

Acknowledgement

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CONTENTS

| | |
|---|--|
| Certificate(by company) ----- | |
| Certificate----- | |
| Acknowledgement----- | |
| Chapter 1 Company Profile----- | |
| 1.1 Introduction----- | |
| 1.2 Vision & Mission----- | |
| 1.3 Company Background----- | |
| 1.4 Training & Certification Program----- | |
| 1.5 Product and Service Offering----- | |
| 1.6 Training Approach & Methodology----- | |
| 1.7 National Level Initiatives----- | |
| 1.8 Industry Impact & Clientele----- | |
| 1.9 Future Prospects & Conclusion----- | |
| Chapter 2 Industry at a Glance----- | |
| 2.1 Training & Development Department----- | |
| 2.2 Cybersecurity Department----- | |
| 2.3 Research & Development Department----- | |
| 2.4 Scholarship & Championship Department----- | |
| 2.5 Project Based Training & Internship Department----- | |
| 2.6 Certification Department----- | |
| 2.7 Network & Communication Department----- | |
| 2.8 Marketing & Outreach Department----- | |
| 2.9 Administration & Operations Department----- | |
| 2.10 Quality Assurance & Metrics Department----- | |
| Chapter 3 Tools & Technologies used in Industry----- | |
| 3.1 Abstract----- | |
| 3.2 Introduction----- | |
| 3.3 Virtual Learning Environments----- | |
| 3.4 Learning Management System (LMS)----- | |
| 3.5 Simulated Environments ----- | |
| 3.6 Cybersecurity Tools----- | |
| 3.7 Certification Platforms ----- | |
| 3.8 Collaboration Tools----- | |
| 3.9 Cloud Platforms----- | |

| | |
|--|--|
| 3.10 Conclusion----- | |
| Chapter 4 Modules of Industry ----- | |
| 4.1 MySQL----- | |
| 4.12 MySQL Architecture----- | |
| 4.13 MySQL Syntax----- | |
| 4.14 Applications of MySQL ----- | |
| 4.15 Conclusion----- | |
| Chapter 5 Details about the Final Project----- | |
| 5.1 Introduction----- | |
| 5.2 Features----- | |
| 5.3 Technologies Used----- | |
| 5.4 Implementation----- | |
| 5.5 Layout----- | |
| 5.6 Source Code----- | |
| 5.7 Screenshots----- | |
| 5.8 Project logic----- | |
| 5.9 Build & Execution----- | |
| 5.10 Conclusion----- | |
| 6.10 Future Enhancements ----- | |
| Chapter 6 Training Outcome----- | |
| 6.1 Introduction----- | |
| 6.2 Overview of the Industrial Training----- | |
| 6.3 Skills Acquired During Training----- | |
| 6.4 Practical Applications of Skills----- | |
| 6.5 Enhanced Understanding of Core MySQL----- | |
| 6.6 Exposure of Industry Standards & Best----- | |
| 6.7 Improvements in Problem-Solving Abilities----- | |
| 6.8 Effective Team Collaboration & Communication----- | |
| 6.9 Introduction to Real-World Software Development----- | |
| 6.10 Project Management & Time Management Skills----- | |
| 6.11 Conclusion----- | |
| Chapter 7 Conclusion----- | |
| References----- | |

Chapter 1 Company Profile

- 1.1 Introduction Azure Skynet Solutions Private Limited, a distinguished Information Technology training and service provider headquartered in India, holds a prominent position in the industry. Established in 2014, the company has since then not only earned an ISO 9001:2015 certification but has also emerged as a steadfast ally for businesses, governmental bodies, and educational institutions in pursuit of comprehensive solutions within the domains of cyber security, training, and professional development.
- 1.2 Vision & Mission At the heart of Azure Skynet Solutions Private Limited's endeavors lies a visionary aspiration to catalyze innovation through cutting-edge training, seamless implementation, and groundbreaking research. Their commitment transcends ordinary learning experiences, seeking to orchestrate a transformative development across every conceivable facet. The company's mission revolves around the creation of a robust and dynamic learning ecosystem, coupled with a professional network that empowers tech enthusiasts and cultivates a workforce adept at navigating the swiftly evolving IT landscape.
- 1.3 Company Background Firmly entrenched as a recognized leader in the field of cyber security training and services, Azure Skynet Solutions boasts a remarkable team, bolstered by an expansive spectrum of expertise. Their dedicated professionals actively assist clients in crafting and executing successful security programs. With exceptional proficiency in areas such as security program strategy, enterprise risk consultation, and comprehensive threat and vulnerability management, they are also at the forefront of providing training across diverse technologies. Notably, their expansive client base of over 120 entities hailing from various industries stands as a testament to their ever-growing reputation as a dependable partner.
- 1.4 Core Values
- Innovation: Embrace innovation as the driving force behind progress in the IT industry.
 - Quality: Commitment to superior quality underpins every aspect of our training and services.
 - Collaboration: Foster collaboration to create a strong network of professionals and learners.
 - Development: Continuous development is at the heart of training philosophy.
 - Ethics: Adhere to the highest ethical standards in all interactions.
- 1.5 Training & Certifications Programs
- Braintech Network & Cyber Security Championship: A scholarship competition that combines workshops with rigorous evaluation.
 - Project Based Training/Internship Program: Hands-on training with live projects and industry exposure.
- 1.6 Product & Service Offering Azure Skynet Solutions provides:
- Comprehensive training programs in various IT disciplines.
 - Cyber security consulting services, including strategy and risk management.
 - Threat and vulnerability management services.
 - National level initiatives for awareness and skill enhancement.
 - Certification programs to validate and enhance technical expertise.
- 1.7 Training Approach & Methodology The training approach embraced by Azure Skynet Solutions is grounded in practicality, interactivity, and real-world relevance. Their pedagogical philosophy thrives on hands-on learning, urging participants to seamlessly translate theoretical concepts into tangible solutions within actual scenarios. The combination of seasoned trainers and meticulously structured curriculum ensures that candidates gain profound insights into the subjects.

- 1.8 National Level Initiatives Azure Skynet Solutions' signature endeavors, exemplified by the BrainTech Championship, serve as compelling platforms for igniting awareness and amplifying skills at a national level. These flagship initiatives not only instigate healthy competition but also inspire participants to push their boundaries in their technical pursuits.
- 1.9 Industry Impact & Clientele Throughout its journey, Azure Skynet Solutions has significantly impacted a plethora of industries, empowering organizations to fortify their cyber security fortifications and elevate their technical proficiency. Their client portfolio comprises a diverse range of businesses, governmental bodies, and educational institutions, all of whom stand to gain from the tailored solutions and unparalleled expertise provided by Azure Skynet Solutions.
- 1.10 Future Prospects & Conclusion As technology continues to evolve, Azure Skynet Solutions remains dedicated to staying at the forefront of the IT training and cyber security landscape. Their commitment to innovation, quality, and collaboration positions us as a key player in shaping the future of IT education and security. In conclusion, Azure Skynet Solutions Private Limited is a forward-thinking organization that blends cutting-edge training, practical implementation, and innovative research to drive progress in the IT industry. With a diverse range of training programs, consulting services, and national-level initiatives, they stand as a beacon of excellence and expertise in the field of cyber security and technical education.

Chapter 2 Industry at a Glance

In an ever-evolving technological landscape, the significance of skill development, cybersecurity, research, and innovation cannot be overstated. Azure Skynet Solutions stands as a bastion of excellence in these domains, meticulously structured into various departments, each a critical cog in the organization's pursuit of excellence. Let's delve further into the intricacies of each department, appreciating the depth and breadth of their functions and contributions.

2.1 Training & Development Department At the heart of Azure Skynet Solutions lies the Training & Development Department, a beacon of knowledge dissemination. This dynamic department, fueled by a commitment to nurturing technical prowess, curates a wide spectrum of training programs. These programs cater to the multifaceted needs of learners – from enthusiastic undergraduates to seasoned professionals eager to keep pace with industry trends. The department's offerings span diverse domains of IT, from programming paradigms to networking principles. A particular emphasis is placed on cybersecurity, recognizing the growing significance of safeguarding digital realms. These programs are meticulously designed, ensuring they are not only comprehensive but also attuned to the ever-evolving industry dynamics. The department's tireless efforts translate into empowered professionals armed with the latest knowledge and skills.

2.2 Cybersecurity Department As the digital landscape expands, so do the vulnerabilities within it. Enter the Cybersecurity Department, a vanguard against digital threats. This department dedicates itself to equipping organizations with the tools and insights needed to build robust cybersecurity programs. Their services span the spectrum – from devising strategic security blueprints to vigilant threat and vulnerability management. A core component of the department's operations involves enterprise risk consulting. By meticulously assessing risks and formulating strategies, the department empowers organizations to navigate the complex web of cybersecurity challenges. Regular vulnerability assessments unveil potential weaknesses, enabling proactive countermeasures. In a digital world fraught with threats, the Cybersecurity Department offers a reassuring shield.

2.3 Research & Innovation Department Innovation is the lifeblood of any organization seeking longevity in a rapidly changing world. Azure Skynet Solutions recognizes this, and thus, the Research & Innovation Department stands as a beacon of progress. This department's skilled researchers embark on expeditions into the ever-expanding frontiers of technology. Their mission is to unearth emerging technologies, trends, and methodologies across IT and cybersecurity domains. These findings do more than just shape the organization's trajectory; they fuel the creation of pioneering training programs and services. This ensures Azure Skynet Solutions remains not just relevant but ahead of the curve, enabling learners to engage with cutting-edge tools and insights.

2.4 Scholarship & Championship Department Nurturing talent is a duty Azure Skynet Solutions takes to heart, and the Scholarship & Championship Department is the nurturing ground for exceptional individuals. This department orchestrates initiatives like the Braintech Network & Cyber Security Championship, where the best and brightest minds converge. Through meticulously organized workshops and intensive sessions, participants are challenged and invigorated. The department's discerning evaluations identify standout performers – those who exhibit exceptional promise. These champions are awarded scholarships, a testament to their dedication and potential. In identifying and cultivating toptier talent, the Scholarship & Championship Department plays a pivotal role in shaping the industry's future.

2.5 Project Based Training & Internship Department The transition from theory to practice is a crucial milestone in any learner's journey. This transition is masterfully guided by the Project Based Training & Internship Department. Recognizing that hands-on experience is pivotal, this department

orchestrates immersive training programs. Candidates are immersed in real-world projects, gaining practical exposure to industry practices. The experience is transformative, as participants grapple with the intricacies of actual projects. In collaboration with associated organizations, the department bestows certifications, validating not just theoretical knowledge but practical acumen.

2.6 Certification Department Certifications stand as veritable badges of expertise in the professional world, and the Certification Department is the architect behind Azure Skynet Solutions' credential ecosystem. This department meticulously designs, develops, and manages certification programs, each a testament to the holder's proficiency. From the prestigious Cyber Security Expert Program to specialized certifications, each course is meticulously structured. The department ensures alignment with industry standards and, more importantly, the capacity to effectively assess candidates' knowledge and skills. Through these certifications, professionals are armed with recognized proof of their capabilities.

2.7 Network & Communication Department In the digital age, seamless communication and robust infrastructure are non-negotiable. Enter the Network & Communication Department, the backbone ensuring Azure Skynet Solutions operates in harmony. This department crafts and maintains the IT infrastructure essential for program delivery, online resource management, and intra-organizational communication. A robust network infrastructure ensures a smooth flow of information, while learning management systems facilitate a cohesive learning experience. Internal communication is streamlined, ensuring that each department functions cohesively. In essence, the Network & Communication Department sets the stage for Azure Skynet Solutions to flourish.

2.8 Marketing & Outreach Department Excellence alone does not suffice – it must be communicated effectively. The Marketing & Outreach Department stands as the organization's megaphone, amplifying its services, programs, and achievements. This department shapes and manages Azure Skynet Solutions' online presence, engaging with potential clients, learners, and industry peers. Through strategic events, workshops, and a multifaceted online strategy, the department showcases the organization's expertise. The result? A constant influx of clients and candidates, drawn by the promise of quality education, cybersecurity solutions, and industry engagement.

2.9 Administration & Operations Department Behind the scenes, the Administration & Operations Department choreographs the organization's daily symphony. From logistical intricacies to human resource management, this department ensures the gears of Azure Skynet Solutions turn smoothly. Finance, administration, and a plethora of essential tasks fall under its purview. In supporting other departments, the Administration & Operations Department paves the way for unimpeded focus on their core functions. It's the unsung hero of seamless operations, enabling the organization to realize its full potential.

2.10 Quality Assurance & Metrics Department The quality assurance and metrics department is focused on maintaining the high standard of training and services provided by Azure Skynet Solutions. It monitors training quality, gathers feedback from participants, and uses metrics to assess the effectiveness of training programs. The department ensures that the organization consistently delivers superior learning experiences.

In summary, Azure Skynet Solutions comprises several interconnected departments that work collaboratively to provide top-notch IT training, cybersecurity solutions, research and innovation, and professional certifications. Each department contributes to the overall mission of promoting innovation through training, implementation, and research while maintaining a strong commitment to quality and development.

Chapter 3 Tools & Technology used in Industry

3.1 Abstract The rapidly evolving landscape of technology necessitates continuous learning and adaptation. Organizations like Azure Skynet Solutions play a crucial role in equipping individuals with the skills needed to thrive in the Information Technology (IT) industry. This article explores the tools and technologies used in the IT industry for training, development, and cybersecurity. It covers a wide range of aspects, from training methodologies and virtual environments to cybersecurity tools and certification platforms.

3.2 Introduction In the dynamic realm of IT, staying updated with the latest tools and technologies is paramount. Azure Skynet Solutions recognizes this and employs a diverse set of tools to provide comprehensive training, development, and cybersecurity solutions. This article delves into the tenacious world of IT tools, ranging from innovative training platforms to robust cybersecurity measures.

3.3 Virtual Learning Environments Modern training methods transcend traditional classroom setups. Virtual Learning Environments (VLEs) have emerged as a cornerstone of remote learning. Azure Skynet Solutions harnesses VLEs to create engaging and interactive training experiences. Platforms like Moodle, Canvas, and Blackboard are utilized to facilitate seamless communication, content delivery, and assessment.

3.4 Learning Management Systems (LMS) A Learning Management System (LMS) is an essential tool for organizing, managing, and delivering educational content. Azure Skynet Solutions employs LMS platforms like Edmodo and Google Classroom to streamline content distribution, assignments, and quizzes. LMS enhances learner engagement and allows for structured learning paths.

3.5 Simulated Environments Hands-on experience is invaluable in IT training. Simulated environments replicate realworld scenarios, enabling learners to practice without real-world consequences. Tools like Cisco Packet Tracer, GNS3, and VMware Workstation are integral to Azure Skynet Solutions' training strategy, enabling learners to configure networks, experiment with systems, and troubleshoot issues.

3.6 Cybersecurity Tools With cybersecurity becoming paramount, Azure Skynet Solutions leverages a myriad of tools to foster cybersecurity awareness and expertise.

- **Wireshark:** A powerful network protocol analyzer, Wireshark aids in monitoring and analyzing network traffic, essential for cybersecurity professionals.
- **Metasploit:** This penetration testing framework allows security experts to simulate attacks and identify vulnerabilities, enhancing proactive defense mechanisms.
- **Nmap:** Network Mapper is utilized for network discovery and security auditing, aiding in identifying open ports and potential threats.
- **Splunk:** For real-time monitoring and analysis of machine-generated data, Splunk helps in identifying security incidents and anomalies.

3.7 Certification Platforms Certifications validate skills and knowledge, establishing credibility in the IT industry. Azure Skynet Solutions integrates certification programs into its training curriculum.

- **CompTIA:** Known for foundational certifications like A+, Network+, and Security+, CompTIA certifications cover a broad spectrum of IT skills.
- **EC-Council:** With certifications like Certified Ethical Hacker (CEH) and Certified Penetration Tester (CPT), EC-Council focuses on cybersecurity

skills.

- Cisco: Cisco offers certifications ranging from entry-level CCNA to expert-level CCIE, encompassing networking expertise. 3.8 Collaboration Tools Collaboration fosters learning and innovation. Azure Skynet Solutions utilizes collaboration tools to promote group discussions, teamwork, and peer learning.

- Slack: A messaging platform for teams, Slack facilitates real-time communication, enhancing interaction among learners and trainers.

- Microsoft Teams: Integrated with Office 365, Teams offers a comprehensive platform for communication, collaboration, and document sharing.

3.9 Cloud Platforms Cloud technology has revolutionized IT infrastructure. Azure Skynet Solutions integrates cloud platforms into its training programs.

- Amazon Web Services (AWS): As a leading cloud provider, AWS skills are crucial. Azure Skynet Solutions uses AWS Educate to provide hands-on experience with cloud services.

- Microsoft Azure: With Microsoft's Azure for Education program, learners gain expertise in deploying and managing applications on Azure.

3.10 Conclusion In the intricate tapestry of the IT industry, Azure Skynet Solutions stands as a testament to the importance of cutting-edge tools and technologies in training, development, and cybersecurity. Virtual learning environments, cybersecurity tools, certification platforms, and collaboration tools collectively contribute to fostering a skilled workforce capable of navigating the challenges of the ever-evolving IT landscape. As technology advances, the journey of learning and adaptation remains constant, guided by the tools that shape the future of IT.

Chapter 4 Modules Description/Activities of Industry

4.1 Braintech Network & Cyber Security Championship

Introduction to Cyber Security In the fast-evolving digital landscape, understanding cyber security's fundamental concepts becomes paramount. Participants delve into the basics, comprehending the significance of safeguarding sensitive information. The module unravels the intricate web of cyber threats and attacks that assail modern technological ecosystems, prompting a sense of urgency in adopting preventive measures.

4.1.2 Network Security Embarking on the network security journey, participants immerse themselves in the world of network protocols, encryption techniques, and firewall deployment. They gain insight into establishing secure network configurations and embracing best practices, building a strong defense against potential breaches. Through hands-on exercises, participants refine their skills, crafting resilient networks capable of thwarting malicious infiltrations.

4.1.3 Web Security In the realm of web security, participants confront the vulnerabilities inherent in web applications. By dissecting common weaknesses such as SQL injection, XSS, and CSRF, they learn to armor digital platforms through judicious coding practices and dedicated tools. Real-world exercises empower them to identify, dissect, and neutralize web vulnerabilities, fostering a safer online environment.

4.1.4 Ethical Hacking Ethical hacking and penetration testing take center stage, offering participants a unique perspective into safeguarding digital realms by understanding the strategies of malicious actors. As they explore the intricacies of penetration testing tools and techniques, participants gain proficiency in simulating attacks. These simulated assaults reveal system vulnerabilities and weaknesses, equipping them to fortify cyber defenses.

4.1.5 Cyber Incident Response Preparation for the inevitable is vital. This module equips participants with strategies for identifying and responding to cyber incidents. They develop comprehensive incident response plans, ensuring a swift and effective reaction when confronted with threats. Engaging in simulated incident response scenarios enhances their ability to tackle real-world challenges, minimizing damage and downtime.

4.1.6 Activities:

- **Workshops:** Engaging 2-day workshops covering each module with interactive lectures, discussions, and hands-on exercises.
- **Scholarship Competition:** Participants compete in levels to showcase their understanding of cyber security concepts and practical skills.
- **Evaluation Levels:** Participants are assessed at different levels to maximize their potential and learning progress.
- **Certification:** Participants achieving different levels of performance receive certifications endorsed by associated organizations.
- **Reward:** Champions receive a scholarship reward of INR 1 Lac along with certifications.

4.2 Project Based Training/Project cum Internship Program

4.2.1 Core Concepts & Implementation Foundational IT concepts lay the groundwork for participants, bridging theory and practice. Hands-on exercises allow them to tangibly apply theoretical knowledge and grasp technologies pertinent to industry requirements.

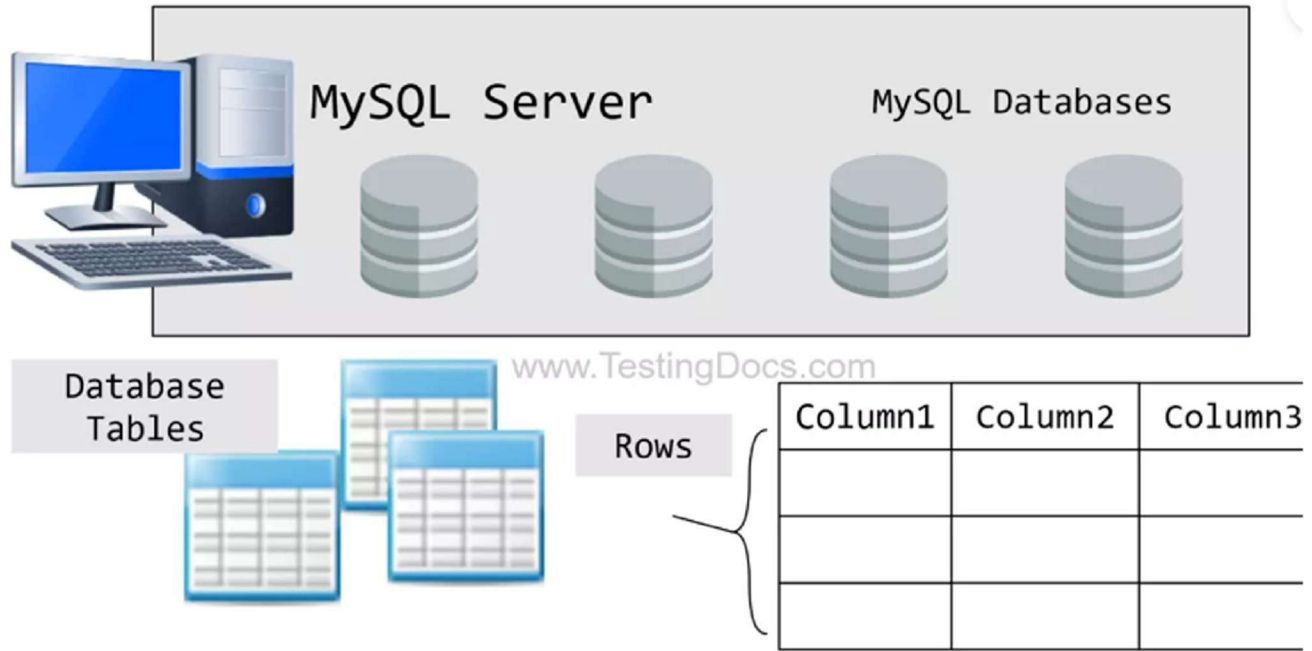
4.2.2 Project Work & Industrial Exposure Participants dive into live projects mirroring real-world scenarios, promoting collaborative problem-solving and a deep understanding of industry norms. By immersing themselves in industry practices, they nurture skills that transcend the classroom.

4.2.3 Activities:

- Duration Options: Training programs range from 7 to 30 days, with 24-30 hours of training sessions.
- Project Work: Candidates work on real-world projects to apply their learning.
- Industrial Exposure: Participants gain an understanding of how their skills are utilized in the industry.
- Certification: Candidates receive certifications acknowledging their completion of the program.

Chapter 5 Details about the Final Project

Layout 5.1



MySQL is a relational database. Database information and data is stored in the form of tables. A MySQL server can manage many databases at once. We can also call a database a schema.

Five Key Features and Benefits of MySQL

We've outlined many of the benefits for MySQL already. It's versatile, mature, open source, and extensible. But if we had to list five key MySQL features and benefits, they would be the following.

1. Easy to Use

MySQL is considered easy to use among RDBMS. It works with basic SQL and, given its maturity and adoption, there is abundant documentation available.

2. Secure

MySQL's maturity also lends itself to security. It's regularly updated, has a vibrant developer community, and, because of its wide adoption within the enterprise, many CVE patches are released before the CVE is announced. These factors combine to make MySQL a stable and secure choice among RDBMS.

3. Open Source

The community edition of MySQL is enterprise ready, and supported by a GNU General Public License. For users who want access to equitable proprietary functionality of MySQL without the added price tag, there are other options within the ecosystem — like MariaDB — that can add similar levels of functionality and beyond.

4. Scalable

MySQL is highly scalable for an RDBMS, with a wide range of options not covered in this blog that allow for tuning, customizing and enhancing your MySQL experience.

5. Reliable

MySQL is reliable — not just from a data perspective, but from a development perspective. It's mature, it has regular releases, patches, and an entrenched developer community that works with it. This makes it a safe choice compared to newer, less mature RDBMS options.

What is MYSQL?

It is a freely available open-source Relational Database Management System(RDBMS) that uses SQL (Structured Query Language). In a MYSQL database information is stored in tables. A single MYSQL database can contain many tables at once and store thousands of individual records.

What is a database?

A database is a collection of information related to a particular subject or purpose, such as tracking customer orders or maintaining a product collection. Using any RDBMS application software like MS SQL Server, MySQL, Oracle, Sybase etc, you can manage all your information from a single database file. Within the file, divide your data into separate storage containers called tables. You can retrieve the data using queries.

- ❖ A table is a collection of data about a specific topic, such as products or suppliers. Using a separate table for each topic means you can store that data only once, which makes your database more efficient and reduces data-entry errors. Table organises data into columns (called fields) and rows (called records).
- ❖ A Primary key is one or more fields whose value or values uniquely identify each record in a table. In a relationship, a primary key is used to refer to specific record in one table from another table..
- ❖ A query can also update or delete multiple records at the same time, and perform built-in or custom calculations on your data.

- **MySQL is a database management system.**

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications.

- **MySQL is based on SQL.**

A relational database stores data in separate tables rather than putting all the data in one big storeroom. This adds speed and flexibility. The SQL part of “MySQL” stands for “Structured Query Language.” SQL is the most common standardized language used to access databases and is defined by the ANSI/ISO SQL Standard. The SQL standard has been evolving since 1986 and several versions exist. In this manual, “SQL-92” refers to the standard released in 1992, “SQL:1999” refers to the standard released in 1999, and “SQL:2003” refers to the current version of the standard.

- **MySQL software is Open Source.**

Open Source means that it is possible for anyone to use and modify the software. Anybody can download the MySQL software from the Internet and use it without paying anything. If you wish, you may study the source code and change it to suit your needs. The MySQL software uses the GPL (GNU General Public License),

- **The MySQL Database Server is very fast, reliable, and easy to use.**

If that is what you are looking for, you should give it a try. MySQL Server also has a practical set of features developed in close cooperation with our users. You can find a performance comparison of MySQL Server with other database managers on our benchmark page. MySQL Server was originally developed to handle large databases much faster than existing solutions and has been successfully used in highly demanding production environments for several years.

Although under constant development, MySQL Server today offers a rich and useful set of functions. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

- **MySQL Server works in client/server or embedded systems.**

The MySQL Database Software is a client/server system that consists of a multi-threaded SQL server that supports different backends, several different client programs and libraries, administrative tools, and a wide range of application programming interfaces (APIs).

The Main Features of MySQL

- Written in C and C++.
- Works on many different platforms.
- Uses multi-layered server design with independent modules.
- Provides transactional and nontransactional storage engines.
- Designed to make it relatively easy to add other storage engines. This is useful if you want to provide an SQL interface for an in-house database.
- Uses a very fast thread-based memory allocation system.
- Executes very fast joins using an optimized nested-loop join.
- Implements SQL functions using a highly optimized class School Transport that should be as fast as possible. Usually there is no memory allocation at all after query initialization.
- Provides the server as a separate program for use in a client/server networked environment, and as a School Transport that can be embedded (linked) into standalone applications. Such applications can be used in isolation or in environments where no network is available.
- Password security by encryption of all password traffic when you connect to a server.
- Support for large databases. We use MySQL Server with databases that contain 50 million records. We also know of users who use MySQL Server with 200,000 tables and about 5,000,000,000 rows.
- MySQL client programs can be written in many languages. A client School Transport written in C is available for clients written in C or C++, or for any language that provides C bindings.
- APIs for C, C++, Eiffel, Java, Perl, PHP, Python, Ruby, and Tcl are available, enabling MySQL clients to be written in many languages.
- The Connector/ODBC (MyODBC) interface provides MySQL support for client programs that use ODBC (Open Database Connectivity) connections.
- The Connector/J interface provides MySQL support for Java client programs that use JDBC connections. Clients can be run on Windows or Unix. Connector/J source is available.

Role of RDBMS Application Program:

A computer database works as an electronic filing system, which has a large number of ways of cross-referencing, and this allows the user many different ways in which to re-organize and retrieve data. The management of data in a database system is done by means of a general-purpose software package called a Database Management System (DBMS). A database management system, therefore, is a combination of hardware and software that can be used to set up and monitor a database, and can manage the updating and retrieval of database that has been stored in it.

Most of the database management systems have the following capabilities:

- ◆ Creating of a table, addition, deletion, modification of details.
- ◆ Retrieving data collectively or selectively.

- ◆ The data stored can be sorted or indexed at the user's discretion and direction.
- ◆ Various reports can be produced from the system. These may be either standardized report or that may be specifically generated according to specific user definition.
- ◆ Mathematical functions can be performed and the data stored in the database can be manipulated with these functions to perform the desired calculations.
- ◆ To maintain data integrity and database use.

The DBMS interprets and processes users' requests to retrieve information from a database. In most cases, a query request will have to penetrate several layers of software in the DBMS and operating system before the physical database can be accessed. The DBMS responds to a query by invoking the appropriate subprograms, each of which performs its special function to interpret the query, or to locate the desired data in the database and present it in the desired order.

HospitalManagementSystem/Doctor.java

```
package HospitalManagementSystem;
import java.sql.Connection;
import java.sql.PreparedStatement;
import java.sql.ResultSet;
import java.sql.SQLException;
import java.util.Scanner;

public class Doctor {
    private Connection connection;
    public Doctor(Connection connection){
        this.connection = connection;
    }
    public void viewDoctors(){
        String query = "select * from doctors";
        try{
            PreparedStatement preparedStatement = connection.prepareStatement(query);
            ResultSet resultSet = preparedStatement.executeQuery();
            System.out.println("Doctors: ");
            System.out.println("+-----+-----+-----+");
            System.out.println("| Doctor Id | Name           | Specialization |");
            System.out.println("+-----+-----+-----+");
            while(resultSet.next()){
                int id = resultSet.getInt("id");
                String name = resultSet.getString("name");
                String specialization = resultSet.getString("specialization");
                System.out.printf("| %-10s | %-18s | %-16s |\n", id, name, specialization);
                System.out.println("+-----+-----+-----+");
            }

        } catch (SQLException e){
            e.printStackTrace();
        }
    }
    public boolean getDoctorById(int id){
        String query = "SELECT * FROM doctors WHERE id = ?";
        try{
            PreparedStatement preparedStatement = connection.prepareStatement(query);
            preparedStatement.setInt(1, id);
            ResultSet resultSet = preparedStatement.executeQuery();
            if(resultSet.next()){
                return true;
            } else {
                return false;
            }
        } catch (SQLException e){
            e.printStackTrace();
        }
        return false;
    }
}
```


HospitalManagementSystem /HospitalManagementSystem.java

```
package HospitalManagementSystem;

import java.sql.*;
import java.util.Scanner;

public class HospitalManagementSystem {
    private static final String url = "jdbc:mysql://localhost:3306/hospital";
    private static final String username = "root";
    private static final String password = "Admin@123";

    public static void main(String[] args) {
        try{
            Class.forName("com.mysql.cj.jdbc.Driver");
        }catch (ClassNotFoundException e){
            e.printStackTrace();
        }
        Scanner scanner = new Scanner(System.in);
        try{
            Connection connection = DriverManager.getConnection(url, username, password);
            Patient patient = new Patient(connection, scanner);
            Doctor doctor = new Doctor(connection);
            while(true){
                System.out.println("HOSPITAL MANAGEMENT SYSTEM ");
                System.out.println("1. Add Patient");
                System.out.println("2. View Patients");
                System.out.println("3. View Doctors");
                System.out.println("4. Book Appointment");
                System.out.println("5. Exit");
                System.out.println("Enter your choice: ");
                int choice = scanner.nextInt();

                switch(choice){
                    case 1:
                        // Add Patient
                        patient.addPatient();
                        System.out.println();
                        break;
                    case 2:
                        // View Patient
                        patient.viewPatients();
                        System.out.println();
                        break;
                    case 3:
                        // View Doctors
                        doctor.viewDoctors();
                        System.out.println();
                        break;
                    case 4:
                        // Book Appointment
                        bookAppointment(patient, doctor, connection, scanner);
```

```

        System.out.println();
        break;
    case 5:
        System.out.println("THANK YOU! FOR USING HOSPITAL MANAGEMENT
SYSTEM!!!");
        return;
    default:
        System.out.println("Enter valid choice!!!");
        break;
    }

}

} catch (SQLException e){
    e.printStackTrace();
}
}

```

```

public static void bookAppointment(Patient patient, Doctor doctor, Connection connection, Scanner
scanner){
    System.out.print("Enter Patient Id: ");
    int patientId = scanner.nextInt();
    System.out.print("Enter Doctor Id: ");
    int doctorId = scanner.nextInt();
    System.out.print("Enter appointment date (YYYY-MM-DD): ");
    String appointmentDate = scanner.next();
    if(patient.getPatientById(patientId) && doctor.getDoctorById(doctorId)){
        if(checkDoctorAvailability(doctorId, appointmentDate, connection)){
            String appointmentQuery = "INSERT INTO appointments(patient_id, doctor_id,
appointment_date) VALUES(?, ?, ?)";
            try {
                PreparedStatement preparedStatement =
connection.prepareStatement(appointmentQuery);
                preparedStatement.setInt(1, patientId);
                preparedStatement.setInt(2, doctorId);
                preparedStatement.setString(3, appointmentDate);
                int rowsAffected = preparedStatement.executeUpdate();
                if(rowsAffected>0){
                    System.out.println("Appointment Booked!");
                }else{
                    System.out.println("Failed to Book Appointment!");
                }
            } catch (SQLException e){
                e.printStackTrace();
            }
        }else{
            System.out.println("Doctor not available on this date!!!");
        }
    }else{
        System.out.println("Either doctor or patient doesn't exist!!!");
    }
}

```

```

    }

    public static boolean checkDoctorAvailability(int doctorId, String appointmentDate, Connection
connection){
    String query = "SELECT COUNT(*) FROM appointments WHERE doctor_id = ? AND
appointment_date = ?";
    try{
        PreparedStatement preparedStatement = connection.prepareStatement(query);
        preparedStatement.setInt(1, doctorId);
        preparedStatement.setString(2, appointmentDate);
        ResultSet resultSet = preparedStatement.executeQuery();
        if(resultSet.next()){
            int count = resultSet.getInt(1);
            if(count==0){
                return true;
            }else{
                return false;
            }
        }
    } catch (SQLException e){
        e.printStackTrace();
    }
    return false;
}
}

```

HospitalManagementSystem/Patient.java

```
package HospitalManagementSystem;

import java.sql.*;
import java.util.Scanner;

public class Patient {
    private Connection connection;
    private Scanner scanner;

    public Patient(Connection connection, Scanner scanner){
        this.connection = connection;
        this.scanner = scanner;
    }

    public void addPatient(){
        System.out.print("Enter Patient Name: ");
        String name = scanner.next();
        System.out.print("Enter Patient Age: ");
        int age = scanner.nextInt();
        System.out.print("Enter Patient Gender: ");
        String gender = scanner.next();

        try{
            String query = "INSERT INTO patients(name, age, gender) VALUES(?, ?, ?)";
            PreparedStatement preparedStatement = connection.prepareStatement(query);
            preparedStatement.setString(1, name);
            preparedStatement.setInt(2, age);
            preparedStatement.setString(3, gender);
            int affectedRows = preparedStatement.executeUpdate();
            if(affectedRows>0){
                System.out.println("Patient Added Successfully!!");
            }else{
                System.out.println("Failed to add Patient!!");
            }
        } catch (SQLException e){
            e.printStackTrace();
        }
    }

    public void viewPatients(){
        String query = "select * from patients";
        try{
            PreparedStatement preparedStatement = connection.prepareStatement(query);
            ResultSet resultSet = preparedStatement.executeQuery();
            System.out.println("Patients: ");
            System.out.println("+-----+-----+-----+-----+");
            System.out.println("| Patient Id | Name          | Age   | Gender  |");
            System.out.println("+-----+-----+-----+-----+");
            while(resultSet.next()){
```

```

        int id = resultSet.getInt("id");
        String name = resultSet.getString("name");
        int age = resultSet.getInt("age");
        String gender = resultSet.getString("gender");
        System.out.printf("| %-10s | %-18s | %-8s | %-10s |\n", id, name, age, gender);
        System.out.println("+ -----+-----+-----+-----+");
    }

    } catch (SQLException e) {
        e.printStackTrace();
    }
}

public boolean getPatientById(int id) {
    String query = "SELECT * FROM patients WHERE id = ?";
    try {
        PreparedStatement preparedStatement = connection.prepareStatement(query);
        preparedStatement.setInt(1, id);
        ResultSet resultSet = preparedStatement.executeQuery();
        if (resultSet.next()) {
            return true;
        } else {
            return false;
        }
    } catch (SQLException e) {
        e.printStackTrace();
    }
    return false;
}
}

```

Screenshots(Table Overview)

```
MySQL 8.0 Command Line Cli x + v
-> FOREIGN KEY (doctor_id) REFERENCES doctors(id)
-> );
Query OK, 0 rows affected (0.03 sec)

mysql> SHOW TABLES;
+-----+
| Tables_in_hospital |
+-----+
| appointments       |
| doctors             |
| patients            |
+-----+
3 rows in set (0.00 sec)

mysql> INSERT INTO DOCTORS(name, specialization) VALUES("Pankaj Jain", "Physician");
Query OK, 1 row affected (0.01 sec)

mysql> INSERT INTO DOCTORS(name, specialization) VALUES("Harshit Amod", "NeuroSurgeon");
Query OK, 1 row affected (0.00 sec)

mysql> select * from doctors;
+-----+
| id | name          | specialization |
+-----+
| 1  | Pankaj Jain   | Physician      |
| 2  | Harshit Amod  | NeuroSurgeon   |
+-----+
2 rows in set (0.00 sec)

mysql>
```

Main menu

```
HOSPITAL MANAGEMENT SYSTEM
1. Add Patient
2. View Patients
3. View Doctors
4. Book Appointment
5. Exit
Enter your choice:
3
```

Output(3)

```
Run HospitalManagementSystem x
5. Exit
Enter your choice:
3
Doctors:
+-----+-----+-----+
| Doctor Id | Name           | Specialization |
+-----+-----+-----+
| 1         | Pankaj Jain    | Physician      |
+-----+-----+-----+
| 2         | Harshit Amod   | NeuroSurgeon   |
+-----+-----+-----+

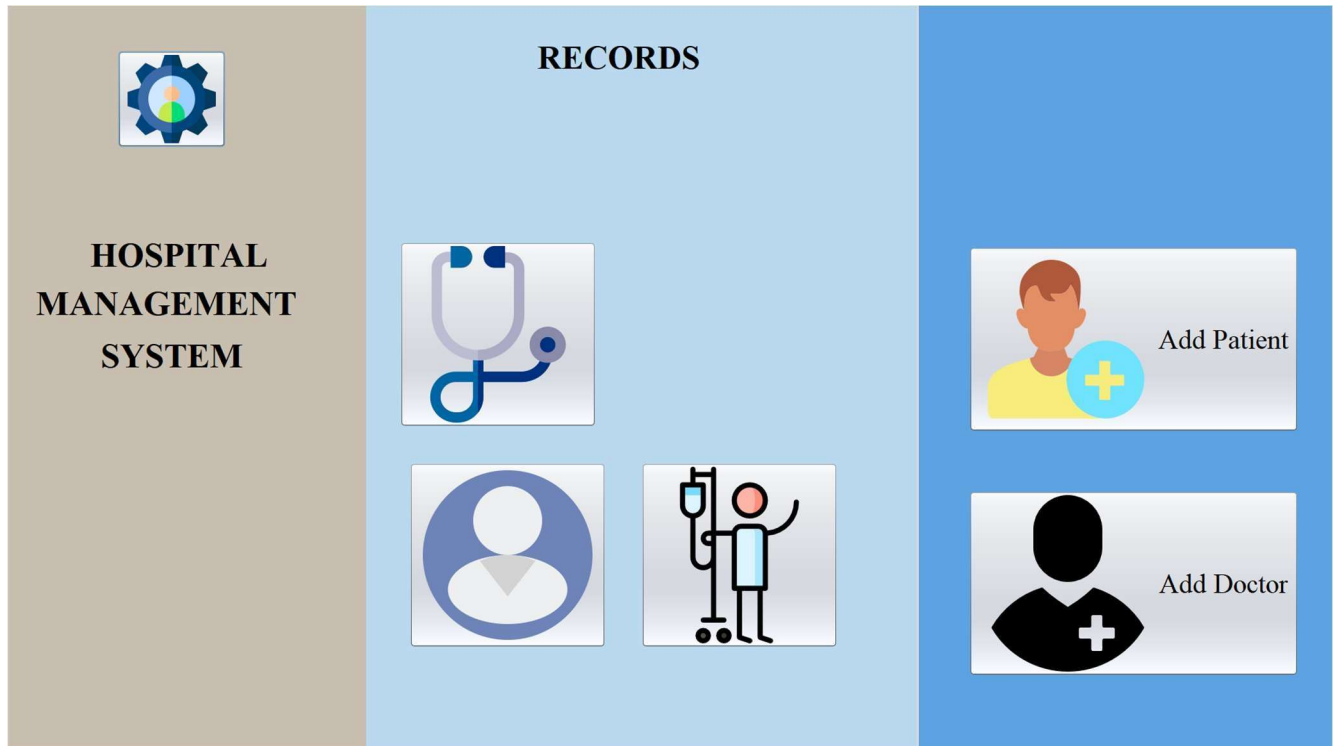
HOSPITAL MANAGEMENT SYSTEM
1. Add Patient
2. View Patients
3. View Doctors
4. Book Appointment
5. Exit
Enter your choice:
```

Logic behind : This Java-based application allows you to manage hospital data of all the patients, and ensure the Efficient handling of data for easier management of data of patient in a hospital.

Features of project

- Patient and doctor Registration & Login
- Add and Remove Patients
- Patient Inquiry health monitoring
- Robust Security Measures

Build & Execution of project Explained:



SCOPE & FUTURE ENHANCEMENT

The scope of the system is the area which it covers with respect to its functionality. The scope of the system includes its function and range.

The scopes of the system will be :-

It fulfills all as an office application automatically with minimal overhead.

Functionality of sharing of additional information for Secure login in the existing project will be added in next version.

It will provide the information of running project , late project and completed project .It will add the functionality of seeing his/her(Patient) medical overview to provide Specialised care(Doctor with Speciality) for the patient who is in need and it will also help to provide clear picture of patient health.

Chapter 7 Training Outcome

7.1 Introduction This chapter delves into a detailed exploration of the training outcome attained during the enriching industrial training period at Azure Skynet Solutions Private Limited. The training's primary objective was to cultivate an enhanced mastery of MySQL a, fostering the practical application of this versatile programming language within real-world contexts. Beyond the technical competencies acquired, the training experience also acted as a catalyst for substantial personal and professional development.

7.2 Overview of the Industrial Training The industrial training at Azure Skynet Solutions Private Limited was meticulously tailored to center around MySQL a bedrock programming language pivotal to the software development landscape. This comprehensive training curriculum encompassing an in-depth exploration of (DBMS)Database Management System fundamentals, immersive GUI (Graphical User Interface) Interaction , adept utilization of development tools such as IDE's, and a foundational introduction to the world of version control is facilitated. This holistic approach to training ensured a well-rounded exposure to MySQL and its multiple applications.

7.3 Skills Acquired during Training Throughout the training period, several valuable skills were acquired:

- **MySQL Based Development:** A thorough understanding of MySQL syntax, and a clear understanding of the database technology concepts was developed.
- **Graphical User Interface (GUI) based Interaction:** Proficiency in creating interactive GUI tables using MySQL was achieved.
- **IDE Usage:** Familiarity with Visual Studio Code for efficient coding, debugging, and project management.
- **Problem-Solving:** Enhanced problem-solving skills through hands-on programming exercises and projects.
- **Team Collaboration:** Exposure to collaborative coding through regular practice excercises, emphasizing teamwork and version control.

7.4 Practical Application of Skills

The proficiencies gained during the training phase metamorphosed into practical prowess, ingeniously harnessed across a spectrum of projects and real-world scenarios. Armed with hands-on experience, the capacity to forge functional, user-centric applications using JDBC with MySQL was harnessed to great effect. From user interaction paradigms to intricate data manipulation operations, practical assignments and projects evolved as the conduits for the application of acquired skills, ultimately solidifying the theoretical bedrock of the training.

7.5 Enhanced Understanding of Core concepts of Database Management System The training voyage significantly elevated the level of comprehension pertaining to database intricate landscape. From fundamental programming constructs to the holistic embrace of Database Management paradigms, the training provided a panoramic understanding of the language's foundations. Furthermore, the curated exposure to a diverse spectrum of JDBC libraries and broadened the horizon of further development with versatile capabilities.

7.6 Exposure to Industry Standards & Best Practices A pivotal facet of the training at Azure Skynet Solutions was the resolute adherence to industry standards and best practices within the realm of

coding and application development. This institutionalization of best practices catalyzed the development of a coding ethos characterized by cleanliness, modularity, and maintainability. The mastery of structuring code congruent with industry standards emerged as a pivotal cornerstone, immeasurably augmenting the caliber of programming skills on offer.

7.7 Improvement in Problem-Solving Abilities Central to the training trajectory were myriad programming conundrums and exercises necessitating an amalgamation of analytical finesse and imaginative problem-solving dexterity. These intellectual crucibles functioned as crucibles for honing the art of dissecting intricate challenges, demystifying them into more manageable components, and architecting efficacious solutions that bore testament to the burgeoning problem-solving acumen.

7.8 Effective Team Collaboration & Communication The orchestration of collaborative brilliance found its expression through the realm of version control systems, prominently exemplified by Git and GitHub. This symphony of collaborative coding fostered an intuitive understanding of code repository management, the dynamics of harmonious teamwork, and the art of harmonizing potentially discordant merge conflicts. An unequivocal takeaway was the profound realization of the centrality of effective communication and teamwork within the tapestry of software development projects.

7.9 Introduction to Real-World Software Development The synthesis of hands-on projects and assignments unfurled an introductory vista into the intricate tapestry of the software development life cycle. From the meticulous analysis of requirements to the meticulous design of user interfaces, the embodiment of functionality, the rigors of testing, and the finesse of debugging, the training journey provided an invaluable backstage pass to the art of translating abstract concepts into tangible, functional applications.

7.10 Project Management & Time Management Skills Juggling the concurrent stewardship of multiple assignments and projects within the confines of finite temporal parameters emerged as a crucible for the development of robust project management and time allocation skills. The training's crucible underscored the pivotal import of strategic planning, the delineation of milestones, and the punctual negotiation of deadlines as indispensable pillars underpinning the triumphant fruition of any project endeavor.

7.11 Conclusion

The industrial training at Azure Skynet Solutions Private Limited was a transformative experience that significantly contributed to my growth as a programmer and aspiring software developer. The hands-on approach, exposure to industry practices, and practical application of MySQL skills enriched my technical and professional abilities. The training not only imparted technical knowledge but also instilled essential soft skills like teamwork, communication, and problem-solving. The gained experience will undoubtedly prove valuable in my future academic and professional pursuits.

Chapter 8 Conclusion

In conclusion, the industrial training at Azure Skynet Solutions Private Limited has been an enriching and transformative experience. Through dedicated modules on MySQL, JDBC development, version control, and integrated development environments, I have acquired a comprehensive skill set that goes beyond theoretical knowledge. The training not only enhanced my technical capabilities in MySQL query language but also instilled in me a deeper appreciation for the practical application of these skills. The training modules provided a structured and systematic approach to learning, allowing me to grasp the fundamentals of MySQL and its versatile applications. The hands-on exercises, practical assignments, and real-world projects enabled me to bridge the gap between theory and practice. Developing GUI applications using JDBC allowed me to create interactive and visually appealing interfaces, enhancing user experiences. As I look ahead, the knowledge and skills acquired during this training will undoubtedly play a pivotal role in my academic pursuits and future endeavors in the field of Information Technology. I am confident that the foundation laid during this industrial training will enable me to make meaningful contributions in the dynamic world of Database Management Systems and software development. I am grateful for this opportunity and look forward to applying what I have learned in my journey ahead.