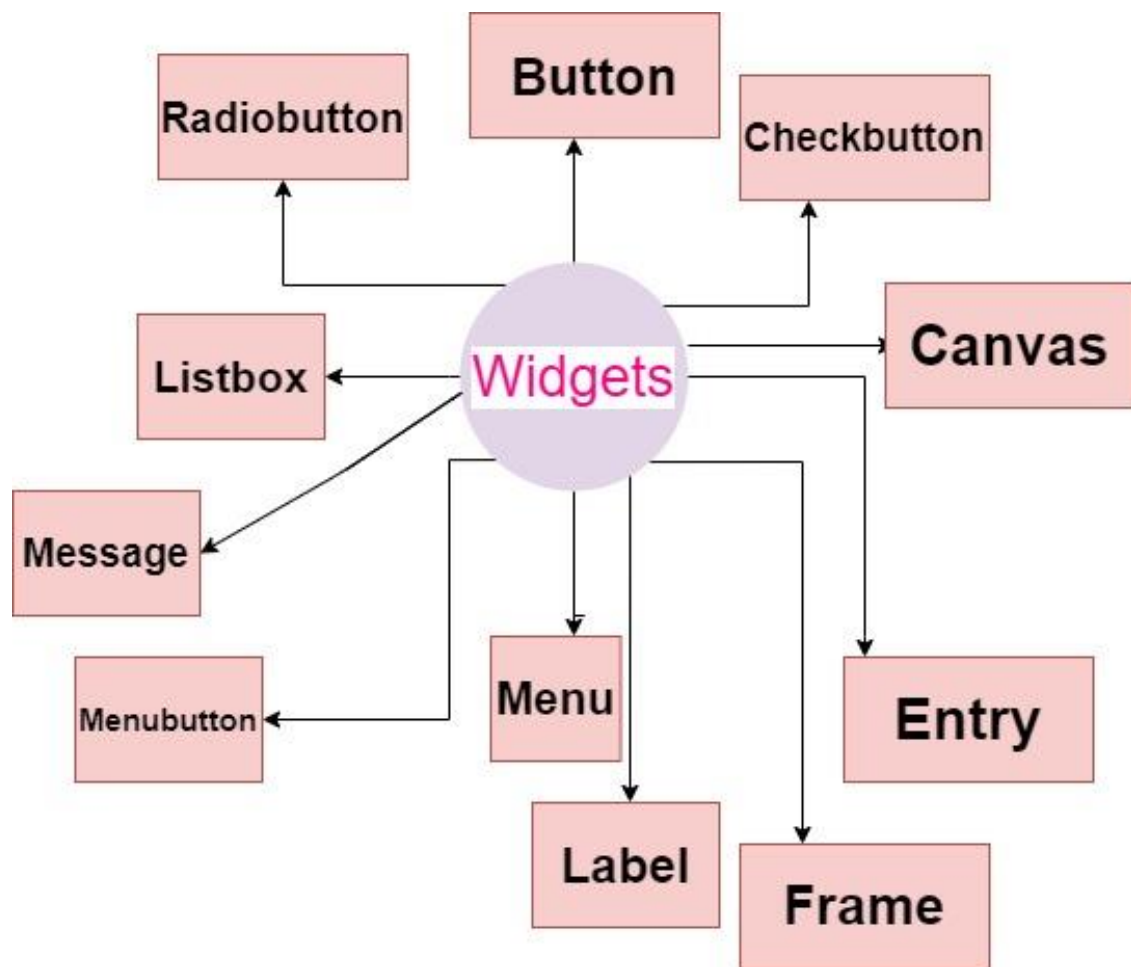


Fig 1.2

**Ex1:** Number guessing game

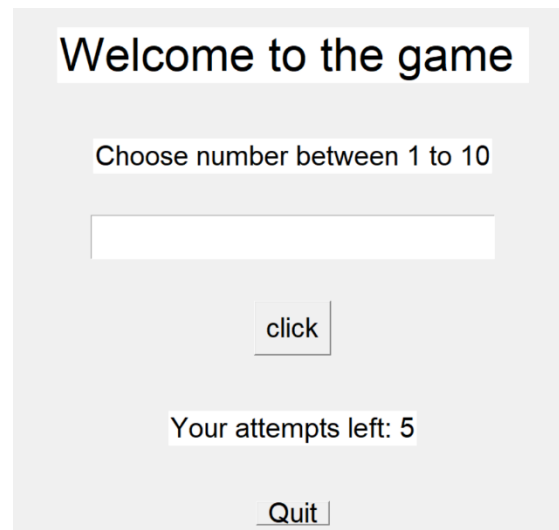


Fig 1.3

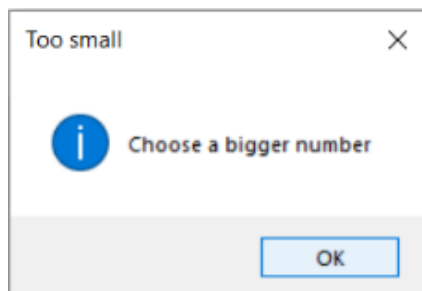


Fig 1.4

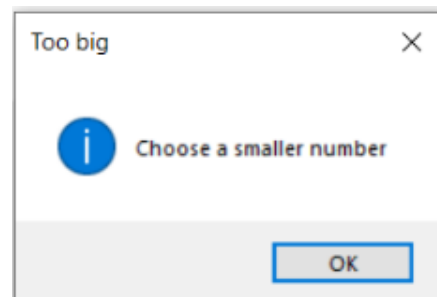


Fig 1.5

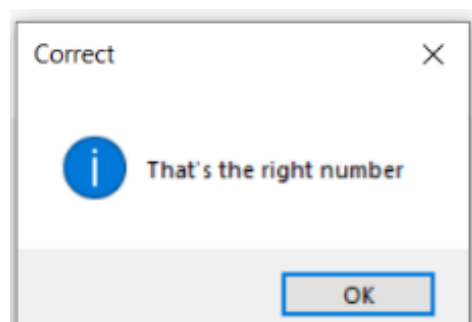


Fig 1.6

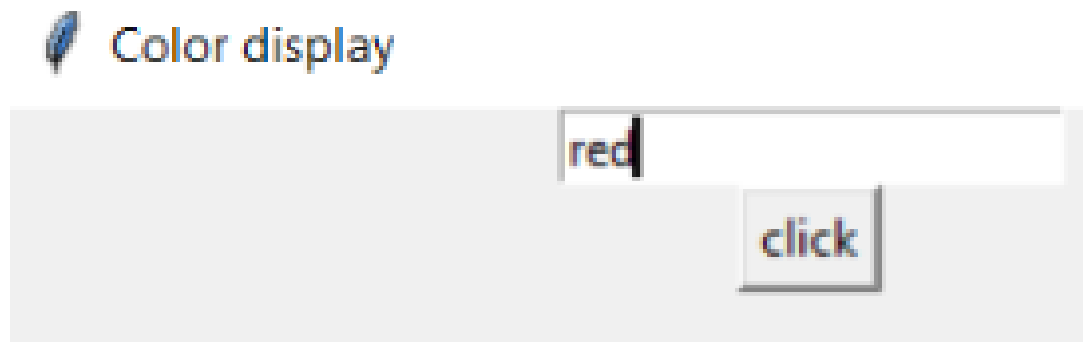


Fig 2.6



Fig 1.7



Fig 1.8

### Ex3: Text Editor

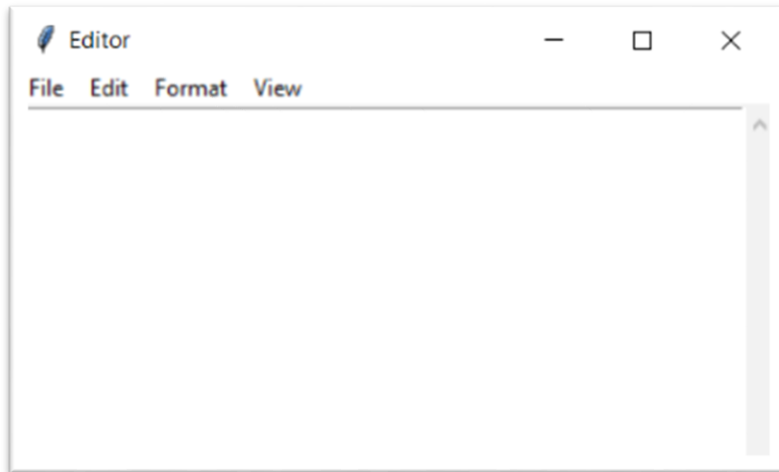


Fig 1.9

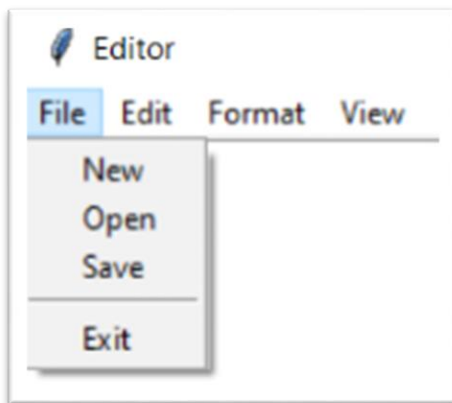


Fig 1.10

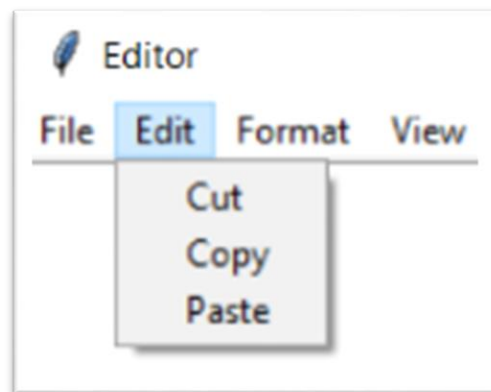


Fig 1.11

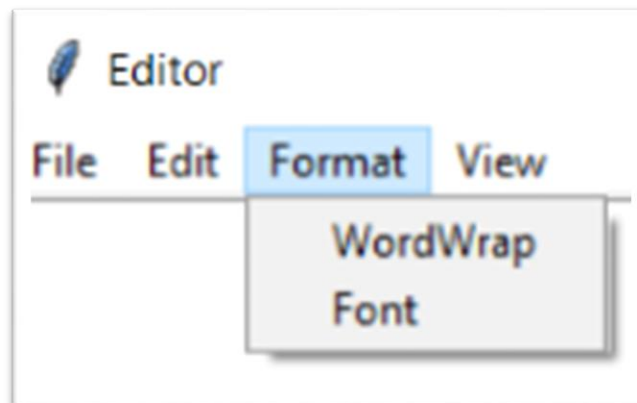


Fig 1.12

## 1.3 About MySql

### 1.3.1 Overview

- **Definition:**

- MySQL is an open-source relational database management system (RDBMS) that uses Structured Query Language (SQL).
- It is developed, distributed, and supported by Oracle Corporation.

- **Relational Database:**

- MySQL follows the relational database model, organizing data into tables with rows and columns.
- Tables are related to each other, facilitating efficient data retrieval and management.

- **Client-Server Architecture:**

- MySQL operates on a client-server architecture where a client interacts with the database server using SQL queries.
- Clients can be applications, web servers, or any software that needs to access the database.

- **Open Source:**

- MySQL is open-source software, making it freely available for use, modification, and distribution.
- The open-source nature encourages a large community of developers and users.

### 1.3.2 Key Features

- **Scalability:**

- MySQL is designed to scale from small to large applications effortlessly.
- It efficiently handles a growing amount of data and user connections.

- **Performance:**

- MySQL is known for its high-performance capabilities, providing fast and reliable data access and retrieval.
- Optimizations, indexing, and caching contribute to enhanced performance.

- **Security:**

- MySQL offers robust security features, including user authentication, encryption, and access controls.
- It ensures the confidentiality and integrity of stored data.

### **1.3.3 MySQL Components and Data Management**

#### **Components of MySQL**

- **Database Server:**

- The core component that stores, manages, and retrieves data.
- Responsible for processing SQL queries and maintaining the integrity of the database.

- **SQL Interface:**

- MySQL provides a SQL interface for interacting with the database.
- Users can perform operations like data insertion, retrieval, updating, and deletion using SQL queries.

- **Storage Engine:**

- MySQL supports multiple storage engines, each with specific features and optimizations.
- InnoDB, MyISAM, and MEMORY are examples of storage engines.

#### **Data Management**

- **Data Types:**

- MySQL supports various data types, including integers, decimals, strings, dates, and more.
- Choosing the appropriate data type is crucial for efficient storage and retrieval.

- **Tables and Relationships:**

- Data is organized into tables, each with a defined structure.
- Relationships between tables are established using primary and foreign keys.

- **Transactions:**

- MySQL supports transactions, allowing users to group multiple SQL statements into a single, atomic operation.

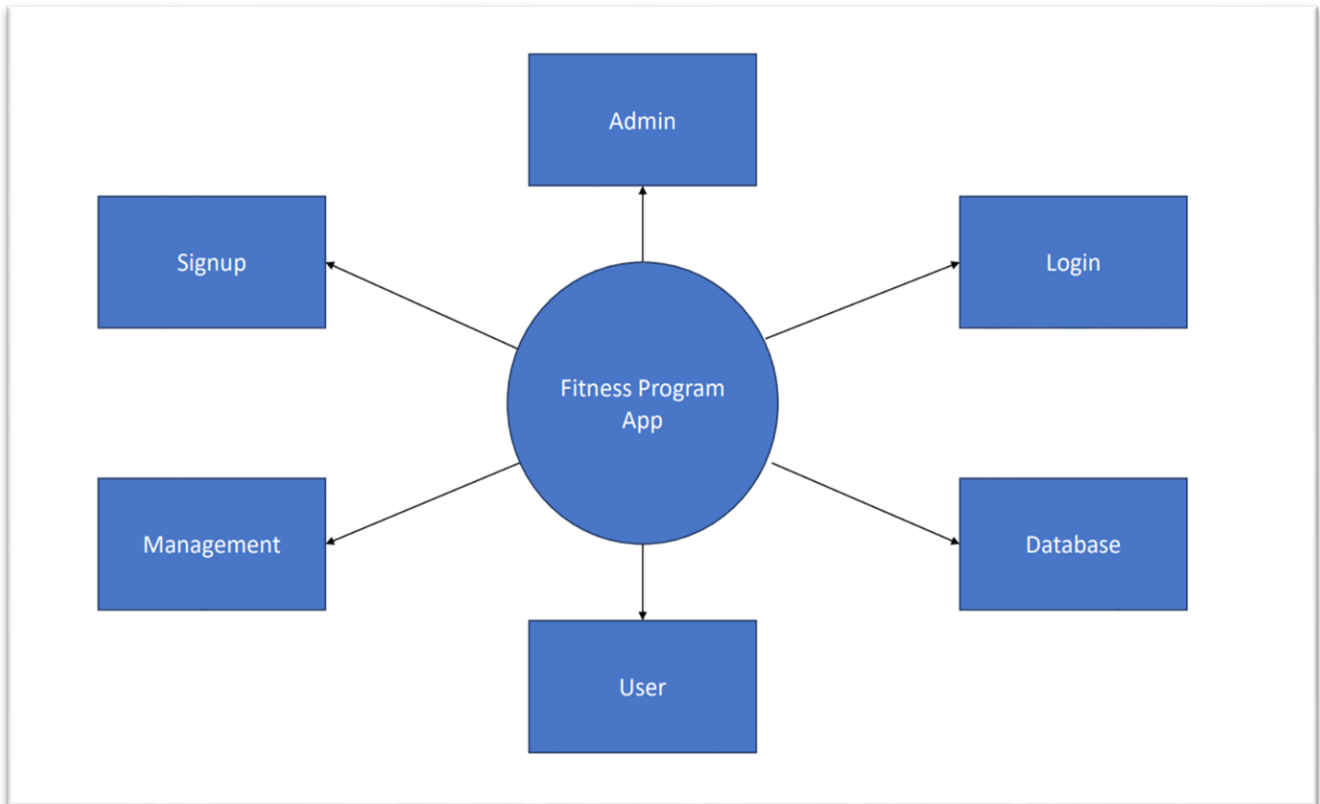


Fig 1.13

### 1.3.4 Minor project (screenshots)

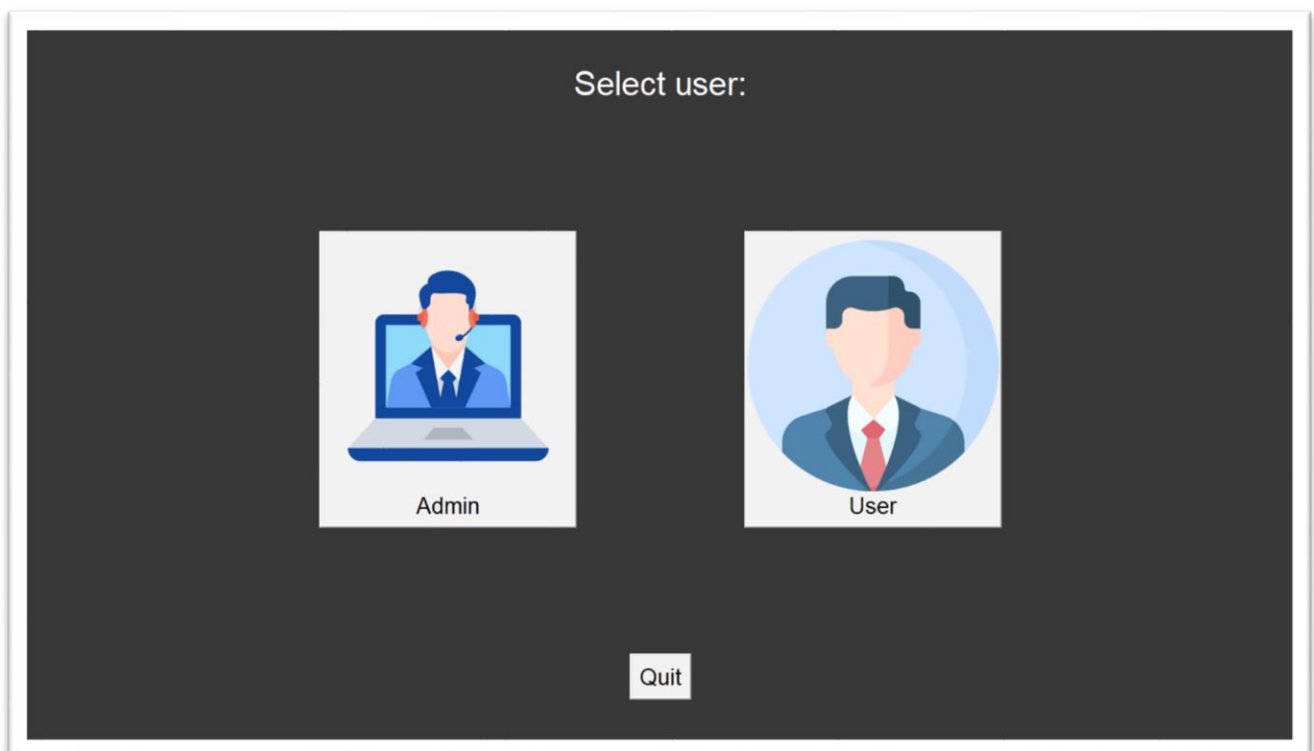
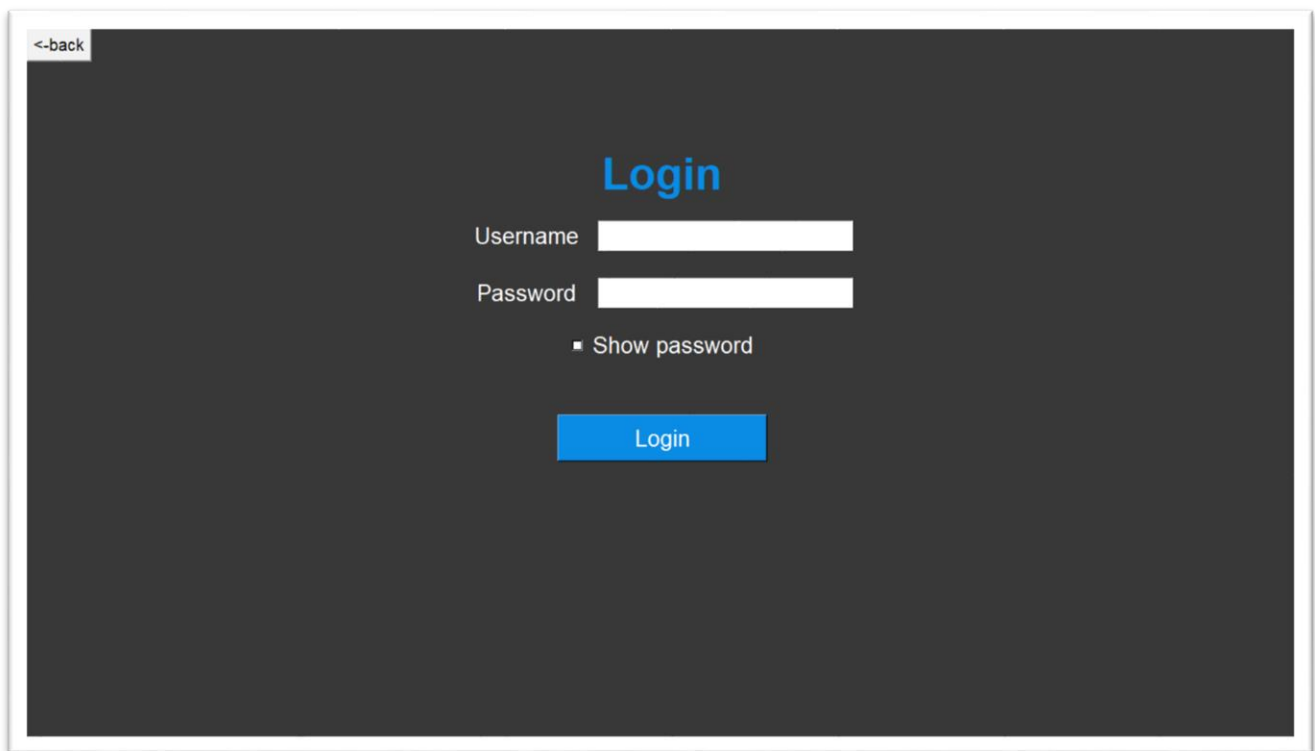


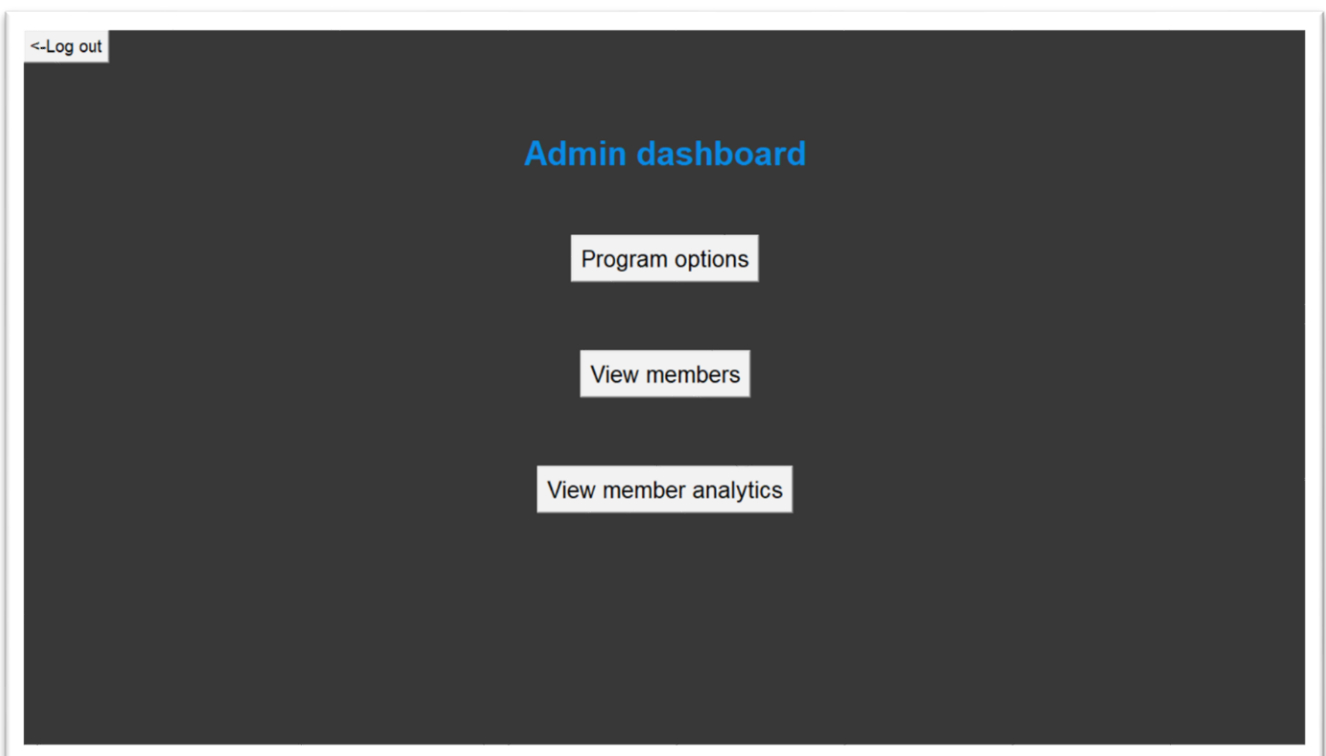
fig 1.14 First window

### 1.3.5 Admin module



The image shows a login screen for an admin module. It has a dark gray background. In the top left corner, there is a small white button with a left arrow and the text "<-back". In the center, the word "Login" is written in a large, blue, sans-serif font. Below it, there are two white input fields. The first is labeled "Username" and the second is labeled "Password". To the right of the "Password" field, there is a small white square icon followed by the text "Show password". Below the input fields, there is a blue rectangular button with the word "Login" in white text.

Admin login fig 1.15

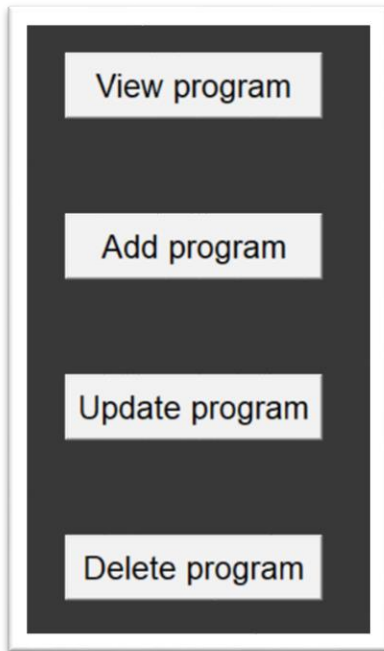


The image shows an admin dashboard screen. It has a dark gray background. In the top left corner, there is a small white button with a left arrow and the text "<-Log out". In the center, the words "Admin dashboard" are written in a large, blue, sans-serif font. Below this title, there are three white rectangular buttons stacked vertically. The top button is labeled "Program options", the middle button is labeled "View members", and the bottom button is labeled "View member analytics".

Fig 1.16

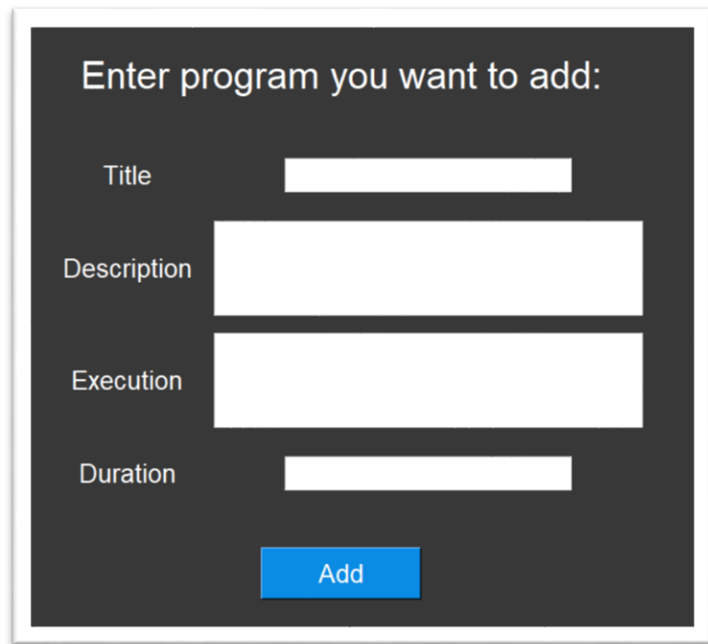


## Admin functions



A vertical menu with four buttons: View program, Add program, Update program, and Delete program.

fig 1.17



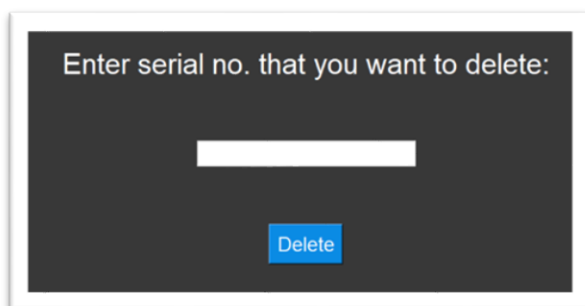
Form titled "Enter program you want to add:". It contains input fields for Title, Description, Execution, and Duration, and an "Add" button.

fig 1.18

Programs list

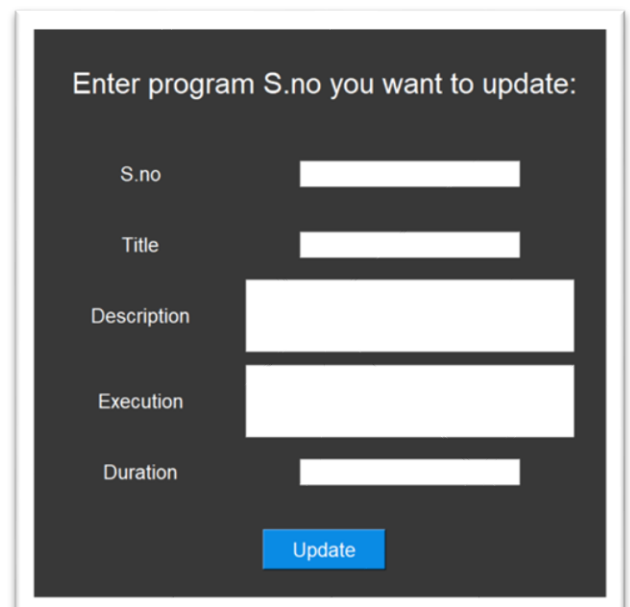
S.no	Title	Description	Execution	Duration
1	Chest	Bench press, Incline bench press, Pec dec	3 set of 10 reps, 3 set of 10 reps, 3 set of 10 reps	1hr
2	Biceps	Barbell curl, Dumbel curl, Hammer curl	3 set of 10 reps, 3 set of 10 reps, 3 set of 10 reps	30min
3	legs	Squats, Leg extension, Leg curl	3 set of 10 reps, 3 set of 10 reps, 3 set of 10 reps	1hr

Fig 1.19



Form titled "Enter serial no. that you want to delete:". It contains an input field for the serial number and a "Delete" button.

Fig 1.20



Form titled "Enter program S.no you want to update:". It contains input fields for S.no, Title, Description, Execution, and Duration, and an "Update" button.

Fig 1.21

S.no	Name	Username	Password	Contact
1	prince	prince_0	123	987
2	karan	karan_0	456	789
3	monty	monty_0	789	700

Fig 1.22

Enter username

Get analytics

Fig 1.23

S.no	Title	Date	Description	Execution	Duration
3	Yoga	1-march-2024	Push-ups, squats, pull-up	3 sets of 10 reps each	1hr
4	dfgfgdf	20-feb-2024	fgdfg	dfhdffdhfd	fhdh

Fig 1.24

### 1.3.6 User module

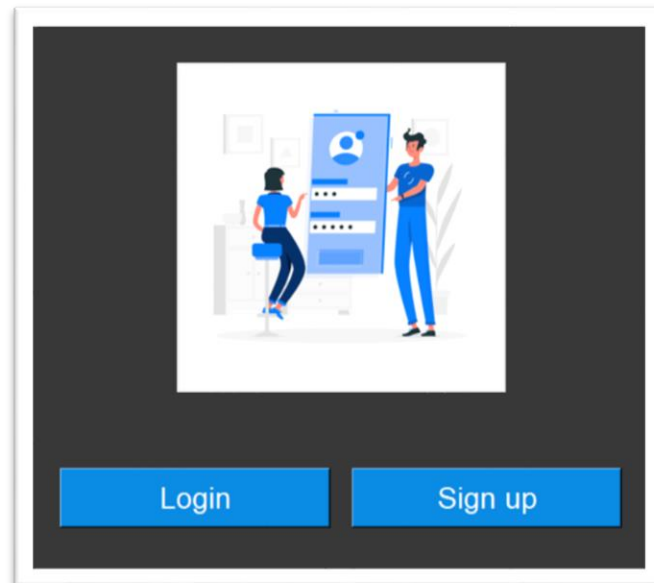


Fig 1.25

[<-back](#)

## Signup

Full Name

Username

Password

Confirm password

Contact

Already have an account?

Fig 1.26

**Login**

Username

Password

☐ Show password

**Login**

Don't have an account?

[Signup](#)

fig 1.27

**Dashboard prince\_0,**

[Workout programs](#)

[See your progress](#)

[Enter your progress](#)

fig 1.28

View progress - prince\_0

S.no	Title	Date	Description	Execution	Duration
3	Yoga	1-march-2024	Push-ups, squats, pull-up	3 sets of 10 reps each	1hr
4	dfgfgdf	20-feb-2024	fgdfg	dfhdffdhfd	fhdh

Fig 1.29

**Enter your progress:**

Title

Date

Description

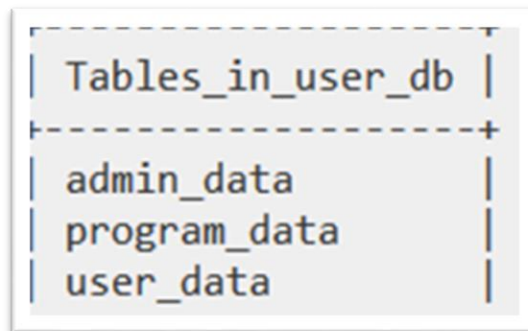
Execution

Duration

**Add**

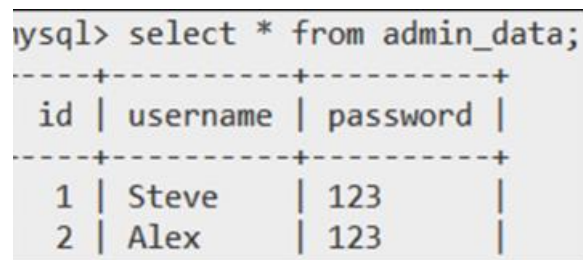
Fig 1.30

### 1.3.7 Database



Tables_in_user_db
admin_data
program_data
user_data

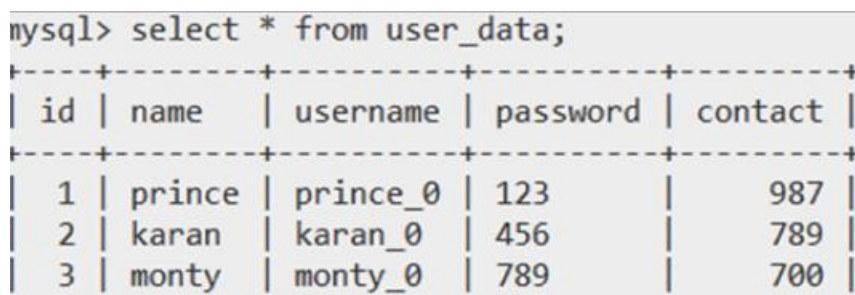
Fig 1.31 (Databases)



```
mysql> select * from admin_data;
```

id	username	password
1	Steve	123
2	Alex	123

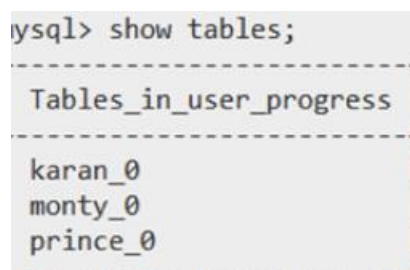
Fig 1.32 (Admin table)



```
mysql> select * from user_data;
```

id	name	username	password	contact
1	prince	prince_0	123	987
2	karan	karan_0	456	789
3	monty	monty_0	789	700

Fig 1.33 (User table)



```
mysql> show tables;
```

Tables_in_user_progress
karan_0
monty_0
prince_0

Fig 1.34 (User Progress table)

### 1.3.8 ER diagram of minor project

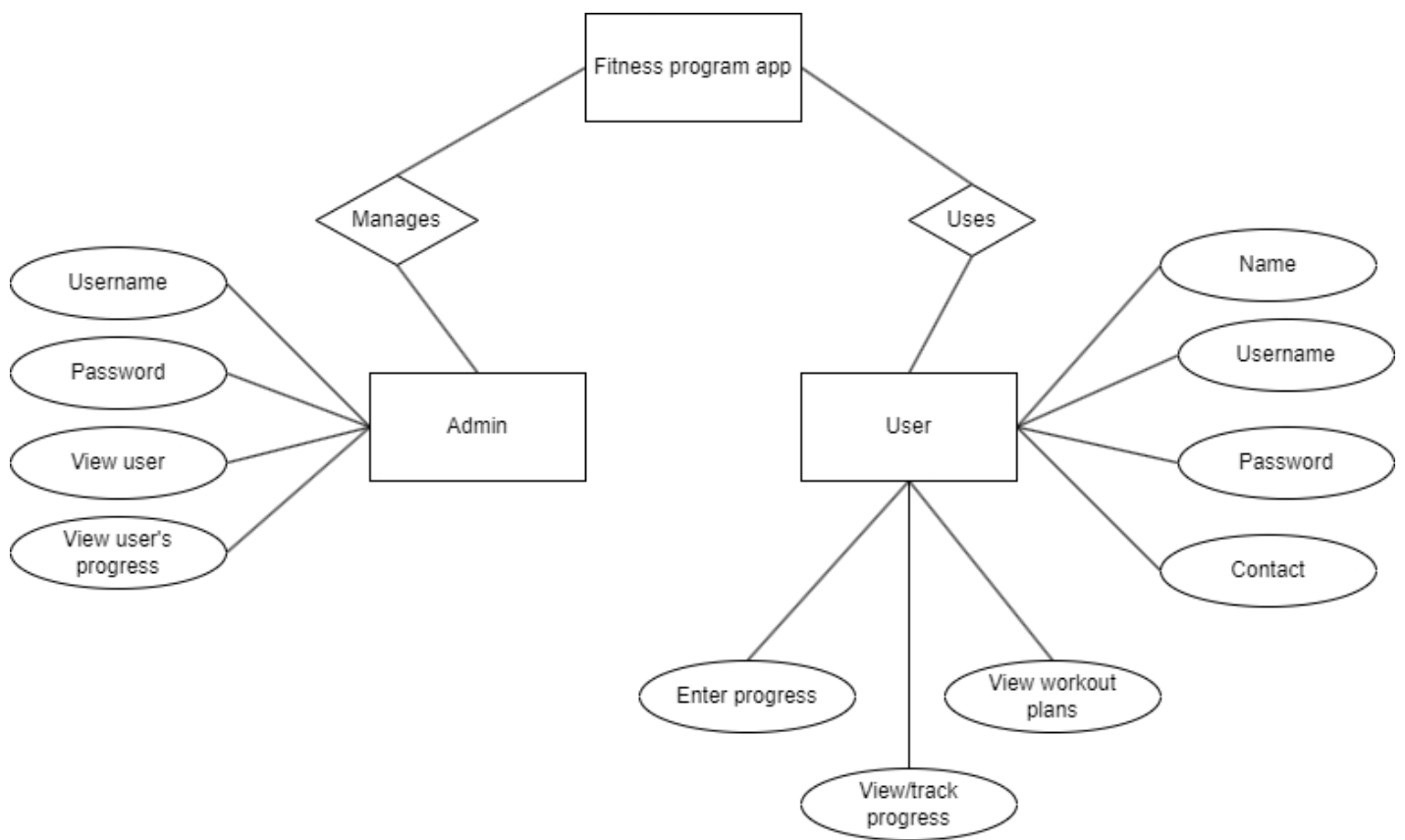


Fig 1.35

## 2 INTRODUCTION TO DJANGO

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. It follows the Model-View-Controller (MVC) architectural pattern, emphasizing reusability and pluggability of components.

Modules:

### 2.1 Web Designing:

Within the realm of web designing, Django emerges as a powerhouse, offering developers an arsenal of potent tools finely tuned for crafting visually stunning and functionally robust user interfaces. At the heart of this capability lies Django's templating system, a versatile engine that empowers developers to effortlessly weave together dynamic HTML pages. By seamlessly integrating presentation and logic, Django's templating system fosters efficient development workflows while upholding principles of code maintainability and scalability.

Furthermore, Django's templating system facilitates the creation of reusable components, promoting consistency across the user interface and streamlining the design process. Developers can leverage templating inheritance, allowing for the creation of base templates with shared layout and structure, while individual templates can extend these base templates and override specific content blocks as needed. This modular approach not only enhances code organization but also simplifies maintenance and updates as applications evolve over time.

### 2.2 Web Development:

In the domain of web development, Django stands as a beacon of efficiency, simplifying the arduous process of building web applications. Through its comprehensive suite of built-in features, Django streamlines every facet of development, from URL routing to database interaction and form processing. By liberating developers from the intricacies of low-level details, Django empowers them to focus wholeheartedly on implementing core business logic.

Moreover, Django's adherence to the Don't Repeat Yourself (DRY) principle ensures that developers can avoid redundancy and maintain consistency throughout their codebase. With its robust libraries and modules, Django accelerates the development process, facilitating rapid iteration and the seamless delivery of feature-rich web applications. From authentication and authorization to internationalization and security, Django provides a robust foundation for building scalable and maintainable web applications, empowering developers to turn their visions into reality with confidence and efficiency.

## 2.1 Web Designing

### 2.1.1 HTML

#### Introduction

1. **Definition:** HTML stands for Hypertext Markup Language.
2. **Core Purpose:** It is the standard markup language for creating and designing web pages.
3. **Structure:** HTML documents are structured using a system of elements, which are represented by tags.
4. **Tags:** Tags are enclosed in angle brackets (< >) and come in pairs – an opening tag and a closing tag.
5. **Basic Structure:**
  - **<html>**: The root element of an HTML page.
  - **<head>**: Contains metadata, such as the page title and linked stylesheets.
  - **<body>**: Contains the content of the page, like text, images, links, etc.
6. **Text Content Tags:**
  - **<p>**: Defines a paragraph.
  - **<h1> to <h6>**: Headings of different levels.
  - **<strong>** and **<em>**: Emphasize text by making it bold or italic.
  - **<br>**: Line break.
  - **<hr>**: Horizontal line (or rule).
7. **Lists:**
  - **<ul>**: Unordered list.
  - **<ol>**: Ordered list.
  - **<li>**: List item.
8. **Links:**
  - **<a>**: Defines a hyperlink, and the **href** attribute specifies the URL.
9. **Images:**
  - **<img>**: Embeds an image, and the **src** attribute specifies the image file.
10. **Forms:**
  - **<form>**: Defines an HTML form for user input.
  - **<input>**: Creates various types of input fields, like text boxes, checkboxes, radio buttons, etc.
11. **Attributes:**
  - Provide additional information about HTML elements.
  - Examples: **class**, **id**, **src**, **href**, **alt**, etc.
12. **Comments:**
  - **<!-- Comment goes here -->**: Used to add comments within the HTML code.
13. **DOCTYPE Declaration:**
  - **<!DOCTYPE html>**: Specifies the HTML version being used (HTML5 in this case).
14. **Semantic HTML:**



- Introduces elements that carry meaning about the structure of the document.
- Examples: **<header>**, **<nav>**, **<article>**, **<section>**, **<footer>**.

#### 15. Validation:

- Ensuring that HTML code follows the rules and guidelines set by the HTML specification.

## 2.1.2 Screenshots

### Ex1 login form

College Student Sign up form

Name

DOB

Gender  
☐ male  
☐ female

FatherName

MotherName

pincode

Password

E-mail

city

Qualification

Address

contact no

i have read all the terms and conditions ☐

## 2.1.3 CSS

1. **Definition:** CSS stands for Cascading Style Sheets.
2. **Core Purpose:** CSS is used for styling the visual presentation of HTML and XML documents on web pages.
3. **Separation of Concerns:** CSS allows the separation of the structure (HTML) and presentation (CSS) of a web page, enhancing maintainability and flexibility.
4. **Selectors and Declarations:**
  - **Selectors:** Define which HTML elements the styles will be applied to.
  - **Declarations:** Specify the styles for the selected elements.
5. **Syntax:**
  - Styles are written in a series of rules with the format: **selector { property: value; }**.
  - Example: **p { color: blue; }** sets the text color of all paragraphs to blue.
6. **Property-Value Pairs:**
  - Properties define the aspects of an element to be styled (e.g., **color**, **font-size**, **margin**).
  - Values set the specific styling for the chosen property.
7. **Selectors Types:**
  - **Element Selector:** Selects all instances of a specified HTML element.

- **Class Selector:** Selects elements with a specific class attribute.
  - **ID Selector:** Selects a single element with a specific ID attribute.
  - **Descendant Selector:** Selects an element that is a descendant of another specified element.
  - **Attribute Selector:** Selects elements based on their attributes.
8. **Box Model:**
- Describes how elements are rendered on the page in terms of content, padding, border, and margin.
9. **Layout and Positioning:**
- CSS provides tools to control the layout and positioning of elements on a web page.
  - Flexbox and Grid are modern layout techniques introduced in CSS3.
10. **Media Queries:**
- Allows for responsive design by applying styles based on the characteristics of the device or browser.
  - Commonly used for adapting layouts to different screen sizes.
11. **Transitions and Animations:**
- CSS supports transitions and animations to create dynamic and interactive user experiences.
  - Properties like **transition** and **animation** control the timing and effects of transitions.
12. **Pseudo-classes and Pseudo-elements:**
- Pseudo-classes (e.g. `:hover`, `:nth-child()`) select elements based on their state or position.
  - Pseudo-elements (e.g., `::before`, `::after`) select and style a specific part of an element.
13. **Color and Typography:**
- CSS enables the specification of text styles, such as font, size, weight, and color.
  - Color can be defined using names, hexadecimal values, RGB, or HSL.
14. **CSS Preprocessors:**
- Tools like Sass and Less extend the capabilities of CSS by introducing variables, nesting, and functions.
15. **Vendor Prefixes:**
- Used to ensure compatibility with different browsers by adding prefixes like **-webkit-** or **-moz-** to certain CSS properties.

Fig 2.1 Animal cards

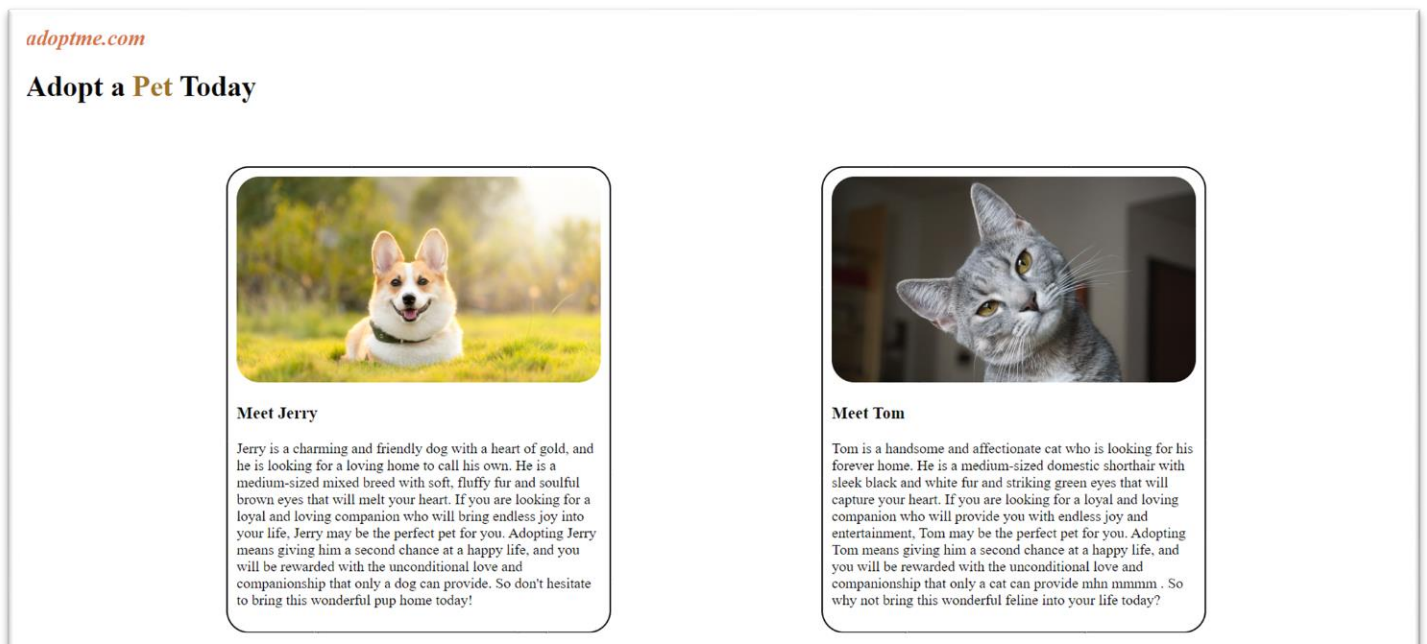
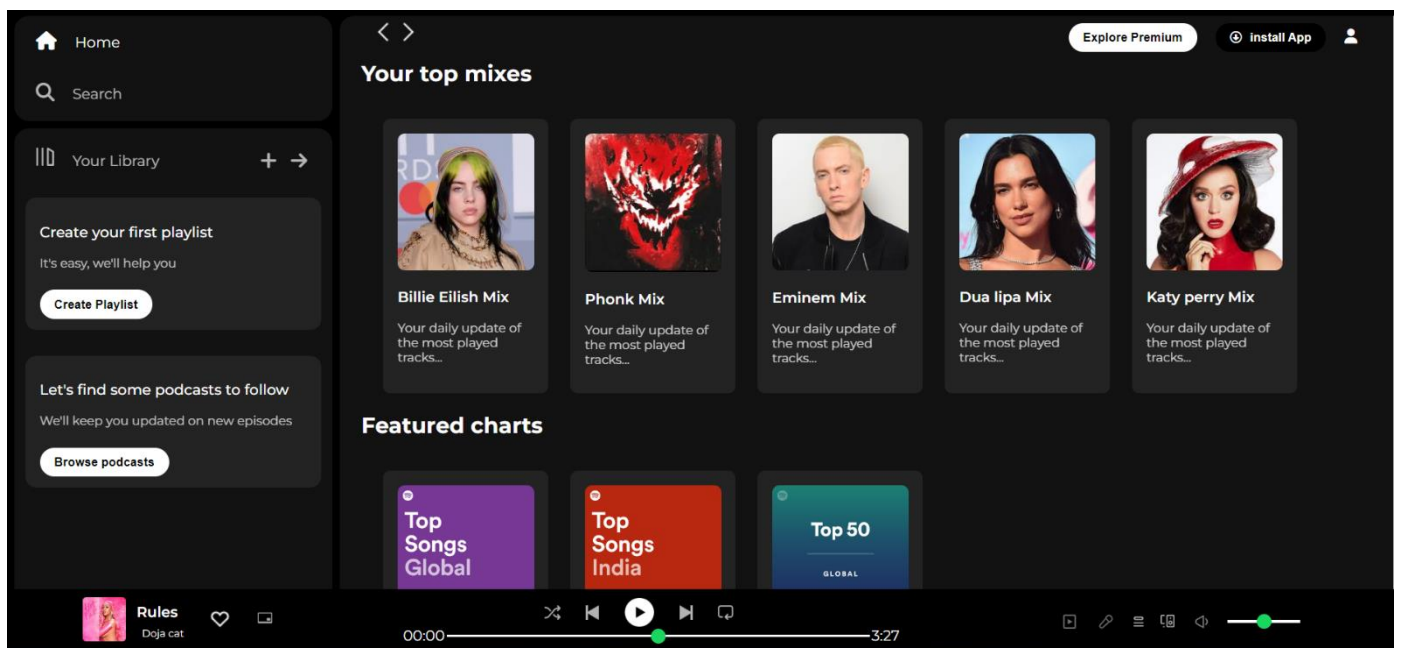


Fig 2.2 Spotify UI using Html and CSS



## 2.1.4 Bootstrap

### Definition:

Bootstrap is a popular open-source front-end framework developed by Twitter. It provides a comprehensive set of tools, components, and pre-styled CSS classes that streamline the process of building responsive and mobile-first web projects. Bootstrap's modular and customizable nature makes it ideal for developers of all skill levels, offering a robust foundation for creating modern and visually appealing websites and web applications.

### Features:

1. **Responsive Grid System:** Bootstrap includes a responsive, mobile-first grid system based on flexbox that allows developers to create complex layouts with ease. The grid system consists of rows and columns, enabling the creation of responsive designs that adapt fluidly to different screen sizes and devices.
2. **Pre-styled Components:** Bootstrap offers a rich library of pre-styled UI components, including buttons, forms, navigation bars, dropdowns, alerts, modals, and more. These components are designed with a consistent visual style and behavior, making it easy to create professional-looking interfaces without the need for extensive custom styling.
3. **CSS Utilities:** Bootstrap provides a collection of CSS utility classes that simplify common tasks such as spacing, typography, alignment, and responsive visibility. These utility classes enable developers to apply styles directly to HTML elements, reducing the need for custom CSS and speeding up the development process.
4. **JavaScript Plugins:** Bootstrap includes a variety of JavaScript plugins that enhance the functionality of UI components and add interactive features to web pages. These plugins cover functionalities such as carousels, tooltips, modals, collapsible panels, form validation, and more, allowing developers to implement advanced user interactions with minimal effort.
5. **Customization Options:** Bootstrap is highly customizable, allowing developers to tailor its appearance and behavior to suit the specific requirements of their projects. Developers can customize Bootstrap's variables, mixins, and components using Sass or Less, or use the Bootstrap Customizer tool to generate a custom build with selected components and styles.
6. **Accessibility:** Bootstrap is designed with accessibility in mind, adhering to best practices for web accessibility and providing built-in support for keyboard navigation and screen readers. This ensures that Bootstrap-powered websites and applications are usable by people with disabilities, conforming to accessibility standards such as the Web Content Accessibility Guidelines (WCAG).
7. **Documentation and Community:** Bootstrap provides extensive documentation and a vibrant community of developers who contribute to its ecosystem. The documentation includes detailed guides, examples, and explanations of Bootstrap's features, making it easy for developers to get started and find solutions to common challenges. The community actively participates in forums, discussion groups, and open-source contributions, providing support and sharing best practices.

8. **Integration with Other Libraries and Frameworks:** Bootstrap seamlessly integrates with other libraries and frameworks, allowing developers to extend its functionality and enhance their projects. For example, Bootstrap can be integrated with jQuery for enhanced interactivity, or with front-end frameworks like React, Angular, or Vue.js for building single-page applications (SPAs).
9. **Theming and Customization:** Bootstrap offers extensive theming and customization options, enabling developers to create unique designs that reflect their brand identity. Developers can customize Bootstrap's variables, mixins, and components using CSS preprocessors like Sass or Less, or use the Bootstrap Customizer tool to generate a custom build with selected components and styles.
10. **Global Reach and Adoption:** Bootstrap enjoys widespread adoption and is used by millions of developers and organizations worldwide. Its popularity stems from its ease of use, extensive features, and robust performance, making it a trusted choice for building websites and web applications across industries and sectors.
11. **Responsive Images and Media:** Bootstrap includes responsive image classes and utilities that enable developers to create fluid images and media objects that scale with the size of the viewport. This ensures that images and media content are displayed optimally on devices with different screen sizes and resolutions, enhancing the overall user experience.

### Applications:

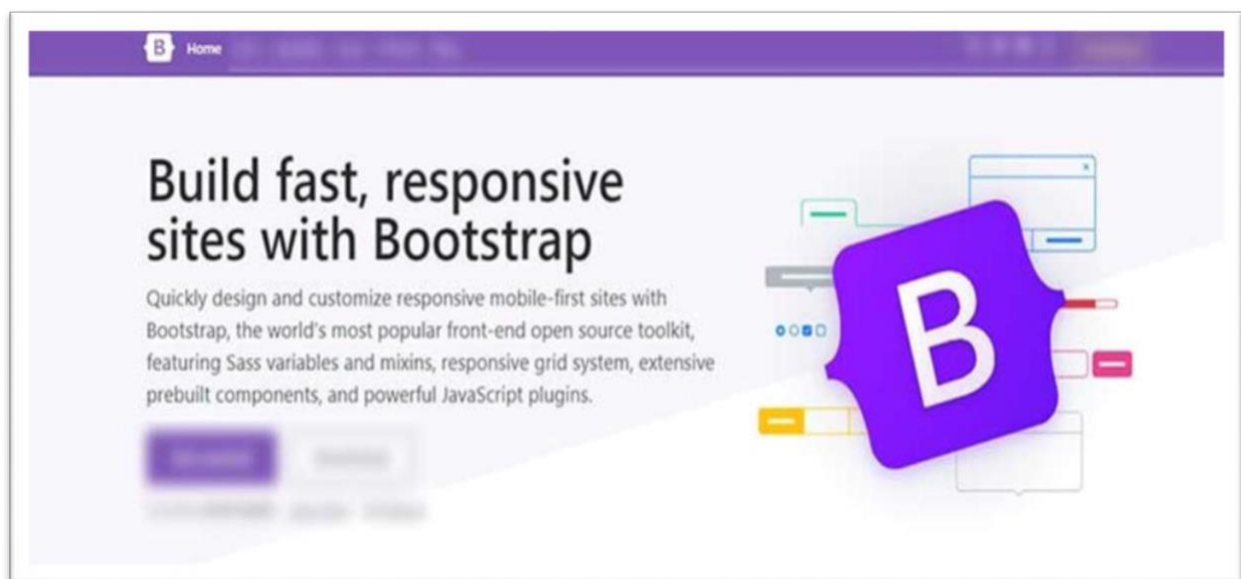
1. **Web Development:** Bootstrap is widely used in web development to create responsive and mobile-friendly websites and web applications. It provides a solid foundation for building UIs quickly and efficiently, allowing developers to focus on functionality and user experience.
2. **Rapid Prototyping:** Bootstrap is often used for rapid prototyping and wireframing due to its extensive library of pre-styled components and responsive grid system. Designers and developers can quickly create prototypes and mockups that closely resemble the final product, facilitating feedback and iteration in the design process.
3. **Cross-Browser Compatibility:** Bootstrap helps ensure cross-browser compatibility by providing a consistent styling experience across different web browsers. Its pre-styled components and CSS normalization ensure that websites built with Bootstrap look and behave consistently across various platforms and devices.
4. **Mobile App Development:** Bootstrap can be used to build mobile-first web applications that provide a seamless user experience on smartphones and tablets. Its responsive grid system and mobile-friendly components make it easy to create web apps that adapt to different screen sizes and orientations.
5. **Theme Development:** Bootstrap serves as a foundation for theme development, allowing designers and developers to create custom themes and templates for websites and web applications. By customizing Bootstrap's variables and styles,

developers can create unique and branded designs that match the visual identity of their projects.

6. **Educational Resources and Tutorials:** Bootstrap is commonly used as a teaching tool in web development courses and tutorials due to its simplicity and versatility. Many educational resources, tutorials, and online courses cover Bootstrap extensively, providing students and aspiring developers with the skills and knowledge needed to build modern web projects.

7.

**Design Systems and Pattern Libraries:** Bootstrap serves as the foundation for design systems and pattern libraries used by organizations to maintain consistency and coherence across their digital products. By standardizing UI components and design patterns, Bootstrap helps ensure a unified user experience across multiple platforms and touchpoints.



## 2.1.5 JavaScript

### Definition:

JavaScript is a high-level, interpreted programming language that is commonly used to add interactivity and dynamic behavior to web pages. Originally developed by Netscape as a client-side scripting language for web browsers, JavaScript has evolved into a versatile programming language that can be used for both client-side and server-side development. JavaScript allows developers to create interactive user interfaces, handle events, manipulate the DOM (Document Object Model), communicate with web servers, and build web applications with rich functionality.

### Features:

1. **Client-Side Interactivity:** JavaScript is primarily known for its ability to add interactivity and dynamic behavior to web pages. It allows developers to respond to user actions such as clicks, keystrokes, mouse movements, and touch gestures, enabling the creation of interactive user interfaces and engaging user experiences.
2. **DOM Manipulation:** JavaScript provides powerful APIs for manipulating the DOM, which represents the structure and content of a web page. Developers can use JavaScript to dynamically create, modify, or remove HTML elements, update styles, handle events, and perform other operations to manipulate the presentation of content on the web page.
3. **Asynchronous Programming:** JavaScript supports asynchronous programming through features such as callbacks, promises, and async/await. Asynchronous programming enables non-blocking execution of code, allowing tasks like fetching data from web servers, performing I/O operations, and handling user input to be handled efficiently without blocking the main execution thread.
4. **Event Handling:** JavaScript enables developers to handle events triggered by user interactions, browser actions, or other sources. Event handling allows developers to define event listeners and callback functions to respond to events such as clicks, mouse movements, keyboard input, form submissions, and page load events, enhancing the interactivity and responsiveness of web pages.
5. **AJAX (Asynchronous JavaScript and XML):** JavaScript facilitates asynchronous communication with web servers using AJAX, allowing web pages to fetch and send data in the background without reloading the entire page. AJAX enables the implementation of dynamic features such as live updates, auto-complete suggestions, and real-time data loading, enhancing the user experience of web applications.
6. **Browser Compatibility:** JavaScript is supported by all modern web browsers, including Chrome, Firefox, Safari, Edge, and Opera. Its widespread support across browsers ensures that JavaScript-powered web applications can reach a broad audience of users on different platforms and devices.

7. **Object-Oriented Programming (OOP):** JavaScript supports object-oriented programming paradigms, allowing developers to define objects, classes, methods, and properties. While JavaScript's approach to OOP differs from traditional class-based languages like Java or C++, it provides mechanisms such as prototypes, constructor functions, and inheritance for building complex and reusable code structures.
8. **Functional Programming:** JavaScript embraces functional programming concepts, enabling developers to write code in a functional style. Functions are first-class citizens in JavaScript, meaning they can be assigned to variables, passed as arguments, and returned from other functions. Features such as higher-order functions, closures, and lambda expressions facilitate the development of concise, modular, and composable code.
9. **Modularity and Reusability:** JavaScript supports modularity and reusability through features such as modules, namespaces, and closures. Modules allow developers to organize code into separate files or components, encapsulating functionality and reducing dependencies. Namespaces prevent naming conflicts by providing a scope for variables and functions, while closures enable private variables and encapsulation of state within functions.
10. **Error Handling and Debugging:** JavaScript provides mechanisms for error handling and debugging, including try-catch blocks, throw statements, and the console object for logging messages to the browser console. Error handling allows developers to gracefully handle runtime errors and exceptions, ensuring that applications remain stable and resilient.
11. **Browser APIs and Web Platform Integration:** JavaScript interacts with various browser APIs and web platform features, enabling access to device capabilities, user permissions, and web services. APIs such as the Document Object Model (DOM), XMLHttpRequest (XHR), Fetch API, Web Storage, Geolocation API, and Web Audio API empower developers to create rich and immersive web experiences that leverage browser capabilities.

### **Applications:**

1. **Web Development:** JavaScript is essential for web development, used to add interactivity, dynamic behavior, and client-side functionality to web pages. It is commonly used in conjunction with HTML and CSS to create modern, interactive websites, web applications, and single-page applications (SPAs).
2. **Front-End Frameworks and Libraries:** JavaScript frameworks and libraries such as React, Angular, Vue.js, and jQuery provide developers with tools and abstractions for building complex web applications more efficiently. These frameworks and libraries abstract away common tasks, provide reusable components, and streamline development workflows, enabling developers to create rich and interactive user interfaces with less code.
3. **Server-Side Development:** With the advent of server-side JavaScript platforms such as Node.js, JavaScript can also be used for server-side development. Node.js allows developers to build scalable, high-performance web servers and web applications using JavaScript, enabling full-stack development with a single programming language.



4. **Mobile App Development:** JavaScript frameworks such as React Native and Ionic allow developers to build cross-platform mobile applications using JavaScript, along with CSS and native UI components. These frameworks leverage JavaScript's versatility and web development skills to create native-like mobile apps that run on both iOS and Android platforms.
5. **Game Development:** JavaScript is increasingly used for game development, thanks to frameworks and libraries such as Phaser.js, Three.js, and Babylon.js. These libraries provide tools and APIs for creating interactive 2D and 3D games directly in the web browser, making game development more accessible to web developers.
6. **Web Animations and Effects:** JavaScript is commonly used to create animations and visual effects on the web, enhancing the user experience and engagement. Libraries such as GreenSock (GSAP) and anime.js provide tools and APIs for animating HTML elements, CSS properties, and SVG graphics, allowing developers to create fluid and interactive animations directly in the browser.
7. **Data Visualization and Charting:** JavaScript is utilized for data visualization and charting in web applications, enabling the creation of interactive charts, graphs, and dashboards that convey information effectively. Libraries such as D3.js, Chart.js, and High charts provide powerful APIs for generating and customizing visualizations from data sets, empowering developers to create compelling data-driven experiences.
8. **Progressive Web Apps (PWAs):** JavaScript is instrumental in building Progressive Web Apps (PWAs), which are web applications that offer native-like experiences with features such as offline support, push notifications, and installation to the home screen. Service workers, a JavaScript API, enable PWAs to cache content, handle network requests, and provide offline functionality, enhancing performance and reliability.
9. **Web APIs and Microservices:** JavaScript is used to develop backend services, APIs, and microservices using frameworks like Express.js, NestJS, and Hapi.js. These frameworks leverage JavaScript's asynchronous and event-driven nature to build scalable and performant server-side applications, supporting tasks such as routing, middleware, authentication, data validation, and database integration.
10. **WebRTC and Real-Time Communication:** JavaScript facilitates real-time communication on the web through technologies like WebRTC (Web Real-Time Communication). WebRTC enables peer-to-peer audio, video, and data communication directly in the browser, without the need for plugins or external software. JavaScript APIs for WebRTC allow developers to build applications such as video conferencing, live streaming, and online collaboration tools.

## 2.2 Web Development (Django)

### 2.2.1 Introduction to Django

Django is a high-level Python web framework that encourages rapid development and clean, pragmatic design. It's built on the principles of DRY (Don't Repeat Yourself) and follows the MVC (Model-View-Controller) pattern, although Django uses slightly different terminology, referring to it as MTV (Model-Template-View).

### 2.2.2 Key Concepts

1. **Models:** Django provides an ORM (Object-Relational Mapping) system that allows you to define your database schema in Python code. Models represent database tables, and each model class maps to a table in the database.
2. **Views:** Views are Python functions or classes that receive web requests and return web responses. They contain the logic of your application and interact with models to fetch or manipulate data.
3. **Templates:** Templates are HTML files mixed with Django template language syntax. They allow you to dynamically generate HTML content by inserting variables, loops, conditionals, and other logic.
4. **URLs:** URLs in Django are mapped to views using a URLconf (URL configuration). URL patterns define the mapping between URL paths and view functions or classes.
5. **Forms:** Django provides a powerful form handling system that simplifies the process of validating and processing user input from HTML forms.
6. **Testing and Quality Assurance:** Employed Django for robust testing and quality assurance, ensuring functionality, usability, and coding standards adherence.

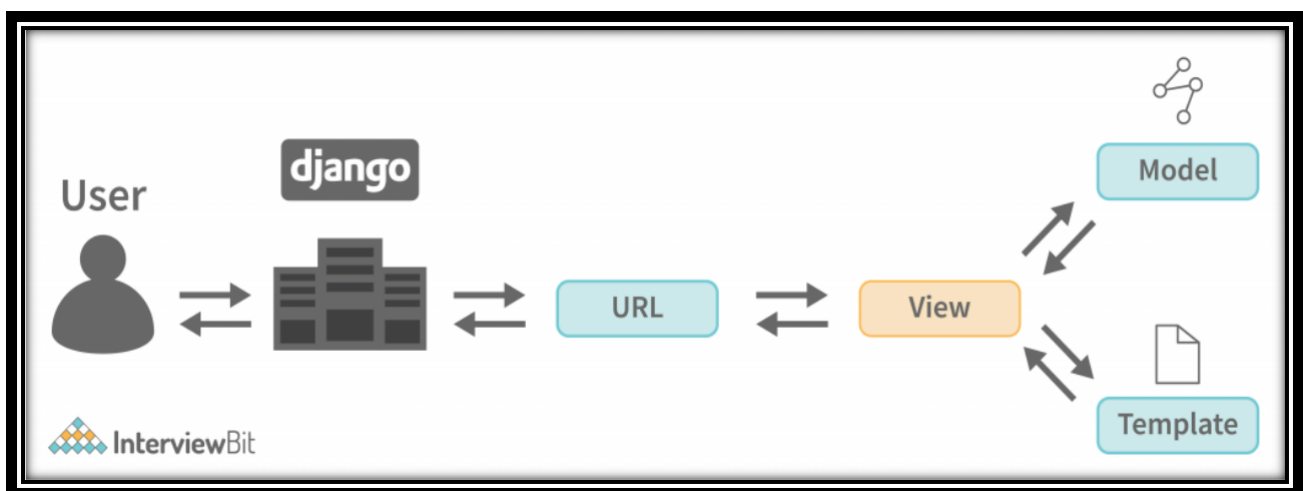


Fig 2.3: django-Architecture

## 2.2.3 SQLite in Django:

### 3.2.4 Introduction to SQLite:

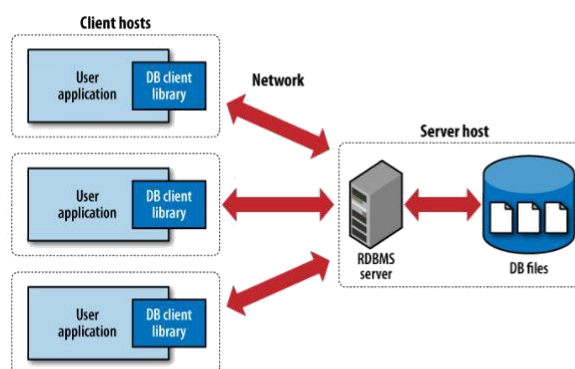
- SQLite is a lightweight, serverless, and self-contained relational database management system (RDBMS).
- It is included as part of the Python standard library, making it the default database engine for Django projects.
- SQLite databases are stored in a single file, making them easy to manage and deploy, especially for small to medium-sized web applications.

### 3.2.5 Integration with Django:

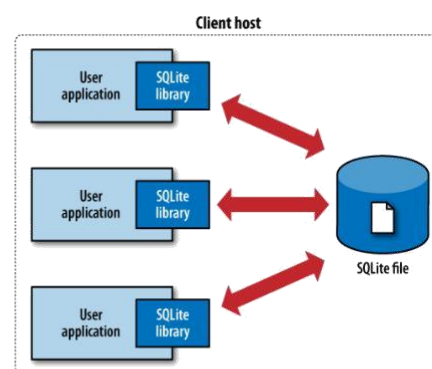
- Django provides built-in support for SQLite, allowing developers to use it as the backend database engine for their web applications.
- By default, a new Django project is configured to use SQLite as the database engine in the project settings (settings.py).
- Django's ORM (Object-Relational Mapping) abstracts the underlying database operations, allowing developers to work with database objects using Python classes and methods, without directly interacting with SQL queries.

### 3.2.6 Advantages of SQLite with Django:

- **Simplicity:** SQLite is easy to set up and use, making it ideal for development and prototyping purposes.
- **Portability:** SQLite databases are self-contained files that can be easily transferred between different environments.
- **Low Overhead:** SQLite has minimal dependencies and resource requirements, making it efficient for small-scale applications.
- **Compatibility:** SQLite supports most of the SQL standard, ensuring compatibility with Django's ORM and existing database tools.



(a) Traditional client-server architecture



(b) SQLite serverless architecture

## **3 Major Project**

### **(Swift Buy – Ecommerce Marketplace)**

#### **3.1 Introduction to the Website:**

- **Online Shopping Platform:** Our e-commerce marketplace project serves as a dynamic online platform, offering a wide range of products and services akin to leading platforms like Amazon.
- **User-Centric Design:** Designed with a focus on user experience, our website features intuitive navigation, seamless product search, and secure payment processing, ensuring a smooth and engaging shopping experience for customers.
- **Robust Backend Functionality:** Powered by Django and MySQL, our website's backend manages product catalogs, user accounts, order processing, and inventory management, providing administrators with comprehensive control and analytics capabilities.

#### **3.2 Frontend and Backend Technologies:**

##### **Frontend Technologies:**

**HTML:** Used for structuring the content and layout of web pages, ensuring a clear and organized presentation of product information and user interfaces.

**CSS:** Implemented for styling the HTML elements, including colors, fonts, spacing, and layout, to create an aesthetically pleasing and consistent design across the website.

**JavaScript:** Employed for client-side scripting, enabling interactive features such as form validations, dynamic content updates, and user interface enhancements without reloading the entire page.

**Tkinter:** Utilized specifically for creating graphical user interfaces (GUIs) in Python, enhancing the user experience through intuitive and user-friendly interfaces.

##### **Backend Technologies:**

**Python:** Served as the primary programming language for backend development, facilitating efficient and scalable code for handling business logic, data processing, and server-side operations.

Django: Chosen as the web framework for Python, Django provided a robust and secure framework for building the backend of the e-commerce platform, including URL routing, database integration, and user authentication.

MySQL: Employed as the relational database management system (RDBMS) for storing and managing structured data, such as user profiles, product listings, order details, and transaction records, ensuring data integrity and scalability.

These frontend and backend technologies collectively contributed to creating a comprehensive and functional e-commerce marketplace with a user-friendly interface, seamless navigation, and efficient data management capabilities.

### **3.3 Modules (User and Admin)**

#### **Admin Module:**

1. Category Management:
  - Add new categories to expand the variety of products available on the platform.
  - Delete or update existing categories as per changes in product offerings or market trends.
2. Product Management:
  - Add new products to the catalog with detailed information such as product name, description, price, and images.
  - Update product details like price, availability, and descriptions to keep the catalog accurate and up to date.
  - Delete products that are no longer available or relevant to maintain a streamlined product listing.

#### **User Module:**

1. Product Viewing:
  - Browse and view products across different categories with detailed product information and images.
  - Access product details such as price, availability, descriptions, and customer reviews to make informed purchasing decisions.
2. Shopping Cart:
  - Add desired products to the shopping cart for future purchase consideration.
  - View and manage items in the shopping cart, including quantity adjustments and product removals.

### 3. Checkout and Payment:

- Proceed to checkout to initiate the purchase process.
- Simulate a demo payment option for testing purposes, showcasing the checkout flow and payment gateway integration without actual monetary transactions.
- These functionalities cater to the needs of both the admin, who manages the platform's content and offerings, and the user, who explores products, adds them to the cart, and experiences the checkout process, including payment simulation for a seamless user experience.

### 3.4 Implementation Details:

- The development process followed a systematic approach, beginning with requirement analysis, followed by design, implementation, testing, and deployment phases.
- Django's MVT architecture facilitated the organization of the codebase, with models representing data structures, views handling user requests, and templates rendering dynamic content.

Frontend and backend components were seamlessly integrated using Django's templating engine and URL routing mechanisms, ensuring a cohesive user experience across the website.

### 3.5 Testing and Quality Assurance:

Testing and Quality Assurance for "Swift Buy" Django Website:

#### 1. Testing Types Applied:

- Unit Testing: Extensive unit tests were developed using Django's built-in testing framework to validate individual components such as models, views, forms, and custom Django templates.
- Integration Testing: Integration tests were performed to ensure seamless interactions between different parts of the application, such as user authentication, product management, and checkout processes.
- Functional Testing: Comprehensive functional tests were conducted to verify the end-to-end functionalities of "Swift Buy," including user registration, product browsing, cart management, order processing, and payment transactions.
- Regression Testing: Regular regression tests were carried out after each code change or feature addition to confirm that existing functionalities continued to work correctly without any unintended side effects.

- User Acceptance Testing (UAT): Real users were involved in UAT to assess the website's usability, accessibility, responsiveness, and overall user experience, with feedback incorporated into iterative improvements.

## **2. Testing Tools and Practices:**

- Django Test Framework: Leveraged Django's testing capabilities for writing and executing tests, ensuring code functionality and reliability.
- Selenium: Used Selenium for automated browser testing to simulate user interactions, validate UI elements, and assess cross-browser compatibility.
- Coverage.py: Employed Coverage.py to measure code coverage and identify areas for additional testing, aiming for comprehensive coverage across the Django application.
- Linting and Code Quality Checks: Integrated tools like Flake8 and Pylint for code linting, ensuring adherence to coding standards, identifying potential issues, and maintaining code cleanliness.
- Continuous Integration (CI): Implemented CI/CD pipelines with tools like GitHub Actions or Jenkins to automate testing, code analysis, and deployment processes, facilitating continuous integration and delivery of updates.

## **3. Quality Assurance Measures:**

- Code Reviews: Conducted regular peer code reviews to validate code correctness, identify bugs, review coding standards, and promote collaboration within the development team.
- Documentation: Maintained comprehensive documentation including test plans, test cases, API documentation, and user guides to facilitate understanding, collaboration, and future development efforts.
- Performance Monitoring: Monitored website performance metrics using tools like Django Debug Toolbar, New Relic, or Sentry to identify bottlenecks, optimize performance, and ensure a smooth user experience.
- Security Audits: Conducted security audits and vulnerability assessments using tools like OWASP ZAP or Django security middleware to mitigate potential security risks, protect user data, and ensure compliance with security best practices.

### 3.6 E-R diagram (Swift Buy Website)

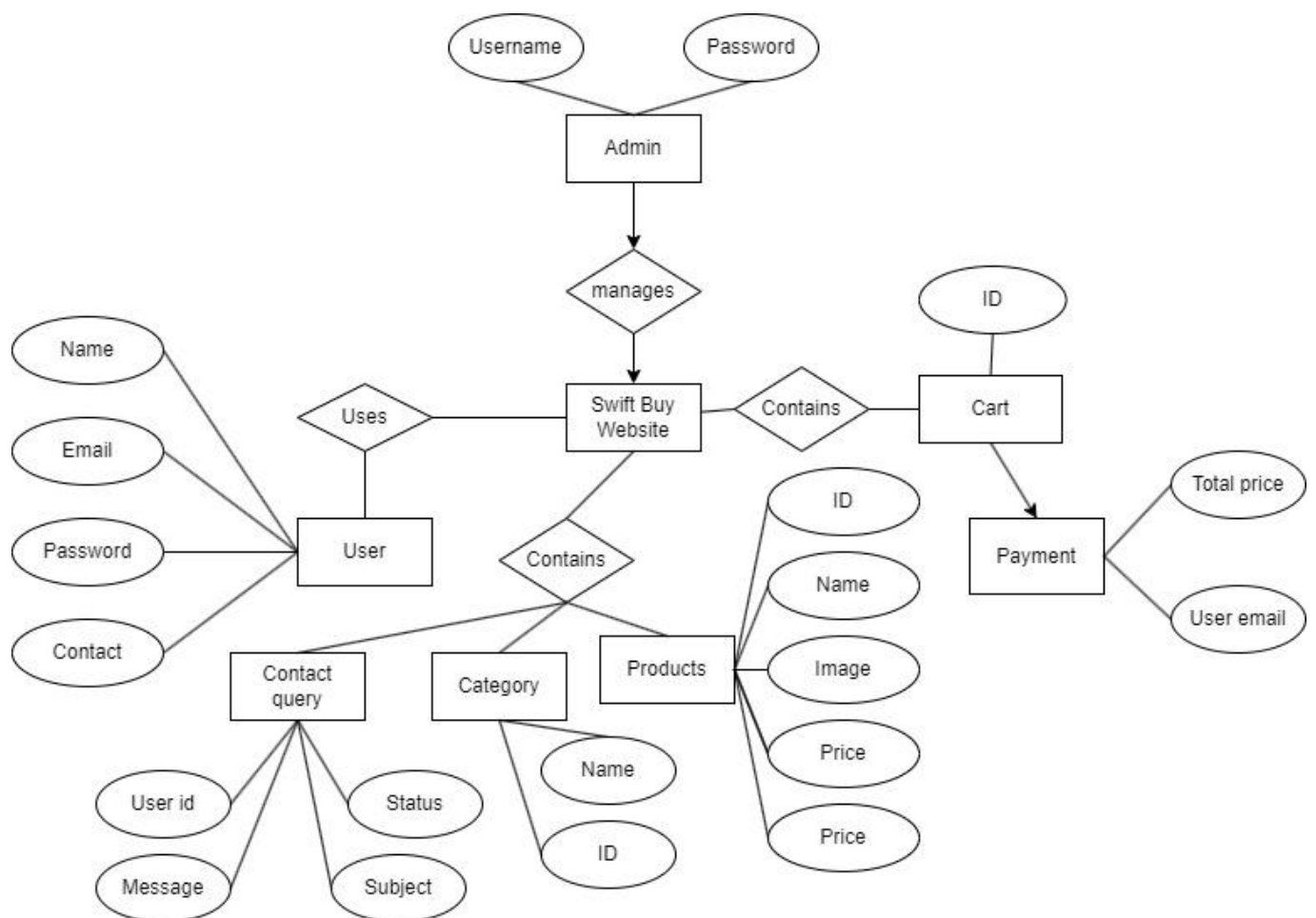


Fig 3.1



### 3.7 Screen Shots

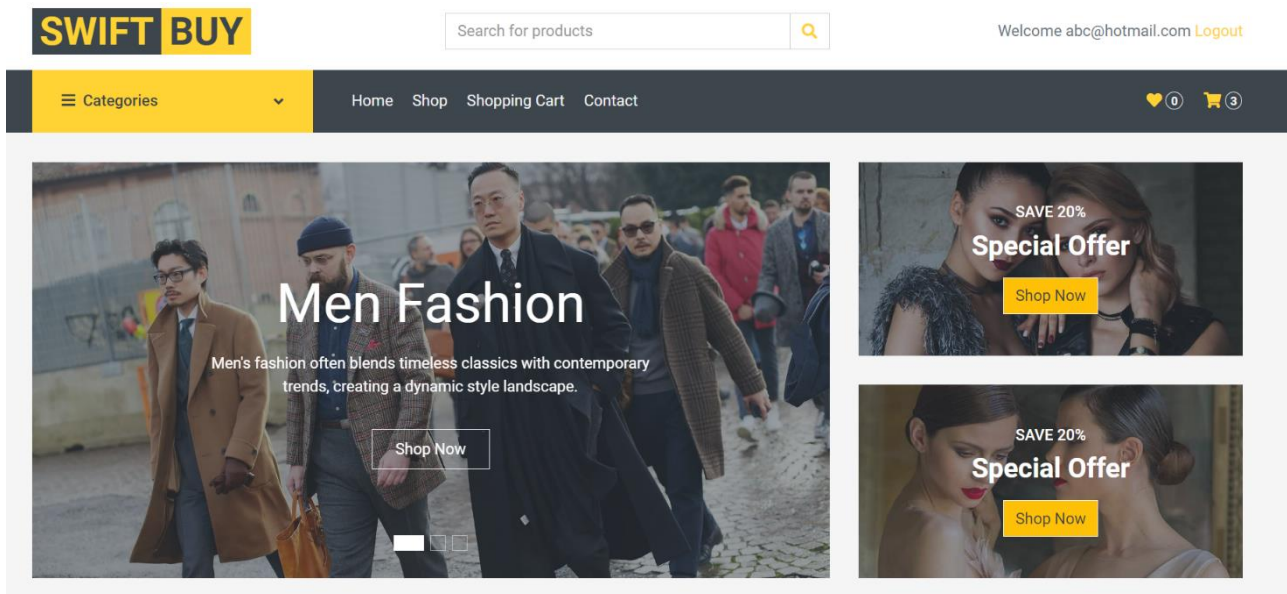


Fig 3.2 Home page

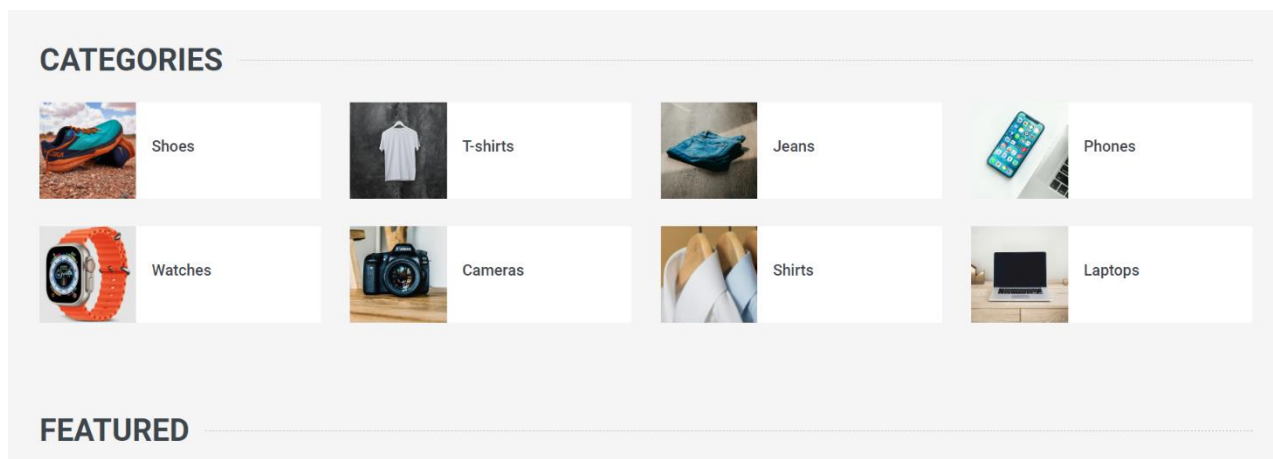


Fig 3.3 To browse through categories

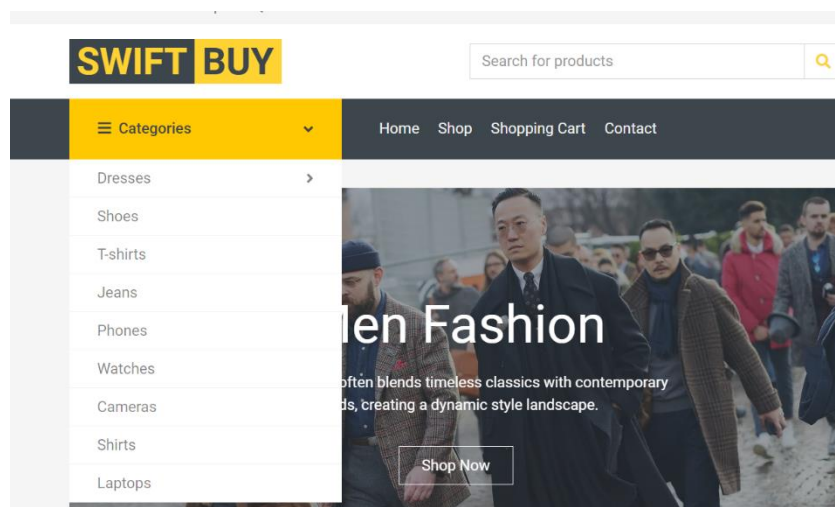


Fig 3.4 Category dropdown

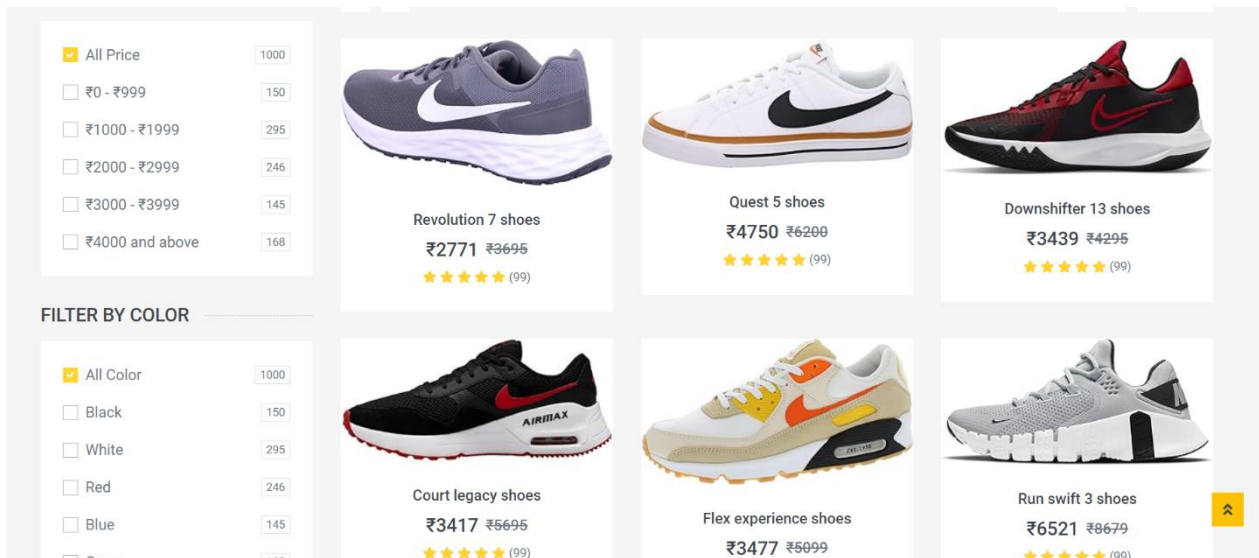


Fig 3.5 Products page

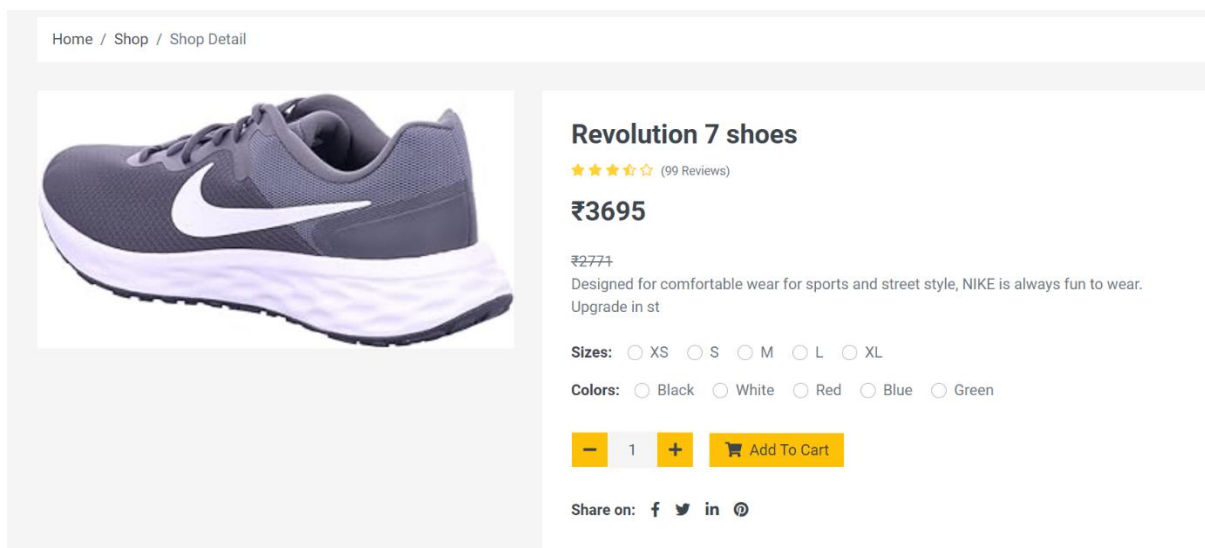


Fig 3.6 Product detail page

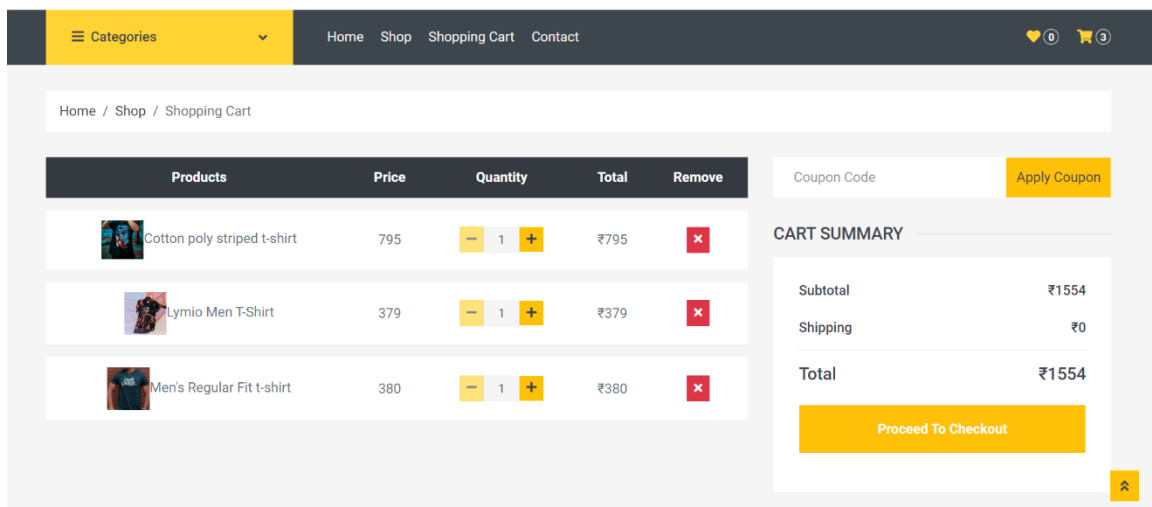
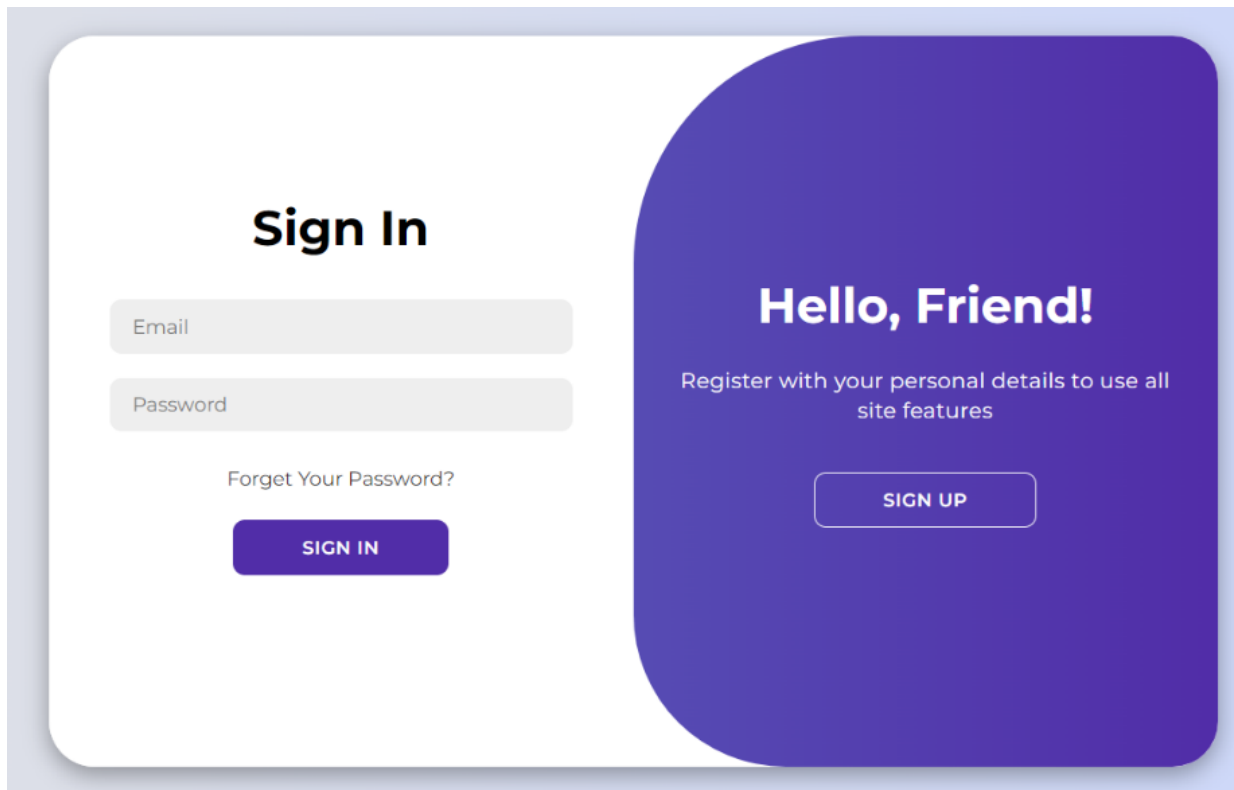


Fig 3.7 Cart page



The login page features a white background with a large purple rounded rectangle on the right. On the left, under the heading "Sign In", are two input fields for "Email" and "Password", a link for "Forgot Your Password?", and a purple "SIGN IN" button. The purple area on the right contains the text "Hello, Friend!", a description of site features, and a white "SIGN UP" button.

## Sign In

[Forgot Your Password?](#)

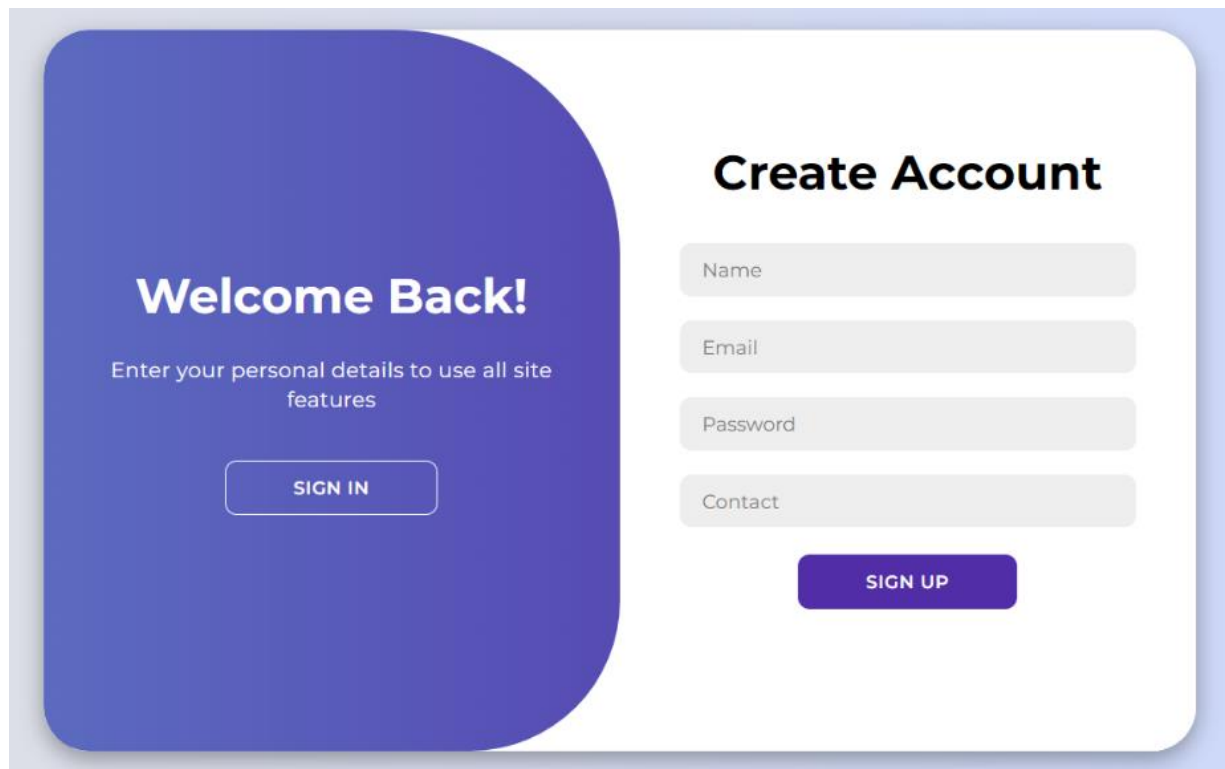
**SIGN IN**

## Hello, Friend!

Register with your personal details to use all site features

**SIGN UP**

Fig 3.8 Login page



The signup page features a white background with a large purple rounded rectangle on the left. On the right, under the heading "Create Account", are four input fields for "Name", "Email", "Password", and "Contact", and a purple "SIGN UP" button. The purple area on the left contains the text "Welcome Back!", a description of site features, and a white "SIGN IN" button.

## Create Account

**SIGN UP**

## Welcome Back!

Enter your personal details to use all site features

**SIGN IN**

Fig 3.9 Signup page

## Myapp administration

MYAPP		
Cart itemss	+ Add	Change
Carts	+ Add	Change
Categorys	+ Add	Change
Contact querys	+ Add	Change
Orders	+ Add	Change
Products	+ Add	Change
User profiless	+ Add	Change

Fig 3.10 Admin table

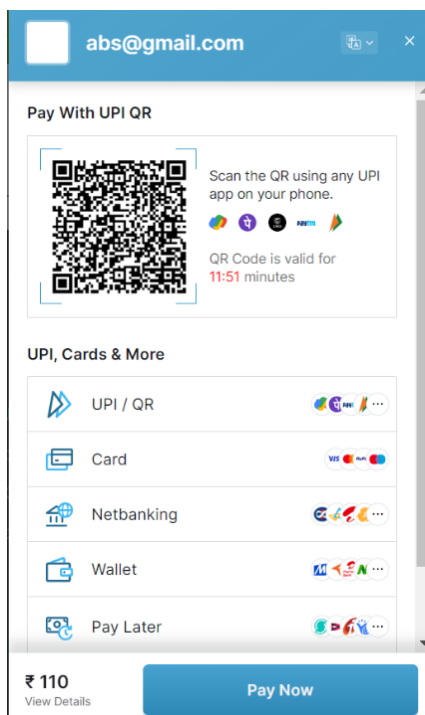


Fig 3.11 payment page

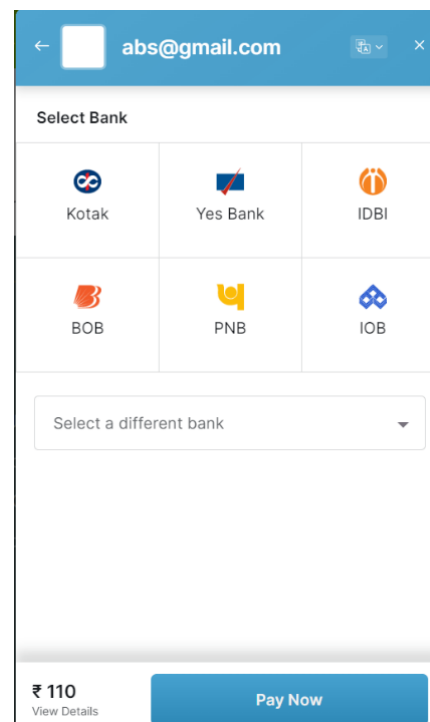


fig 3.12 bank selection

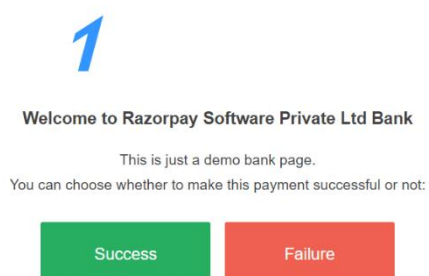


Fig 3.13 Demo bank page success or failure option

## **4 Conclusion and Future Scope:**

### **4.1 Conclusion**

"Swift Buy" stands as a robust and user-centric e-commerce platform designed to offer a seamless shopping experience for both administrators and users alike. Through the integration of advanced technologies and meticulous attention to detail, the platform aims to redefine online shopping by providing a feature-rich environment that prioritizes functionality, usability, and security.

For administrators, "Swift Buy" provides a comprehensive suite of management tools, allowing them to effortlessly oversee various aspects of the platform. From managing product categories, adding or updating products, to handling user profiles and resolving contact queries, administrators have the necessary control and insights to ensure a smooth operation and customer satisfaction.

On the user front, "Swift Buy" offers a visually appealing and intuitive interface that enables users to navigate through a diverse range of products effortlessly. With features such as category-based browsing, detailed product views, cart management with quantity adjustments, and a simulated payment process for testing, users can enjoy a seamless and engaging shopping journey.

Moreover, the platform prioritizes security and data privacy, implementing robust authentication mechanisms for both administrators and users. By adhering to industry best practices and leveraging encryption protocols, "Swift Buy" ensures the confidentiality and integrity of user information and transactional data.

In conclusion, "Swift Buy" strives to deliver a cutting-edge e-commerce experience that blends functionality, convenience, and security. With a focus on continuous improvement and user feedback, the platform remains poised to evolve and adapt to ever-changing market dynamics, cementing its position as a go-to destination for online shoppers and businesses alike.

## 4.2 Future scope

The future scope for "Swift Buy" involves several areas of enhancement and expansion to further improve the platform and cater to evolving market trends and user demands:

1. **Mobile Optimization:** As mobile shopping continues to rise, optimizing "Swift Buy" for mobile devices through responsive design and dedicated mobile apps can enhance user accessibility and convenience.
2. **Personalization and Recommendations:** Implementing machine learning algorithms for personalized product recommendations based on user behavior, preferences, and past purchases can boost engagement and sales.
3. **Social Commerce Integration:** Integrating social media features and social commerce functionalities, such as social sharing, user reviews, and influencer collaborations, can amplify brand visibility and customer engagement.
4. **Internationalization and Multi-Currency Support:** Expanding "Swift Buy" to support multiple languages, currencies, and international shipping options can attract a global customer base and facilitate cross-border transactions.
5. **Augmented Reality (AR) and Virtual Try-On:** Integrating AR technology for virtual product try-ons, especially for fashion and home decor items, can enhance the shopping experience by allowing users to visualize products before purchase.
6. **Subscription Services and Loyalty Programs:** Introducing subscription-based services, loyalty programs, and targeted promotions can foster customer loyalty, increase repeat purchases, and drive revenue growth.
7. **Enhanced Analytics and Insights:** Implementing advanced analytics tools and data-driven insights can provide valuable business intelligence, helping administrators make informed decisions, optimize marketing strategies, and identify market trends.
8. **AI-Powered Customer Support:** Integrating AI-powered chatbots or virtual assistants for customer support can streamline inquiries, provide instant responses, and enhance overall customer satisfaction.
9. **Blockchain and Cryptocurrency Payments:** Exploring blockchain technology for secure transactions, supply chain transparency, and integrating cryptocurrency payment options can attract tech-savvy customers and offer alternative payment methods.
10. **Environmental Sustainability Initiatives:** Incorporating eco-friendly practices, sustainable product sourcing, and green packaging options can appeal to environmentally conscious consumers and contribute to corporate social responsibility efforts.

By embracing these future-focused initiatives and staying agile in adapting to market shifts and technological advancements, "Swift Buy" can position itself as a leading and innovative player in the competitive e-commerce landscape, driving growth, customer loyalty, and business success.

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