



PARSHVANATH CHARITABLE TRUST'S
A.P. Shah Institute of Technology
Thane, 400615

Academic Year: 2023-24
Department of Computer Engineering

CSL605 SKILL BASED LAB COURSE: CLOUD COMPUTING

Mini Project Report

□ **Title of Project** : **Online Library Management System**

□ **Year and Semester** : **T.E. (Sem VI)**

□ **Group Members Roll No. & Name** :

135	Aastha Patil
127	Anwasha Pani
85	Soham Kulkarni

Table of Contents

Sr. No.	Topic	Page No.
1.	Abstract	3
2.	Introduction	4
3.	Problem Definition	5
4.	Objective & Scope	6
5.	Description (Include the cloud services used in the project, methodologies used and software requirements)	7
6.	Implementation details with screen-shots (stepwise)	10
7.	Learning Outcome	11

Chapter 1

Abstract

The Library Management System project is a web-based application developed using PHP and MySQL, which enables the automation of the entire library management process. This system provides a user-friendly interface that allows library staff to manage books, members, and circulation efficiently.

The Online Library Management System provides features such as a user-friendly interface, online cataloging, book reservation, book issuing, book return, and fine management. Additionally, the system can generate various reports such as a list of books, overdue books, and fines. It also has an online payment system for overdue fines and other charges, which can be paid through online modes of payment.

The system has two modules - the user module and the admin module. The user module is accessible to library members who can search for books, reserve books, and check their borrowing history. The admin module is accessible only to authorized personnel who can manage books, add new books, and manage users.

The Online Library Management System is designed to be scalable and customizable, making it suitable for various types of libraries, including academic, public, and corporate libraries. It improves library efficiency by reducing manual work and provides access to library resources 24/7 from anywhere with an internet connection.

Chapter 2

Introduction

This project report aims to provide a detailed overview of the Online Library Management System project, including its purpose, scope, objectives, and features. The report also outlines the methodology used in developing the system, including the tools, techniques, and software used.

The Online Library Management System project is designed to provide a user-friendly interface, online cataloging, book reservation, book issuing, book return, and fine management. Additionally, the system generates various reports such as a list of books, overdue books, and fines. It also has an online payment system for overdue fines and other charges, which can be paid through online modes of payment.

The project has two modules - the user module and the admin module. The user module is accessible to library members who can search for books, reserve books, and check their borrowing history. The admin module is accessible only to authorized personnel who can manage books, add new books, and manage users.

The report also covers the methodology used in developing the system, including requirements gathering, system design, implementation, testing, and deployment. The project was developed using PHP and MySQL, making it scalable and customizable.

Overall, this report aims to provide a comprehensive overview of the Online Library Management System project, highlighting its features, objectives, and methodology. The system provides a valuable tool for library management, enabling automation, reducing manual work, improving efficiency, and providing access to library resources 24/7 from anywhere with an internet connection.

Chapter 3

Problem Definition

Traditional library management systems are manual and paper-based, which can be time-consuming and error-prone. They also lack the ability to provide real-time access to library resources, limiting their effectiveness. Additionally, traditional library management systems do not provide features such as online cataloging, book reservation, book issuing, book return, and fine management. These features are essential for efficient library management, and the absence of such features in traditional library management systems can lead to a lack of efficiency and productivity. Moreover, traditional library management systems may also have limitations in terms of accessibility, as users may need to be physically present in the library to access its resources. This limitation can be inconvenient for users who may have limited time or are located far away from the library.

To address these challenges, the Online Library Management System project was developed to provide a centralized platform for managing various library activities. Overall, the Online Library Management System project was developed to address the limitations and challenges of traditional library management systems, providing a modern and efficient solution for library management.

Chapter 4

Objective

The main objective of the Online Library Management System project is to provide a modern and efficient solution for library management. The system aims to automate the entire library process, including book acquisition, circulation, and cataloging, among others. The system provides a user-friendly interface, online cataloging, book reservation, book issuing, book return, and fine management, and generates various reports, providing real-time access to library resources and improving efficiency.

Scope

The Online Library Management System project scope includes the following: The user management feature of the system allows users to register for an account, log in, search for books, reserve books, and check their borrowing history. The admin management feature enables authorized personnel to manage books, add new books, manage users, and generate reports. The book management feature facilitates managing the entire book lifecycle, including acquisition, cataloging, circulation, and return. These features are crucial for efficient library management, and the Online Library Management System project aims to provide a modern and efficient solution for library management

The system is designed to be scalable and customizable, allowing libraries to tailor the system to their specific needs. The Online Library Management System project is intended to provide a modern and efficient solution for library management, improving efficiency, reducing manual work, and providing real-time access to library resources.

Chapter 5

Description

Services

VM Instance

Google Cloud VM instance is a cloud computing service offered by Google Cloud Platform that allows you to create and manage virtual machines in the cloud. A VM instance is a virtual machine that runs in Google Cloud Platform and provides you with computing resources such as CPU, memory, and storage.

The methodology used to describe the Google Cloud VM instance service involves providing a general overview of the service's features and capabilities, detailing pricing and plans, highlighting benefits and advantages over other hosting options, providing specific use cases or examples, and providing technical specifications for the service. The goal of the methodology is to provide users with a clear and concise understanding of what the service does, how it works, and how it can benefit them

Identity and Access Management

Google Cloud Identity and Access Management (IAM) is a service that provides centralized management and control of user access to Google Cloud Platform resources. With IAM, users can assign roles and permissions to users, groups, and service accounts to grant access to specific resources in a secure and compliant manner. IAM supports fine-grained access control, role-based access control (RBAC), and identity federation. IAM can help organizations to improve security, simplify access management, and reduce costs. Technical specifications for IAM include integration with other Google Cloud Platform services, APIs and SDKs, and support for authentication and authorization.

The methodology used to describe the Google Cloud Identity and Access Management (IAM) service involves introducing the service and its purpose, highlighting key features such as fine-grained access control and role-based access control (RBAC), explaining the benefits of using IAM including improved security and simplified access management, providing use cases for the service, and including technical specifications such as integration with other Google Cloud Platform services and available APIs and SDKs. The goal of the methodology is to provide users with a comprehensive understanding of the service and its capabilities, so that they can make informed decisions about using it to manage user access to Google Cloud Platform resources.

Google Cloud SQL

Google Cloud SQL is a fully-managed relational database service offered by Google Cloud Platform. With Cloud SQL, users can create, manage, and scale MySQL, PostgreSQL, and SQL Server databases in the cloud. The service provides automatic replication, backups, and patches, and also supports high availability with automatic failover. Cloud SQL can be integrated with other Google Cloud Platform services such as Compute Engine, App Engine, and Kubernetes Engine. The service provides security features such as encryption at rest and in transit, and supports fine-grained access control using IAM. Users can monitor and optimize database performance with built-in monitoring and alerting features. Technical specifications for Cloud SQL include support for SQL queries and commands, data storage and retrieval, and integration with third-party tools and services.

The methodology used to describe the Google Cloud SQL Instance service involves providing an overview of the service's features and capabilities, explaining the supported

database engines, discussing pricing and plans, highlighting benefits and advantages over other database hosting options, providing specific use cases or examples, and providing technical specifications for the service. The goal of the methodology is to provide users with a clear understanding of what the service does, how it works, and how it can benefit them when managing their databases in the cloud.

Google Cloud Storage (Bucket)

Google Cloud Storage is a cloud-based object storage service offered by Google Cloud Platform. With Cloud Storage, users can store and access data from anywhere in the world through a simple web interface or API. The service provides automatic redundancy and durability, and also supports data versioning, lifecycle management, and access control using IAM. Cloud Storage can be used for a variety of use cases, such as storing backups, archiving data, serving static content for websites, and storing multimedia content. The service provides a pay-as-you-go pricing model with no upfront costs and no minimum usage requirements. Technical specifications for Cloud Storage include support for object storage and retrieval, object metadata management, and integration with third-party tools and services.

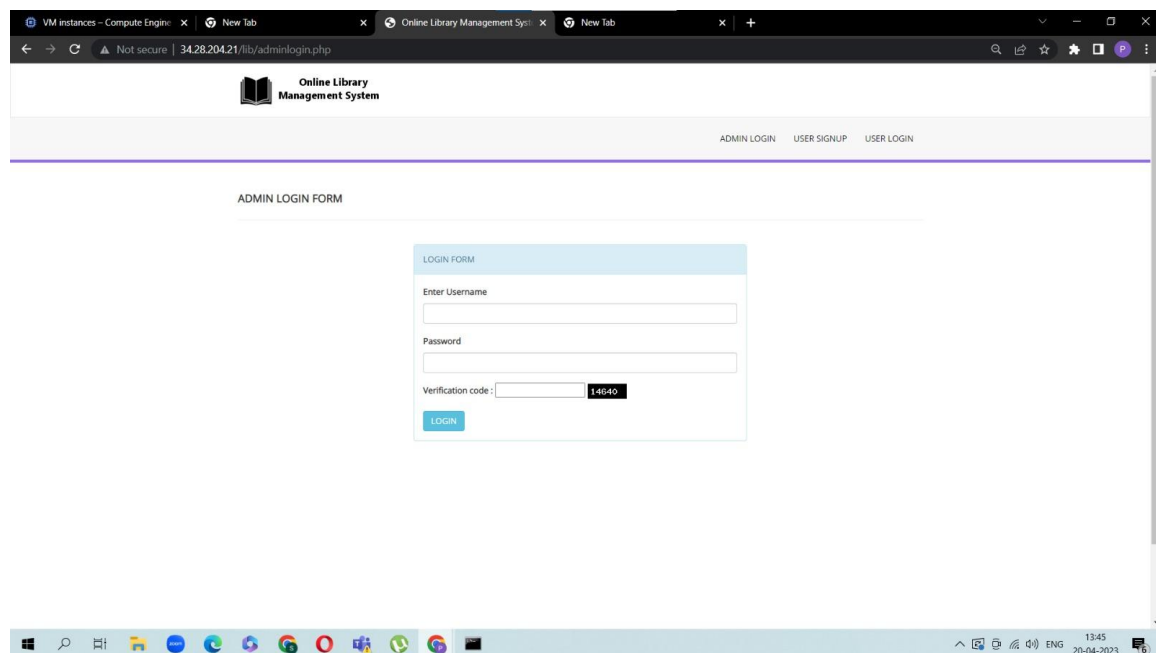
The methodology used to describe the Google Cloud Storage Bucket service involves providing an overview of the service's features and capabilities, explaining the supported data types, discussing pricing and plans, highlighting benefits and advantages over other storage options, providing specific use cases or examples, and providing technical specifications for the service. The goal of the methodology is to provide users with a clear understanding of what the service does, how it works, and how it can benefit them when storing and accessing their data in the cloud.

Chapter 6

Implementation

The screenshot shows a web browser window with the URL `34.28.204.21/lib/signup.php`. The page title is "Online Library Management System". The navigation bar includes links for "ADMIN LOGIN", "USER SIGNUP", and "USER LOGIN". The main heading is "USER SIGNUP". Below it is a "SIGNUP FORM" with the following fields: "Enter Full Name", "Mobile Number:", "Enter Email", "Enter Password", "Confirm Password", and "Verification code:". The verification code is displayed as "79626". A red "Register Now" button is at the bottom of the form.

The screenshot shows a web browser window with the URL `34.28.204.21/lib/index.php`. The page title is "Online Library Management System". The navigation bar includes links for "ADMIN LOGIN", "USER SIGNUP", and "USER LOGIN". The main heading is "USER LOGIN FORM". Below it is a "LOGIN FORM" with the following fields: "Enter Email id", "Password", "Forgot Password", and "Verification code:". The verification code is displayed as "76739". A blue "LOGIN" button is at the bottom of the form, followed by the text "Not Register Yet".



Chapter 7

Learning Outcome

The Online Library Management System project deployed on Google Cloud is an opportunity for individuals to learn about cloud computing and its various components. The project provides hands-on experience in building a complex system using virtual machines, database servers, and cloud storage. Individuals can learn how to create a virtual machine instance, set up a database server, and optimize the system for better performance. IAM is used in the project to grant access to various users, providing individuals with experience in managing access control in a cloud environment. They can learn how to create and manage roles and permissions and how to grant and revoke access to various resources. The project involves using a SQL database to store and manage data, providing individuals with experience in writing SQL queries and managing a database server in a cloud environment. This is essential for efficient data management. Building an online library management system as part of the project provides an opportunity to gain a deeper understanding of how library management systems work. Individuals can learn about user management, book management, and fine management, and how they can be implemented in a cloud environment. This knowledge can be beneficial for building other types of management systems in the future.

In summary, the project provides individuals with a wide range of learning outcomes, including understanding cloud computing, cloud deployment, IAM, SQL, and library management systems. By gaining experience in these areas, individuals can build their skills and knowledge in cloud computing, database management, and system design, which can be useful in a variety of industries and professions.