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Online Lab Management System

(First Review Report)

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Submitted to:-

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Abstract:-

As the name suggests, the lab management system is an application that helps in maintaining the smooth running of the operations in a lab. In computer labs, you can find different computers that are kept to perform various tasks as per the user's desire. All the information related to this stuff can be stored in the laboratory management system with great ease. This will be one of the projects that will be very useful and will help to maintain the activities of the laboratory really well.

The features that can be included in the online lab management system are as follows:

- Administrator database management: Details related to the administrators. These people have access to all information stored in the lab. They control the users and have the power to give them permissions and revoke them when needed.

- User database management: The details related to users like name, age, the project conducted and so on can be maintained in the database.

The online lab management system will be one of the projects that will help in improving the activities that take place in the laboratory. There will be many computers that will be present in the laboratory. Through this application, the users or the admins can control the lab. Even the records of the particular user must be kept in the right place.

Introduction:-

The main objective of the Project is to manage the details of Student, Lab, Report, Update and View. It manages All the information about the student, Lab. Report, Teacher. The project is built both at administrative as well as user end. But the admin (Teacher) will have more privileged access as compared to Student's End. The purpose of this project is to built an application program that reduces the manual work for managing the Student Data, Course Materials, Lab Data, etc.

Some Features of The System are:-

- Online lab management is easy as it connects all systems to a common server which can be manipulated only by the administrator.
- Userid and password are provided to students and admins which is unique due to which its data will be secured.
- Student problems can be reported by filing queries.
- Students can upload their assignments and get marks.
- Data of a particular student is secured and nobody can access it except the student.

These functionality are going to be implemented sequentially. MongoDB JSON Collections will be first implemented to store the Values needed for Modules(Like Admin and Student)

Then the databases are going to be implemented using pymongo as connector working between MongoDB and Backend where using Flask Web framework we are going to implement backend.

Front end will be implemented using HTML and CSS.

Project Resource Requirements:-

Software Requirements:-

(i)Web Frameworks:-Flask

(ii)Language Requirements for Implementation:-Python

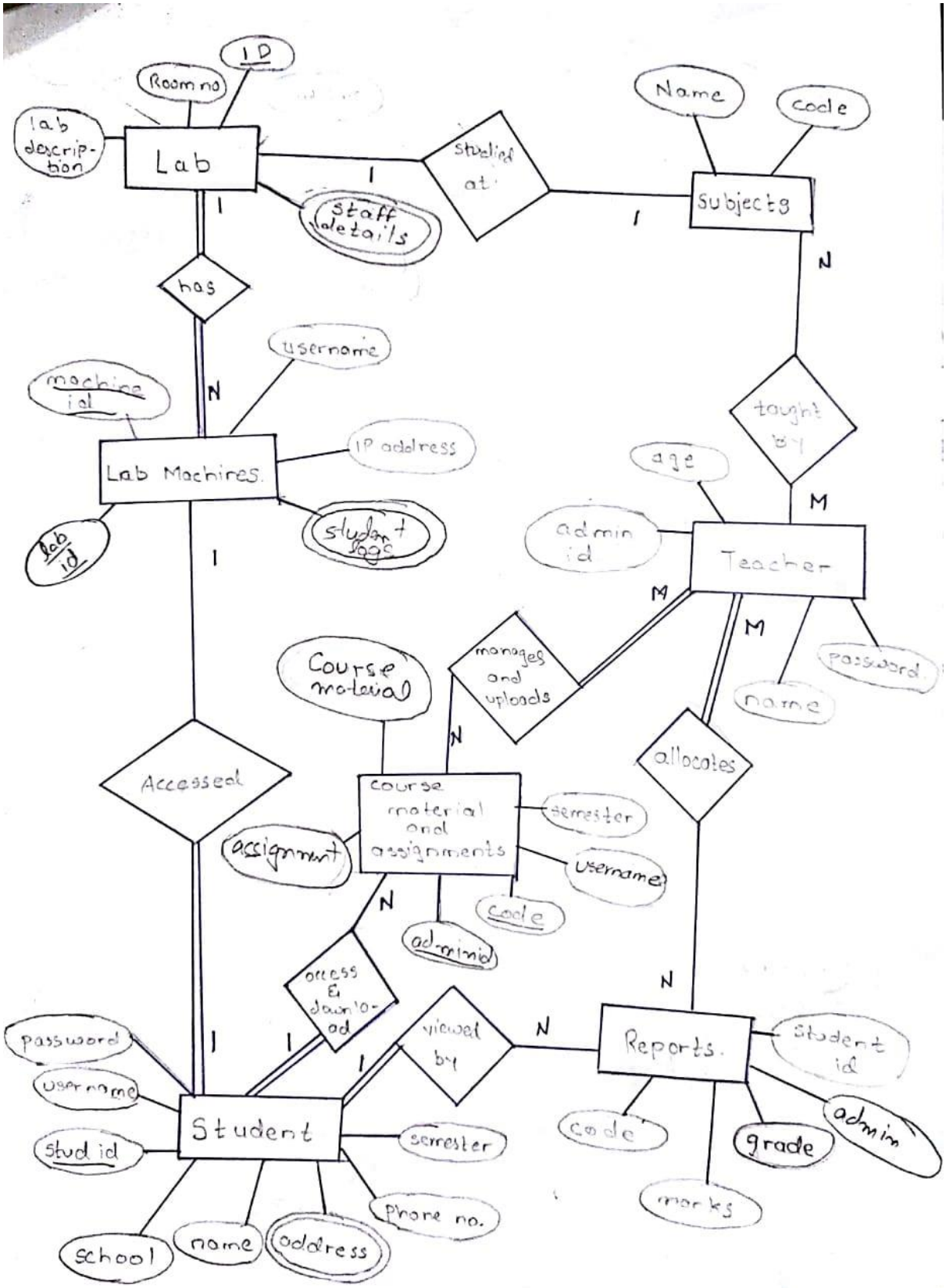
(iii)Database Requirements:- MongoDB

Hardware Requirements:-

A Working Computer with minimum 8GB of RAM, Compatible Operating System (e.g-Windows) with all the required softwares and a sufficient processor(i5-7700HQ) for handling all the Computations.

Hard Disk:-10 GB

ER Diagram:-


ID
Room no
lab description
Lab
1
Staff details
Studied at
Name
code
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N
has
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Lab Machines
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student logs
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Course material
manages and uploads
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course material and assignments
semester
assignment
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username
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Student
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address
name
school

ER to Relational Diagram:-

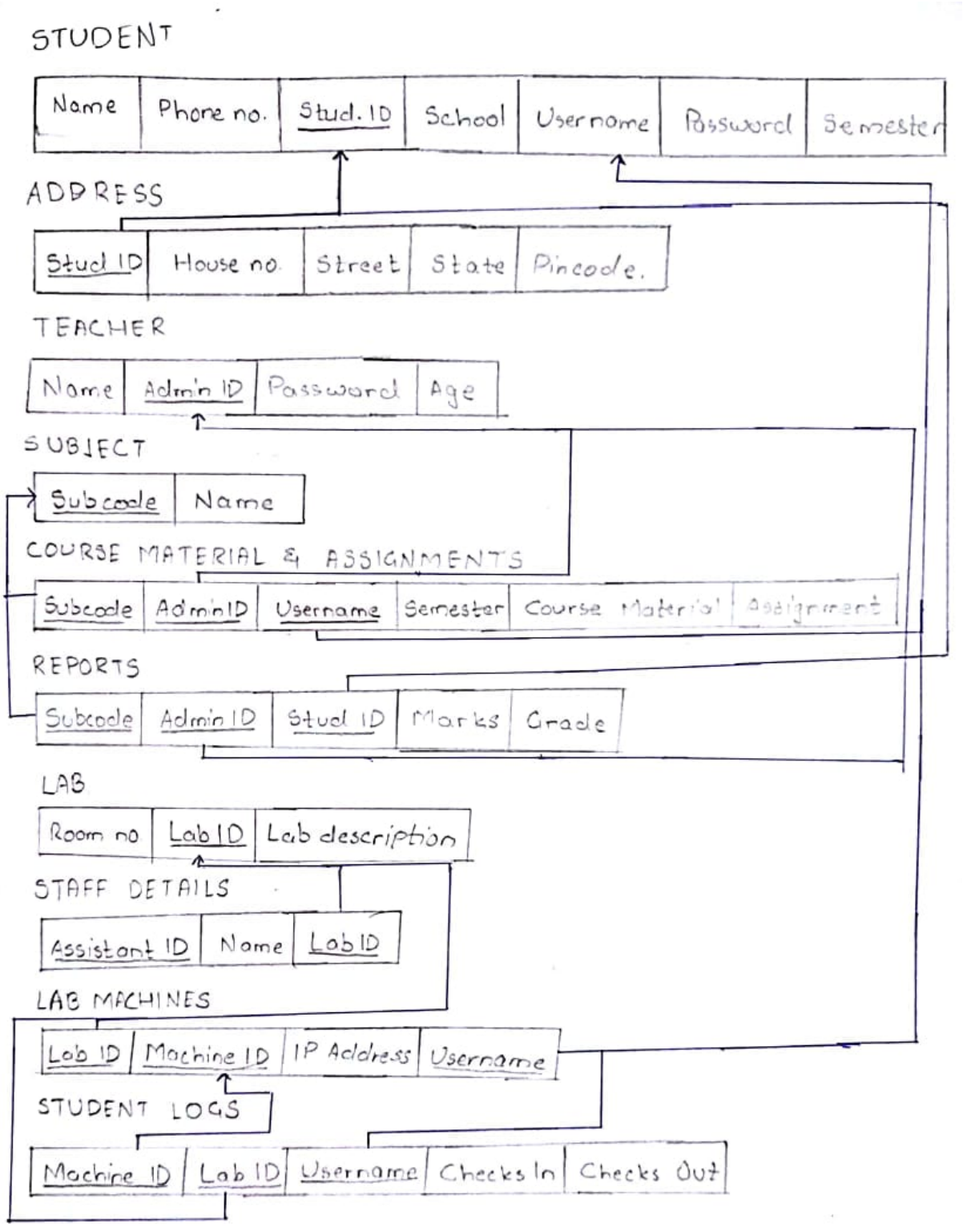

Table and Constraints:-

Student :-

Attributes	Datatype	Constraint
Student ID	Varchar	Primary Key
Username	Varchar	Unique constraint
Name	Varchar	Not null
School	Varchar	Not null
Password	Varchar	Unique Constraint
Phone number	Number	Not null
Semester	Varchar	Not null

Address:-

Attributes	Datatype	Constraint
House No.	Varchar	Not null
Street	Varchar	Not null
State	Varchar	Not null
Pincode	Number	Not null
Student ID	Varchar	Primary key and Foreign Key (referenced from Student table on delete cascade)

Student ID = Primary Key

Lab Machines:-

Attributes	Datatype	Constraint
Lab ID	Varchar	Foreign Key referenced from Lab table on delete set null
Machine ID	Varchar	Not null and unique constraint
IP Address	Varchar	Not null and unique constraint
Username	Varchar	Foreign key referenced from Student Table on delete set null

(Machine ID, Lab Id, Username) = Primary Key

Course material and assignments:-

Attributes	Datatype	Constraint
Subcode	Varchar	Foreign Key referenced from Subject Table
Adminid	Varchar	Foreign Key referenced from Teacher Table
username	Varchar	Foreign Key referenced From
Semester	Varchar	Not null
Course Material	RAW	
Assignment	RAW	

(Subcode, Username,adminid) = Primary Key

Teacher:-

Attributes	Datatype	Constraint
Admin Id	Varchar	Primary Key
Name	Varchar	Not null
Password	Varchar	Not null and unique
Age	Number	Not null

Reports:-

Attributes	Datatype	Constraints
Subcode	Varchar	Foreign Key referenced from Subject Table on delete set default
Adminid	Varchar	Foreign Key referenced from Subject Table on delete set default
Student ID	Varchar	Foreign Key referenced from Subject Table on delete cascade
Marks	Number	
Grade	Char	

Primary Key = (Subcode,Adminid,Student ID)

Lab:-

Attributes	Datatype	Constraints
Lab ID	Varchar	Primary Key
Room No	Varchar	Not null
Lab description	Varchar	Not null

Staff Details:-

Attributes	Datatype	Constraints
Assistant ID	Varchar	Not null and unique constraint
Name	Varchar	Not null
Lab ID	Varchar	Foreign Key referenced from Lab machine table on delete cascade

(Lab ID, Assistant ID):- Primary Key

Student Logs:-

Attributes	Datatype	Constraints
Machine ID	Varchar	Foreign Key referenced from Lab machine table on delete set null
Lab ID	Varchar	Foreign Key referenced from Lab machine table on delete cascade
Username	Varchar	Foreign Key referenced from Student table set on delete cascade
Checks in	Varchar	
Checks out	Varchar	

(Machine ID,Lab ID,Username):- Primary Key

Work Breakdown structure template:-

Team Member Registration Number	Name	Work Assigned
17BCE2010	Shivam Sethi	(i)Developing Web Framework using Flask (ii)Using Python implementing Backend by using Pymongo as API to MongoDB (iii) Storing JSON File structures and collections in MongoDB Database
17BCB0014	Darsh Sheth	(i)Developing Frontend using HTML and CSS

Literature Survey:-

In This Section, the our main focus is to survey the already present research papers and trying to approach the same problem through a refined and improvised method, therefore these previous works are very much needed to thoroughly analyse and improve our work.

Authors	Title	Purpose	Advantages	Disadvantages
[1]Ms. Rashmi Janbandhu, Ms. Bhagyashree Gaurkhede, Ms. Gayatri Puri, Ms. Neelam Bahekar.	Computer Lab Monitoring System *(International Journal on Recent and Innovation Trends in Computing and Communication, Volume : 3 Issue : 3,March 2015)*	Project aim is to monitor the activities of students by the lecturer and to maintain the control and discipline while student's practical performance.	In college computer labs it is used for monitoring the student activity (client) on their system by lecturer through server system. They can see their practical performance, login time, can give marks on the basis of their performance, etc.	Montoring Of Student real time data using Client Server Model Can be hectic and time-consuming
[2]Pratiksha D.Kakde, Minal S.Sutarkar Shubhangi K.Waghmare.	A Review on Computer Lab Monitoring System (International Journal of Research In Science & Engineering)	Providing security to all records and databases in every module	Dataflow regarding this project is quite simplified and achievabe	The more focus on security is resulting in functionality being reduced for User(Student)
[3]P.Rajesh Kanna, S.Keerthi	Automation of Lab with Attendance Monitoring, Screen Capturing and Performance Analysis	Providing real time data to teacher to monitor student performance in lab	Logout Time recording, Attendance, Screen Capturing Are some of the key features of this project	Blacklisted Applications cannot be stopped automatically and not feasible to implement
[4]Mr.Vipul Shaha, Mr.Amit Arabhavi	Remote Lab Monitoring.	Implement Client-Server Protocol Implementation	Monitoring entire lab by sending lab desktop of	File Sharing is not categorised accordingly

Mr.Chetan Barage, Mr.Suraj Chavan, Mr.Yogesh Karande, Mr. Bhagyashri Kelkar		to manage by using softwares capable to monitor whole of the network	student machine to teacher machine without knowing to student	
[5]V.Ramya, B. Palaniappan, V.Sumathi,	GSM BASED EMBEDDED SYSTEM FOR REMOTE LABORATORY SAFETY MONITORING AND ALERTING	The aim of this project is to design an embedded system for remote monitoring of the laboratory environment.	Advantage of this automated detection and alarm system is that, it offers faster response time and accurate detection during an emergency.Also it helps us in understanding client chip transfers between a machine and embedded systems	Complex to implement and loosely related to our project part
[6]Wang ping, wany Zheng	"IEEE, design and Implementation of open computer lab monitoring and management system" IEEE, computer and modernization,2007	The system created by the authors was one of the first system which was implemented to monitor and manage lab data	Paper implements a different approach as compared to earlier models and is helpful in providing different point of view	Being an early model some techniques becomes obsolete.
[7] YOUwen Zhang, Dong Kang	Design and Implementation of Computer Room Management System in University	The goal is to improve the quality of college teaching, improve the level of experiment, while the establishment of a window of information	Paper focuses mainly on 'time and space' optimization which will improve the processing speed and reduce space occupied by the data.	The emergence of different querying methods have different SQL query, which leads to programming simple enough, query process is relatively complex,

		exchange with the outside world.		query time is relatively long. Therefore, SQL won't be able to handle the database properly.