

Data Flow Diagram

DFD is the abbreviation for Data Flow Diagram. The flow of data of a system or a process is represented by DFD. It also gives insight into the inputs and outputs of each entity and the process itself. DFD does not have control flow and no loops or decision rules are present. Specific operations depending on the type of data can be explained by a flowchart. It is a graphical tool, useful for communicating with users, managers and other personnel. It is useful for analyzing existing as well as proposed system.

Rules for creating DFD

- The name of the entity should be easy and understandable without any extra assistance (like comments).
- The processes should be numbered or put in ordered list to be referred easily.
- The DFD should maintain consistency across all the DFD levels.
- A single DFD can have a maximum of nine processes and a minimum of three processes.

Symbols Used in DFD

1. **Square Box:** A square box defines source or destination of the system. It is also called entity. It is represented by rectangle.
2. **Arrow or Line:** An arrow identifies the data flow i.e. it gives information to the data that is in motion.
3. **Circle or bubble chart:** It represents as a process that gives us information. It is also called processing box.
4. **Open Rectangle:** An open rectangle is a data store. In this data is store either temporary or permanently.

Levels of DFD

- **0-level DFD:** It represents the entire system as a single bubble and provides an overall picture of the system.
- **1-level DFD:** It represents the main functions of the system and how they interact with each other.
- **2-level DFD:** It represents the processes within each function of the system and how they interact with each other.
- **3-level DFD:** It represents the data flow within each process and how the data is transformed and stored.

Data Flow Diagram of Online Placement Preparation Platform

The data flow diagram shows how data flows between the different components of the online placement preparation system. The external entities (Users, Admin) interact with the system through the processes. The processes store and retrieve data from the data stores.

Level 0 DFD:-

- The user logs in to the preparation platform.
- The preparation platform authenticates the user and retrieves their profile information.
- The user prepares placement study material on the preparation platform.
- The preparation platform stores the user's study material.
- The user logs out of the preparation platform.
- The admin logs in to the preparation platform.
- The preparation platform authenticates the admin and retrieves their profile information.
- The admin manages the placement study material on the preparation platform.
- The admin logs out of the preparation platform.

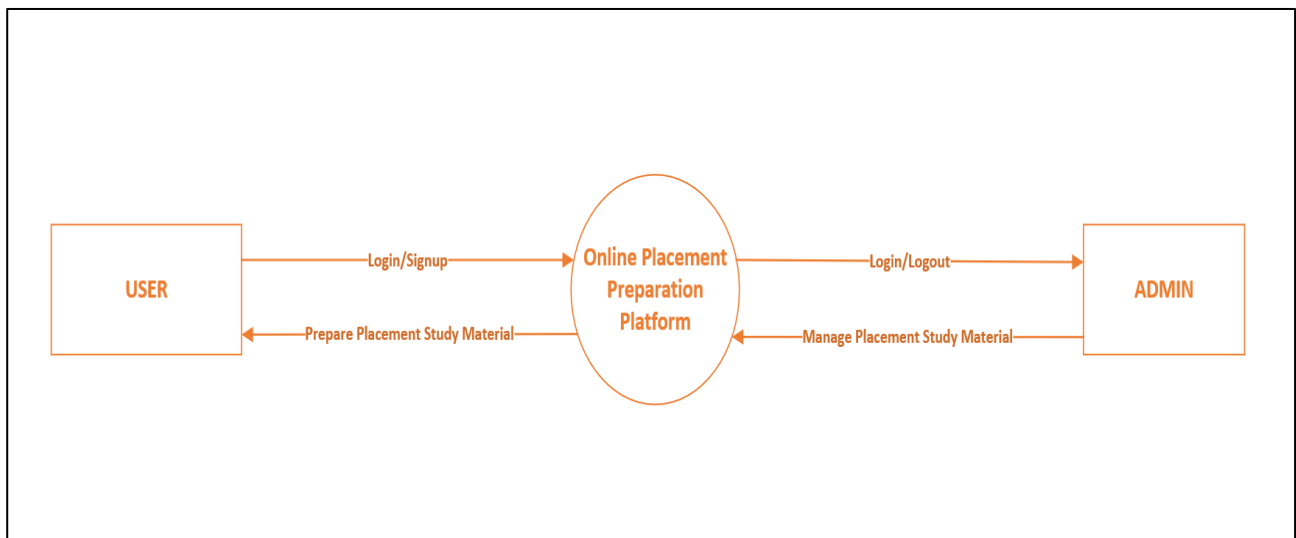


Fig1:- Level-0 DFD

Level 1 DFD:-

- Admin and users can log in to the platform using their email address and password.
- New users can create an account by providing their name, email address, and other relevant information.
- Users can view and edit their profile information, such as their resume, transcripts, and extracurricular activities.
- Users can access a variety of resources to help them prepare for placement exams, such as online courses, practice tests, and mock interviews.
- Admins can view and manage user accounts, including adding, editing, or deleting users.
- Admins can add, edit, or delete study material on the platform.
- Admins can handle user queries and provide support.

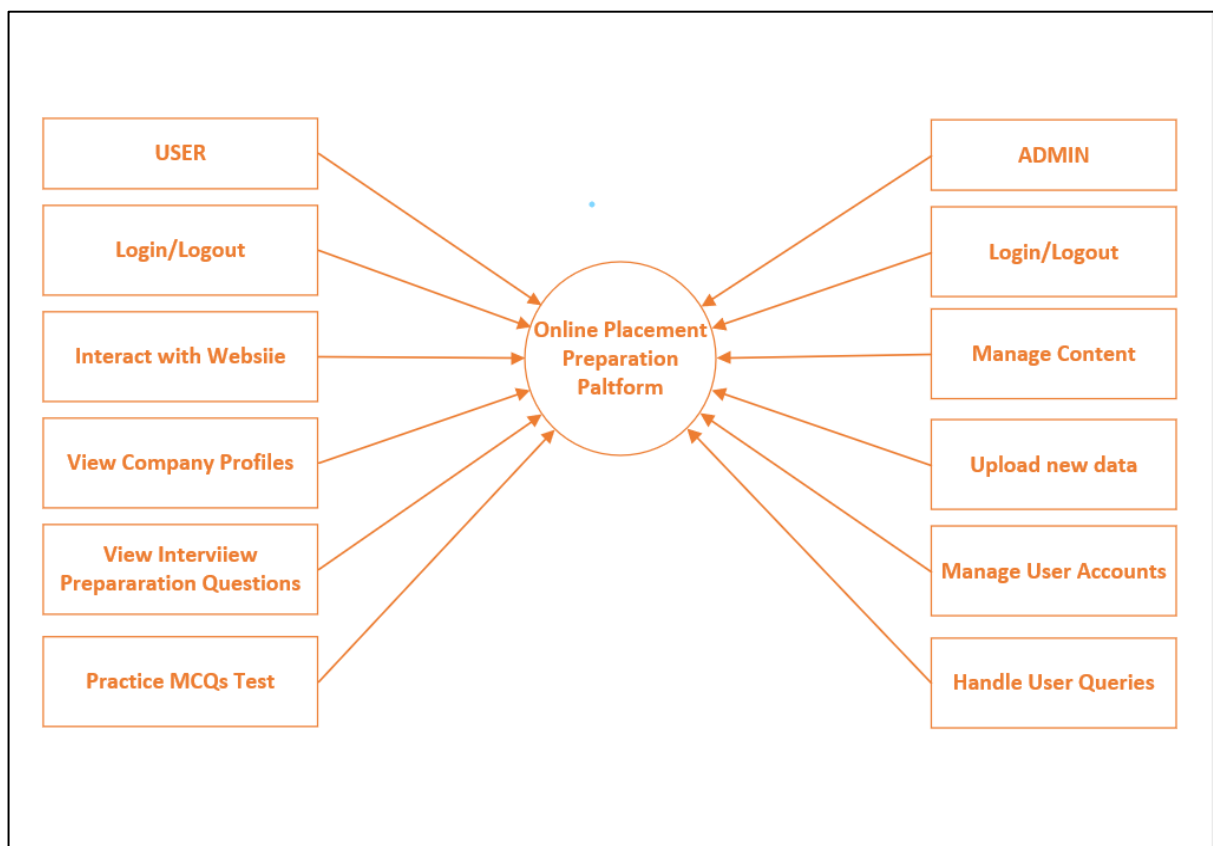


Fig2:- Level-1 DFD

Level 2 DFD(Admin):-

- Login in to the system
- Change Password
- Manage Data User
- Manage Modules

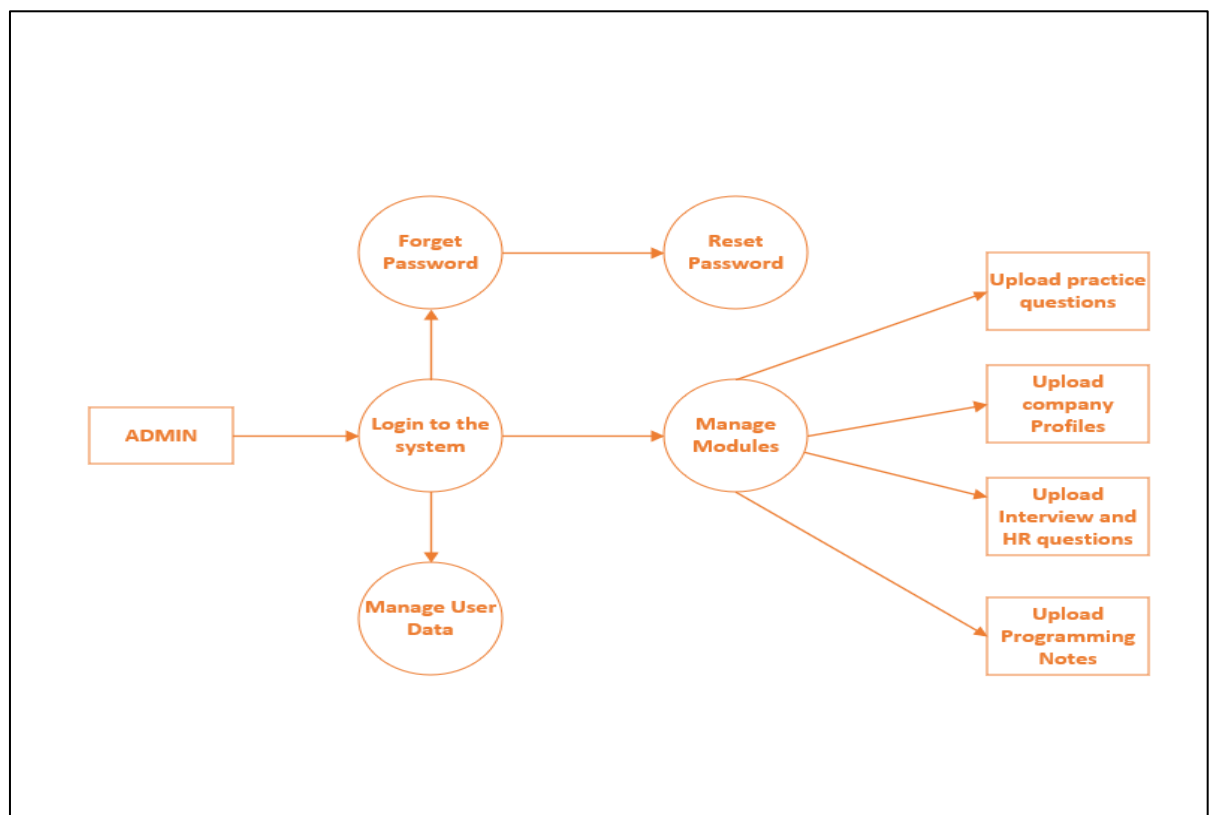


Fig3:- Level-2 DFD(Admin)

Level 2 DFD(User):-

- Login
- Registration
- Study Material
- View Companies Details
- View Programming Notes
- Practice MCQs
- Prepare Interviews

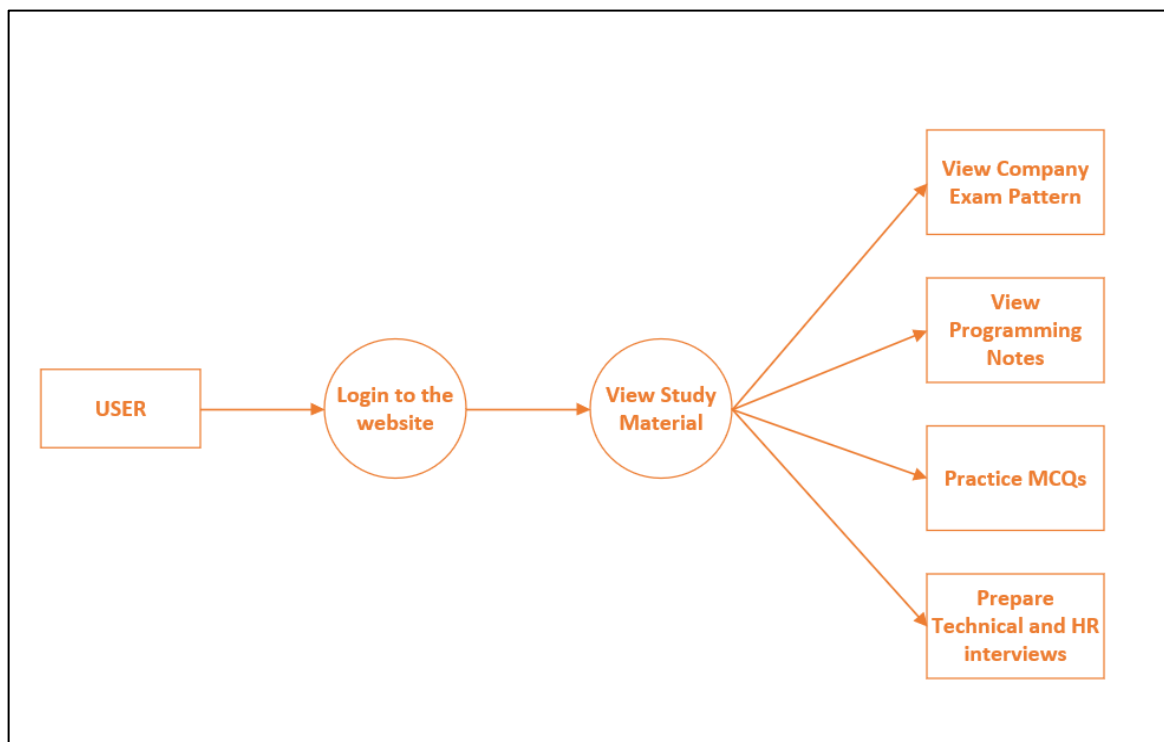


Fig4:- Level-2 DFD(User)

UML Use Case Diagram

A use case diagram is used to represent the dynamic behavior of a system. It encapsulates the system's functionality by incorporating use cases, actors, and their relationships. It models the tasks, services, and functions required by a system/subsystem of an application. It depicts the high-level functionality of a system and also tells how the user handles a system

Use case diagram symbols and notation

The notation for a use case diagram is pretty straightforward and doesn't involve as many types of symbols as other UML diagrams. Here are all the shapes you will be able to find in use case diagrams:

- **Use cases:** Horizontally shaped ovals that represent the different uses that a user might have.
- **Actors:** Stick figures that represent the people actually employing the use cases.
- **Associations:** A line between actors and use cases.
- **System boundary boxes:** A box that sets a system scope to use cases. All use cases outside the box would be considered outside the scope of that system.
- **Packages:** A UML shape that allows you to put different elements into groups. Just as with component diagrams, these groupings are represented as file folders.

Purpose of Use Case Diagrams

The main purpose of a use case diagram is to portray the dynamic aspect of a system. It accumulates the system's requirement, which includes both internal as well as external influences. It invokes persons, use cases, and several things that invoke the actors and elements accountable for the implementation of use case diagrams. It represents how an entity from the external environment can interact with a part of the system.

Following are the purposes of a use case diagram given below:

1. It gathers the system's needs.
2. It depicts the external view of the system.
3. It recognizes the internal as well as external factors that influence the system.
4. It represents the interaction between the actors.

Use Case Diagram of Online Placement Preparation Platform

The use case diagram of an online placement preparation platform is a diagram that shows the different ways that users can interact with the system to achieve their goals. The main actors in this system are the students and the platform itself. The use cases are the different ways that students can use the platform to prepare for placements. The relationships between the actors and use cases show how students interact with the system to achieve their goals. For example, a student would associate with the "Browse and search for resources" use case in order to find the resources they need to prepare for a specific placement. A student would also associate with the "Take practice tests" use case in order to assess their preparation and identify areas where they need to improve.

Here is a UML Use Case Diagram for the online placement preparation platform :-



Fig5:- Use Case Diagram of Online Placement Preparation Platform

Actors:-

- **Admin:-** The admin can manage data and the permissions that are applied on data.
- **User:-** The user can create their account and visit the website.

Use Cases:-

- **Login and Logout from System:-** The admin and user can log in and out of the system.
- **Signup:-** The admin and user can create a new account in the system.
- **Update profile and change password:-** The admin and user can update their profile and change their password.
- **Add Company Details and Paper Pattern:-** The admin can add company details and paper patterns to their website.
- **Upload PDFs of Technical Subjects:-** The user can upload PDFs of technical subjects to their website.
- **Generate MCQs:-** The user can generate multiple-choice questions (MCQs) for their technical subjects.
- **Upload HR Interview Questions and Answers:-** The user can upload HR interview questions and answers to their website.
- **Upload Resume Writing Pattern:-** The user can upload a resume writing pattern to their website.
- **Manage User:-** The admin can manage users and their permissions.
- **View paper pattern:-** The user can view the paper patterns they have added to their website.
- **Get the job description about specific company:-** The user can get the job description about a specific company from their website.
- **View PDFs:-** The user can view the PDFs they have uploaded to their website.
- **Doing preparation for Technical Subjects:-** The user can prepare for technical subjects using the resources on their website.
- **Give a technical test and Aptitude test:-** The user can give a technical test and aptitude test on their website.
- **Make a Resume for various companies:-** The user can make a resume for various companies using the resume writing pattern on their website.

UML Class Diagram

The class diagram depicts a static view of an application. It represents the types of objects residing in the system and the relationships between them. A class consists of its objects, and also it may inherit from other classes. A class diagram is used to visualize, describe, document various different aspects of the system, and also construct executable software code.

It shows the attributes, classes, functions, and relationships to give an overview of the software system. It constitutes class names, attributes, and functions in a separate compartment that helps in software development. Since it is a collection of classes, interfaces, associations, collaborations, and constraints, it is termed as a structural diagram.

Purpose of Class Diagrams

The main purpose of class diagrams is to build a static view of an application. It is the only diagram that is widely used for construction, and it can be mapped with object-oriented languages. It is one of the most popular UML diagrams. Following are the purpose of class diagrams given below:

1. It analyses and designs a static view of an application.
2. It describes the major responsibilities of a system.
3. It is a base for component and deployment diagrams.
4. It incorporates forward and reverse engineering.

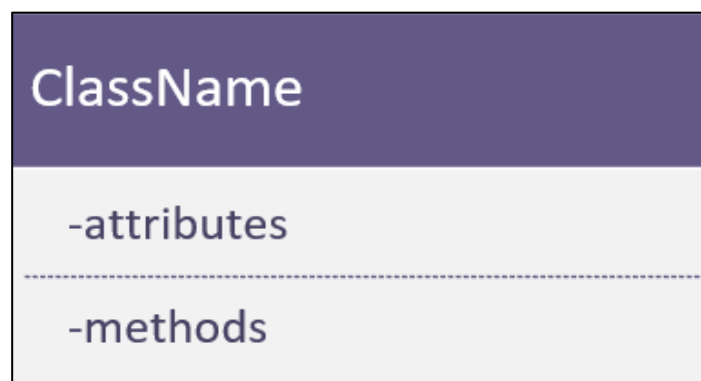
Benefits of Class Diagrams

1. It can represent the object model for complex systems.
2. It reduces the maintenance time by providing an overview of how an application is structured before coding.
3. It provides a general schematic of an application for better understanding.
4. It represents a detailed chart by highlighting the desired code, which is to be programmed.
5. It is helpful for the stakeholders and the developers.

Vital components of a Class Diagram

The class diagram is made up of three sections:

- **Upper Section:** The upper section encompasses the name of the class. A class is a representation of similar objects that shares the same relationships, attributes, operations, and semantics. Some of the following rules that should be taken into account while representing a class are given below:
 1. Capitalize the initial letter of the class name.
 2. Place the class name in the center of the upper section.
 3. A class name must be written in bold format.
 4. The name of the abstract class should be written in italics format.
- **Middle Section:** The middle section constitutes the attributes, which describe the quality of the class. The attributes have the following characteristics:
 - a. The attributes are written along with its visibility factors, which are public (+), private (-), protected (#), and package (~).
 - b. The accessibility of an attribute class is illustrated by the visibility factors.
 - c. A meaningful name should be assigned to the attribute, which will explain its usage inside the class.
- **Lower Section:** The lower section contain methods or operations. The methods are represented in the form of a list, where each method is written in a single line. It demonstrates how a class interacts with data.



Class Diagram of Online Placement Preparation Platform

A class diagram for an online placement preparation platform is a diagram that shows the different classes that make up the platform and how they interact with each other. It is a type of Unified Modeling Language (UML) diagram that is used to design and document software systems.

Overall, the class diagram for an online placement preparation platform would provide a good overview of the structure of the platform and how the different components interact with each other. It could be used to guide the development of the platform and to ensure that all of the necessary components are implemented.

Here is a UML Class Diagram for the online placement preparation platform. It consists of the following classes and methods:-

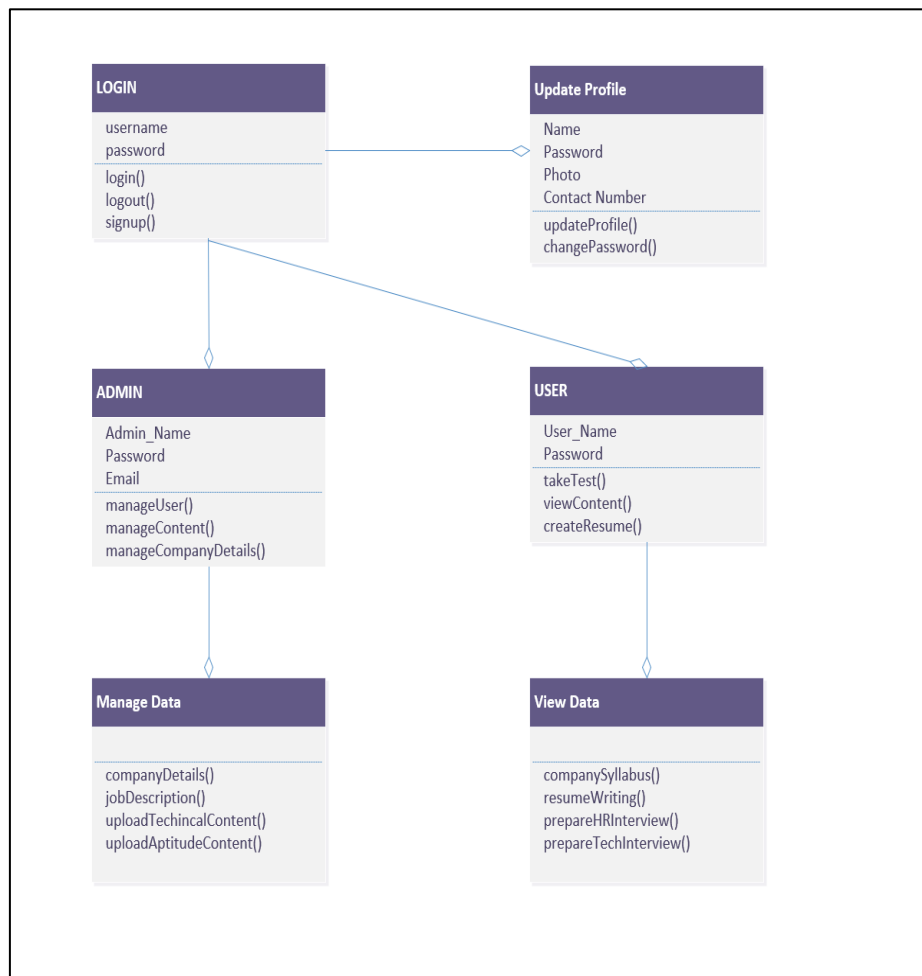


Fig6:- Class Diagram of Online Placement Preparation Platform

Components of Class Diagram of Online Placement Preparation Platform:-

1. Login Class:-

a. Attributes:-

- username
- password

b. Methods:-

- login()
- logout()
- signup()

2. Update Profile:-

a. Attributes:-

- name
- password
- photo
- contact_number

b. Methods:-

- updateProfile()
- changePassword()

3. Admin:-

a. Attributes:-

- Admin_name
- password
- email

b. Methods:-

- manageUser()
- manageContent()
- manageCompanyDetails()

4. User:-

a. Attributes:-

- User_name
- password

b. Methods:-

- practiceMcqs()
- viewStudyMaterial()
- createResume()

5. Manage Data:-

a. Methods:-

- companyDetails()
- jobDescription()
- uploadTechnicalContent()
- uploadAptitudeContent()

6. View Data:-

a. Methods:-

- companySyllabus ()
- resumeWriting ()
- prepareHRInterview()
- prepareTechInterview()

UML Sequence Diagram

The sequence diagram represents the flow of messages in the system and is also termed as an event diagram. It helps in envisioning several dynamic scenarios. It portrays the communication between any two lifelines as a time-ordered sequence of events, such that these lifelines took part at the run time. In UML, the lifeline is represented by a vertical bar, whereas the message flow is represented by a vertical dotted line that extends across the bottom of the page. It incorporates the iterations as well as branching. Sequence diagrams are typically used to show the following:

- The sequence of messages that are exchanged between objects in a system.
- The order in which messages are exchanged.
- The lifetime of objects in a system.
- The flow of control through a system.

Purpose of a Sequence Diagram

1. To model high-level interaction among active objects within a system.
2. To model interaction among objects inside a collaboration realizing a use case.
3. It either models generic interactions or some certain instances of interaction.

Notations of a Sequence Diagram

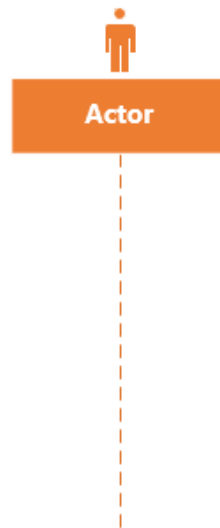
1. Lifeline

An individual participant in the sequence diagram is represented by a lifeline. It is positioned at the top of the diagram.



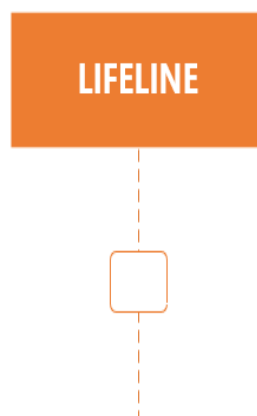
2. Actor

A role played by an entity that interacts with the subject is called as an actor. It is out of the scope of the system. It represents the role, which involves human users and external hardware or subjects. An actor may or may not represent a physical entity, but it purely depicts the role of an entity. Several distinct roles can be played by an actor or vice versa.



3. Activation

It is represented by a thin rectangle on the lifeline. It describes that time period in which an operation is performed by an element, such that the top and the bottom of the rectangle is associated with the initiation and the completion time, each respectively.



Sequence Diagram of Online Placement Preparation Platform

The sequence diagram of an online placement preparation platform would show the interaction between the different objects in the system, such as the user, the resource, the test, and the score. It would also show the order in which the different interactions take place. This sequence diagram provides a simplified view of the user's interaction with the platform, highlighting the key steps involved in logging in, accessing study materials, and taking a practice test. In a real-world scenario, there would be additional interactions and components, such as user registration, database interactions, and more extensive user interactions.

Here is a Sequence Diagram for an online placement preparation platform:-

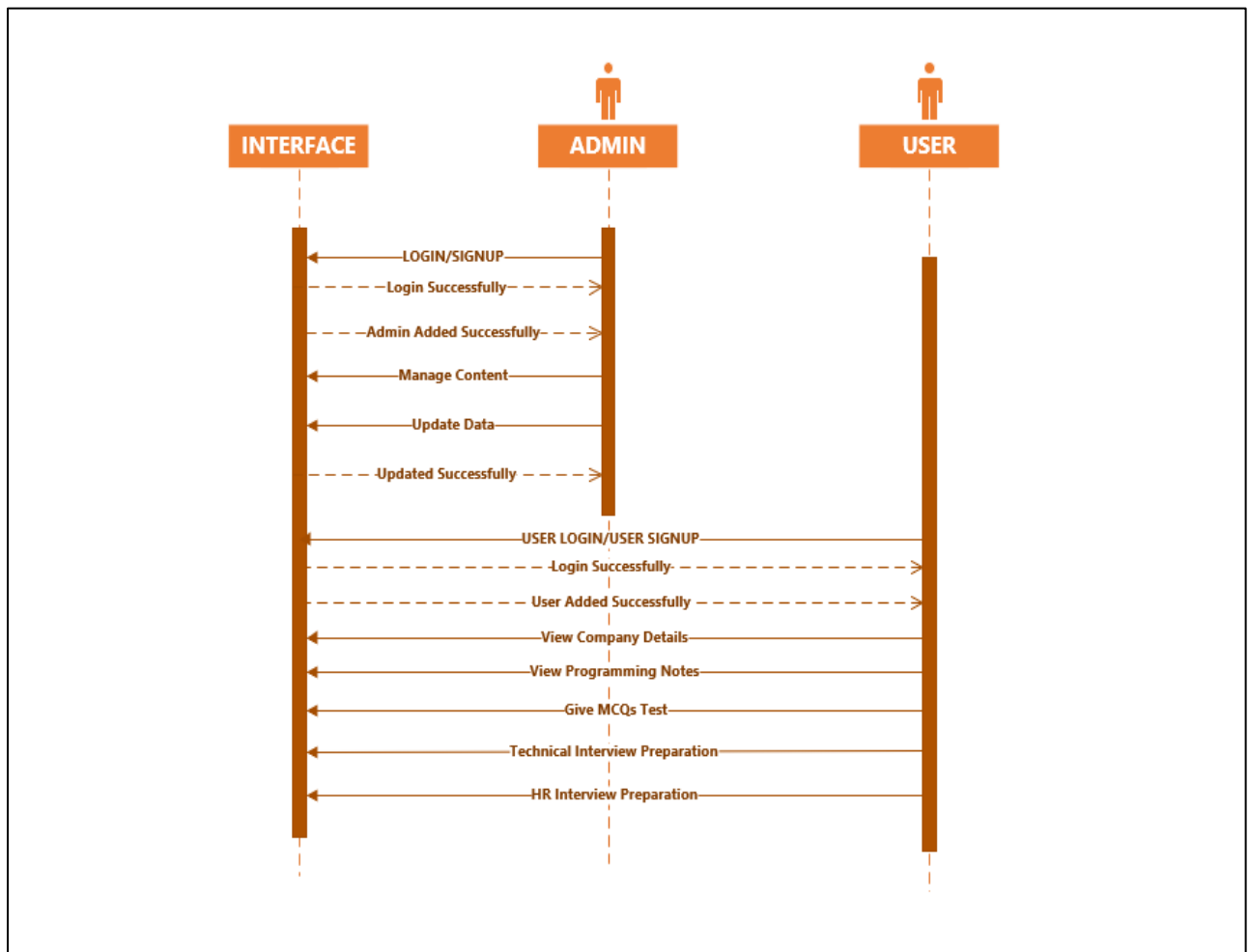


Fig7:- Sequence Diagram of Online Placement Preparation Platform

Components of sequence diagram of online placement preparation platform:-

1. Admin:-The admin component of the online placement preparation platform is responsible for managing the system and its users. The admin can login and signup into the system, create and manage data, upload and remove study material, and view and edit all user data. Admin can perform the following tasks :-

- Admin can login and signup into the system.
- Admin can create and manage data.
- Admin can upload and remove the study material.
- Admin can view and edit all user data.

2. User:- The user component of the online placement preparation platform is responsible for allowing users to access and use the platform's features. The user can create an account and login into the system, view company details and come to know about the company requirements, view programming notes and enhance problem-solving skills, practice various MCQs of different subjects, and prepare for technical and HR interviews. User can perform the following tasks :-

- User can create their account and login into the system.
- User can view company details and come to know about the company requirements.
- User can view programming notes and enhance their problem solving skills.
- User can practice the various MCQs of different subjects.
- User can prepare themselves for the Technical and HR interviews.

Test Cases

A test case is a document, which has a set of test data, preconditions, expected results and postconditions, developed for a particular test scenario in order to verify compliance against a specific requirement.

Test Case acts as the starting point for the test execution, and after applying a set of input values, the application has a definitive outcome and leaves the system at some end point or also known as execution postcondition.

Test case format

Test cases must be designed to fully reflect the software application features and functionality under evaluation. QA engineers should write test cases so only one thing is tested at a time. The language used to write a test case should be simple and easy to understand, active instead of passive, and exact and consistent when naming elements.

The components of a test case include:

- **Test name.** A title that describes the functionality or feature that the test is verifying.
- **Test ID.** Typically a numeric or alphanumeric identifier that QA engineers and testers use to group test cases into test suites.
- **Objective.** Also called the description, this important component describes what the test intends to verify in one to two sentences.
- **References.** Links to user stories, design specifications or requirements that the test is expected to verify.
- **Prerequisites.** Any conditions that are necessary for the tester or QA engineer to perform the test.
- **Test setup.** This component identifies what the test case needs to run correctly, such as app version, operation system, date and time requirements and security specifications.
- **Test steps.** Detailed descriptions of the sequential actions that must be taken to complete the test.
- **Expected results.** An outline of how the system should respond to each test step.

Test Cases For Online Placement Preparation Platform

Here are some test cases for the different modules:-

- 1. User Authentication Module:-** Here are some test cases specific to user authentication module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that a user can successfully login to the platform using a valid username and password.	The user should be successfully logged in to the platform.	The user is successfully logged in to the platform.
TC2	Verify that a user cannot login to the platform using an invalid username and password.	The user should receive an error message indicating that the username and password are invalid.	The user receives an error message indicating that the username and password are invalid.
TC3	Verify that a user cannot login to the platform if their account is locked	The user should receive an error message indicating that their account is locked.	The user receives an error message indicating that their account is locked.

- 2. User Registration Module:-** Here are some test cases specific to the user registration module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that a user can successfully register for an account on the platform using a valid email address and password.	The user should be successfully registered for an account and receive a confirmation email.	The user is successfully registered for an account and receives a confirmation email.
TC2	Verify that a user cannot register for an account on the platform using an invalid email address.	The user should receive an error message indicating that the email address is invalid.	The user receives an error message indicating that the email address is invalid.
TC3	Verify that a user cannot register for an account on the platform using an invalid password.	The user should receive an error message indicating that the password is invalid.	The user receives an error message indicating that the password is invalid.

3. Company Syllabus Module:- Here are some test cases specific to the company syllabus module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that the platform contains comprehensive and up-to-date content for the syllabus of all major placement companies.	All major placement companies are covered in the platform's content library.	The platform's content library covers all major placement companies, such as Amazon, Google, and Microsoft.
TC2	Verify that the content is well-organized and easy to navigate.	The content library is organized into logical categories and the search functionality is easy to use.	The content library is organized into logical categories, such as aptitude, programming, and technical knowledge. The search functionality is also easy to use.
TC3	Verify that the content is accurate and error-free.	The content is reviewed by experts and is updated regularly to ensure accuracy.	The content is reviewed by experts and is updated regularly to ensure accuracy.

4. Interview Preparation Module:- Here are some test cases specific to the interview preparation module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that the platform provides comprehensive interview preparation resources, including common interview questions, answers, and tips.	The platform provides a comprehensive range of interview preparation resources, including common interview questions, answers, and tips.	The platform provides a comprehensive range of interview preparation resources, including common interview questions, answers, and tips. The resources are also organized by topic and difficulty level, making it easy for users to find the resources they need.
TC2	Verify that the resources are up-to-date and reflect current industry trends.	The interview preparation resources are up-to-date and reflect current industry trends.	The interview preparation resources are up-to-date and reflect current industry trends.

5. Programming Notes Module:- Here are some test cases specific to the programming notes module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that the platform contains comprehensive and up-to-date programming notes for popular programming languages such as Java, C++, and Python.	All popular programming languages are covered in the platform's content library.	The platform's content library covers all popular programming languages, such as Java, C++, and Python.
TC2	Verify that the notes are clear and concise.	The notes are written in a clear and concise style that is easy to understand.	To verify that the notes are clear and concise, check if the language is simple, direct, and free of unnecessary jargon.
TC3	Verify that the notes include examples and code snippets to illustrate the concepts.	The notes include examples and code snippets to illustrate the concepts in a practical way.	The notes include examples and code snippets to illustrate the concepts in a practical way.

6. MCQs Module:- Here are some test cases specific to the MCQs module:-

Test Case ID	Test case description	Expected Result	Actual output
TC1	Verify that the platform contains a large database of MCQs on all relevant placement topics.	The platform contains a large database of MCQs on all relevant placement topics, such as aptitude, programming, and technical knowledge.	The platform contains a large database of MCQs on all relevant placement topics, such as aptitude, programming, and technical knowledge.
TC2	Verify that the MCQs are of varying difficulty levels.	The MCQs are of varying difficulty levels, from beginner to expert.	The MCQs are of varying difficulty levels, from beginner to expert.
TC3	Verify that the MCQs are accurate and error-free.	The MCQs are accurate and error-free.	The MCQs are accurate and error-free.
TC4	Verify that the platform provides instant feedback on user performance.	The platform provides instant feedback on user performance, including the correct answer and an explanation.	The platform provides instant feedback on user performance, including the correct answer and an explanation.

Gantt Chart

A Gantt chart is a popular project management tool used to visualize and plan tasks and activities over time. It consists of several key components, which help project managers and teams understand project timelines and dependencies. The main components of a Gantt chart include:

- 1. Task or Activity Bars:-** These are horizontal bars that represent individual tasks or activities within the project. Each bar typically spans from the start date to the end date of the task. The length of the bar is proportional to the duration of the task.
- 2. Time Scale:-** The Gantt chart has a horizontal timeline that represents the project's time frame. It could be in days, weeks, months, or any other time unit, depending on the project's scale. The time scale is usually shown along the top or bottom of the chart.
- 3. Milestones:-** Milestones are significant points or achievements in the project that are represented as a diamond or other distinctive shape on the Gantt chart. Milestones help highlight critical events or goals in the project.
- 4. Task Dependencies:-** Gantt charts often use arrows or lines to indicate task dependencies. These show the relationships between tasks, such as which tasks must be completed before others can start. There are two types of task dependencies: finish-to-start (Task B can't start until Task A finishes) and start-to-start (Task B can start when Task A starts).
- 5. Task Labels:-** Task labels are typically placed inside or beside each task bar and provide a brief description of the task or activity. They help stakeholders understand what each task represents.
- 6. Task Duration:-** The Gantt chart includes information about the duration of each task or activity, usually displayed in units of time (e.g., days, weeks, or months). This information is crucial for understanding the project timeline.
- 7. Progress or Completion Bars:-** In many Gantt charts, there may be a second bar within each task bar to show the progress or completion of the task. This helps track the actual progress of tasks over time.

Gantt Chart for Online Placement Preparation Platform

Creating a Gantt chart for an online placement preparation platform can help you plan the development and launch of the platform. Below is a simplified example of a Gantt chart for such a project. Please note that this is a high-level overview, and in practice, you would break down each task into more detailed subtasks and set specific timelines based on the project's complexity and requirements.

Project:- Online Placement Preparation Platform

Start Date:- 4/9/2023

End Date:- 15/12/2023

Project Phases:-

1. Planning Phase (2 weeks)

- Define project scope and objectives
- Identify project requirements
- Develop a project plan

2. Design Phase(2.6 weeks)

- User Interface Design
- Content Creation
- Content Management System Design

3. Development Phase (6 weeks)

- Set up project infrastructure (servers, domains, etc.)
- Create the platform's database
- Develop the user registration system
- Design the user interface (UI)
- Create content for the platform (e.g., Interview questions, MCQs)
- Implement the project modules

4. Testing Phase (1.5 weeks)

- Perform functionality testing
- Conduct user experience (UX) testing
- Address bugs and issues

5. Deployment Phase(1.2 weeks)

- Server setup and configuration
- Database deployment
- Platform Installation
- Content Migration
- User Training

Dependencies:-

- The "Design Phase" depends on the completion of the "Planning Phase."
- The "Development Phase" depends on the completion of the "Design Phase."
- The "Testing Phase" depends on the completion of the "Development Phase."
- The "Deployment" can begin after the "Testing Phase" has completed.

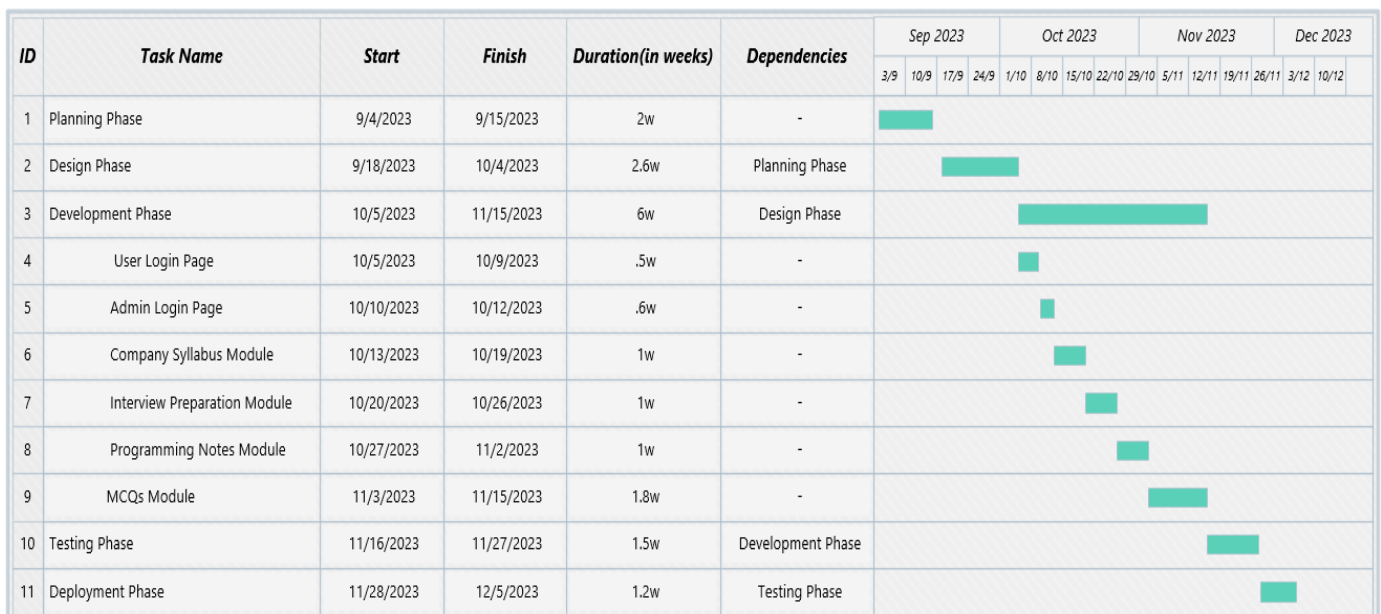


Fig8:- Gantt Chart for Online Placement Preparation Platform

Implementation

Project Snapshots:-

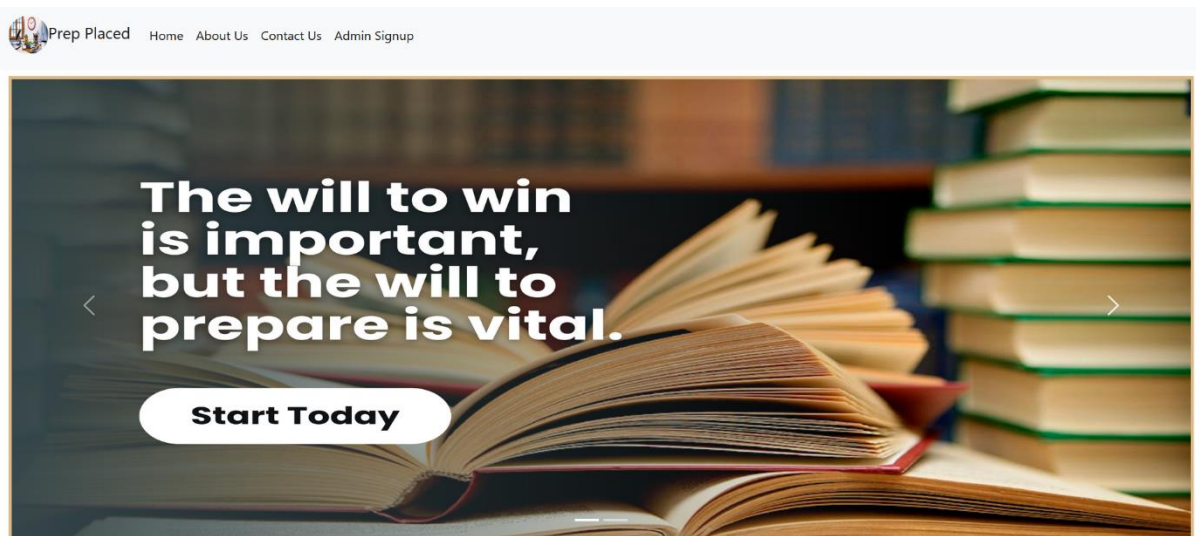


Fig9:- Home Page-I

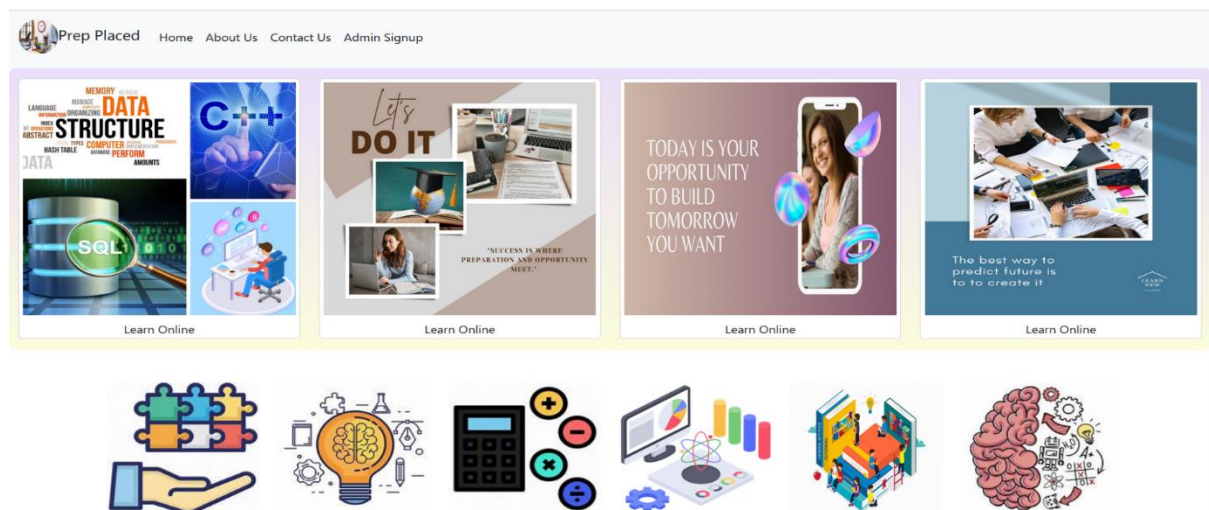


Fig10:- Home Page-II

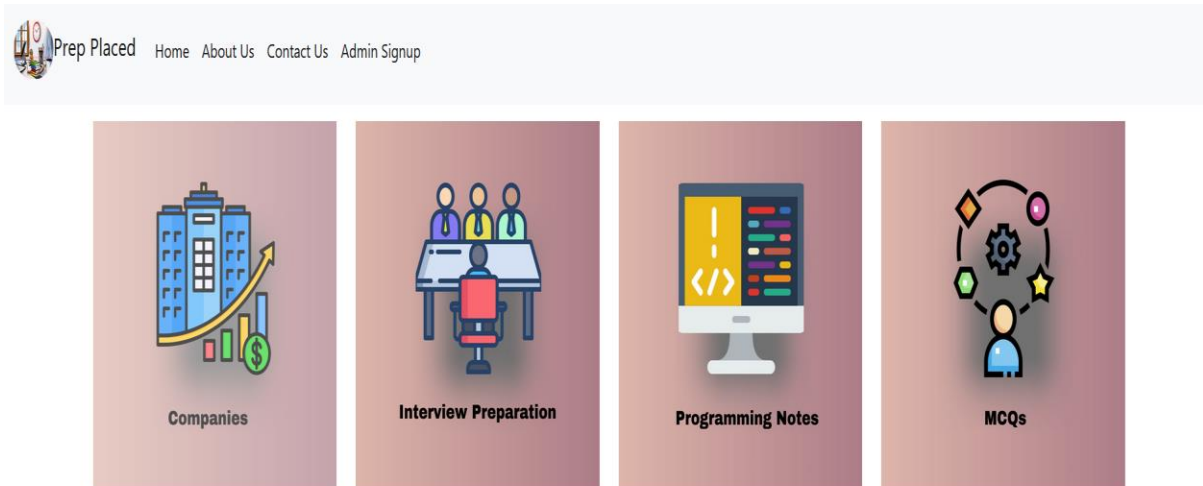


Fig11:- Modules of the project

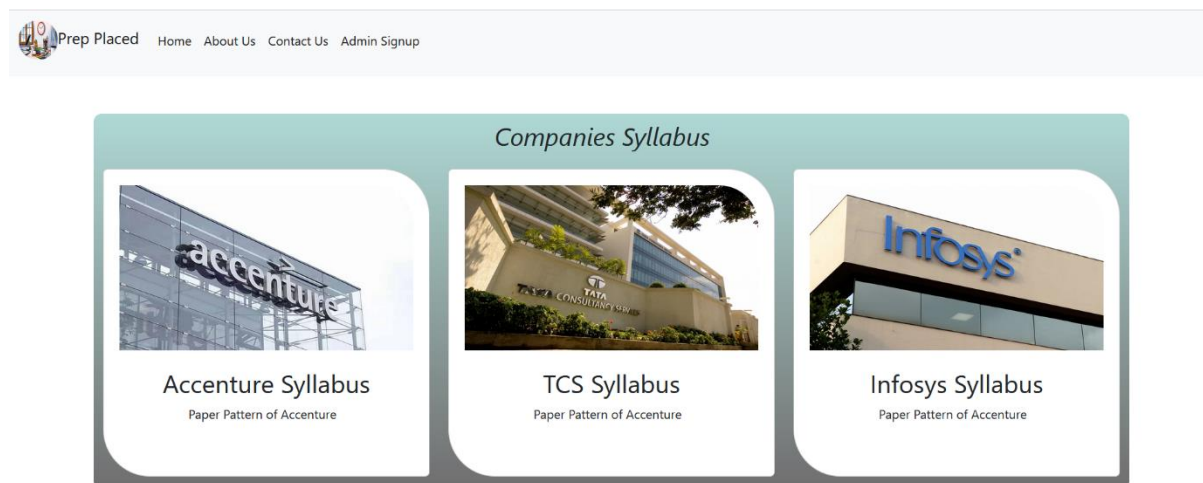


Fig12:- Companies Module



Fig13:- Interview Preparation Module

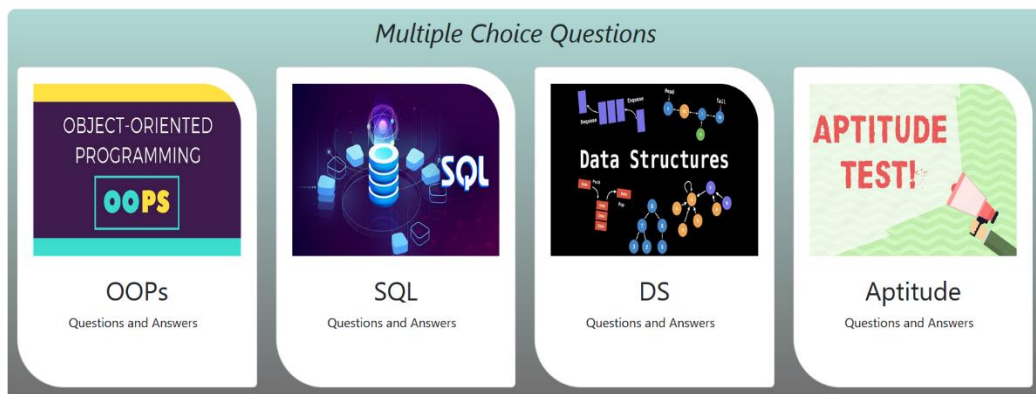


Fig14:- MCQs Module

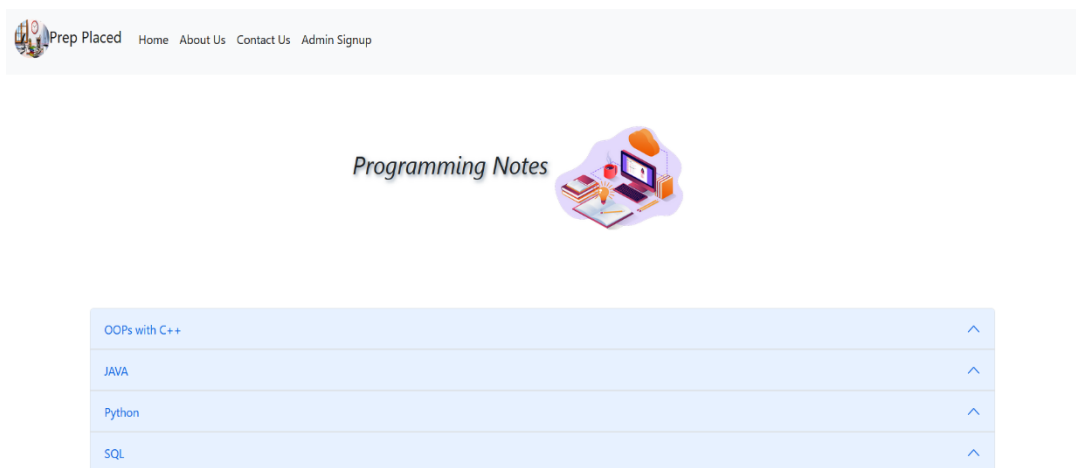


Fig15:- Programming Notes Module

Conclusion

In conclusion, an online placement preparation platform offers a comprehensive and effective solution for individuals seeking to excel in job placement exams and interviews. These platforms provide numerous benefits, including flexibility, accessibility, and personalized learning experiences. They empower users with the knowledge, skills, and confidence needed to compete successfully in the highly competitive job market. Furthermore, online placement preparation platforms often incorporate advanced technologies, such as AI-driven assessment tools and interactive simulations, enhancing the learning process and ensuring that users are well-prepared for the challenges they will face during job placements. As the job market continues to evolve and become increasingly competitive, these platforms have become invaluable resources for job seekers. They bridge the gap between education and employment, equipping individuals with the tools they need to secure their desired positions. In a rapidly changing professional landscape, an online placement preparation platform is an indispensable ally for those striving to build a successful career. Its ability to adapt and evolve with the evolving needs of job seekers and employers makes it a crucial tool for anyone looking to thrive in today's job market.

Future Scope

Our online placement preparation platform has a solid foundation, and there are several directions we can take to expand and improve it in the future. Our online placement preparation platform has the potential to evolve into a comprehensive and dynamic ecosystem for students and job seekers. In the future, we can enhance user engagement through personalized learning experiences, expand our reach with a dedicated mobile application, and foster a vibrant community by integrating discussion forums and social features. Analytics and reporting capabilities will empower users to track their progress effectively, and the platform can incorporate gamification elements and advanced learning resources to make the learning process engaging and interactive. We can also do in a way by integrating a job portal, your platform can seamlessly connect users with employment opportunities, and you can explore e-commerce and monetization options to sustain its growth. Continuous content expansion, partnerships, and localization will ensure that your platform remains relevant to a diverse global audience. Keeping a strong focus on security, accessibility, and staying abreast of industry trends, your project has the potential to be a leading resource for career preparation and development.

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