

A

**MINOR PROJECT REPORT ON**

**“Student Tracking and Parent Notification System”**

*Submitted in partial fulfillment of the requirements*

*for the award of the degree of*

**BACHELOR OF ENGINEERING  
IN  
COMPUTER SCIENCE AND ENGINEERING**

**Submitted to**



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Under the Guidance of

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**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING  
INSTITUTE OF TECHNOLOGY AND MANAGEMENT, GWALIOR  
June, 2016**

**INSTITUTE OF TECHNOLOGY AND MANAGEMENT, GWALIOR(M.P.)**

**COMPUTER SCIENCE AND ENGINEERING**

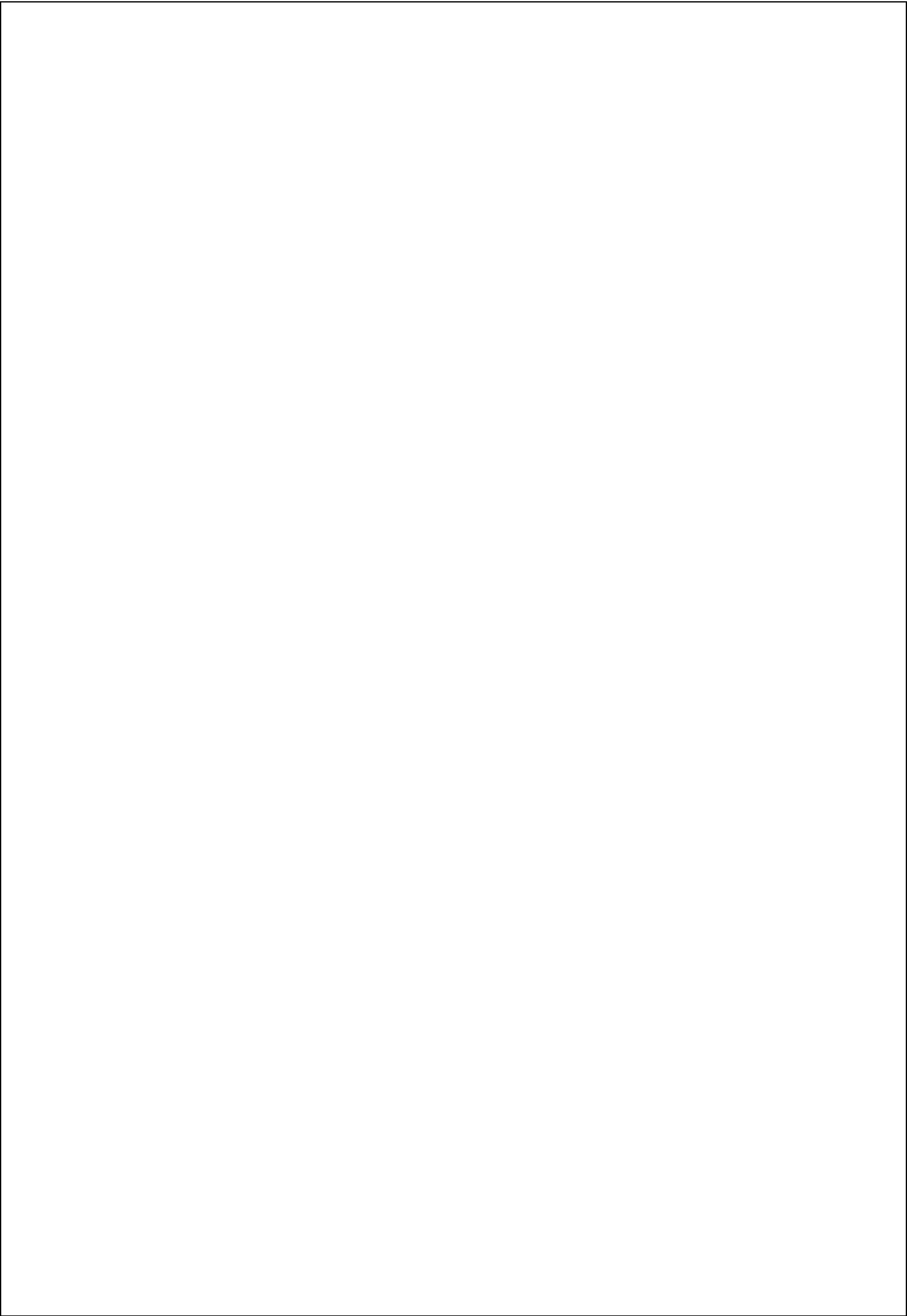
**DECLARATION**

We hereby declare that the Project entitled “**StudentRFID**” is our own work conducted under the supervision of **Mrs. Archana Tomar, Department of Computer Science and Engineering** at **Institute Of Technology And Management, Gwalior.**

We further declare that to the best of our knowledge this report does not contain any part of work that has been submitted for the award of any degree either in this university or in other university without proper citation.

Shubham Sharma  
Shreya Gupta

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**INSTITUTE OF TECHNOLOGY AND MANAGEMENT, GWALIOR(M.P.)**

**DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING**

**CERTIFICATE**

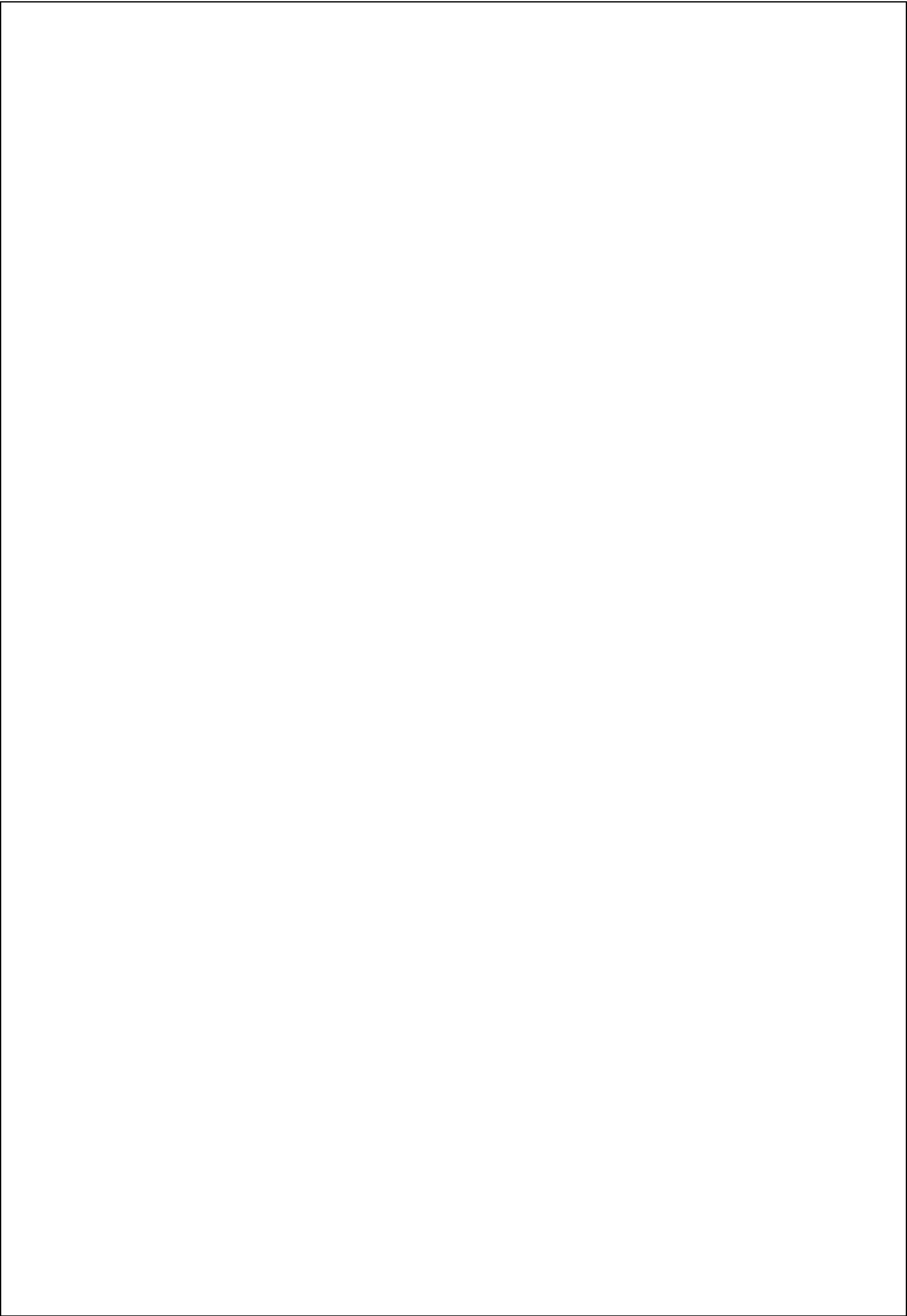
This is to certify that the work embodied in this project entitled “**StudentRFID**” being submitted by **Shubham Sharma (0905CS131156)**, **Shreya Gupta (0905CS131151)**, in partial fulfillment of the requirement for the award of the degree of the **Bachelor of Engineering (Computer Science & Engineering)** to Rajiv Gandhi Proudyogiki Vishwavidyalaya, Bhopal (M.P.) is a record of bonafide piece of work, carried out by them under our supervision and guidance in the **Department of computer science and engineering, Institute Of Technology And Management ,Gwalior(M.P.)**

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## **ABSTRACT**

### **Student Tracking and Parent notification System**

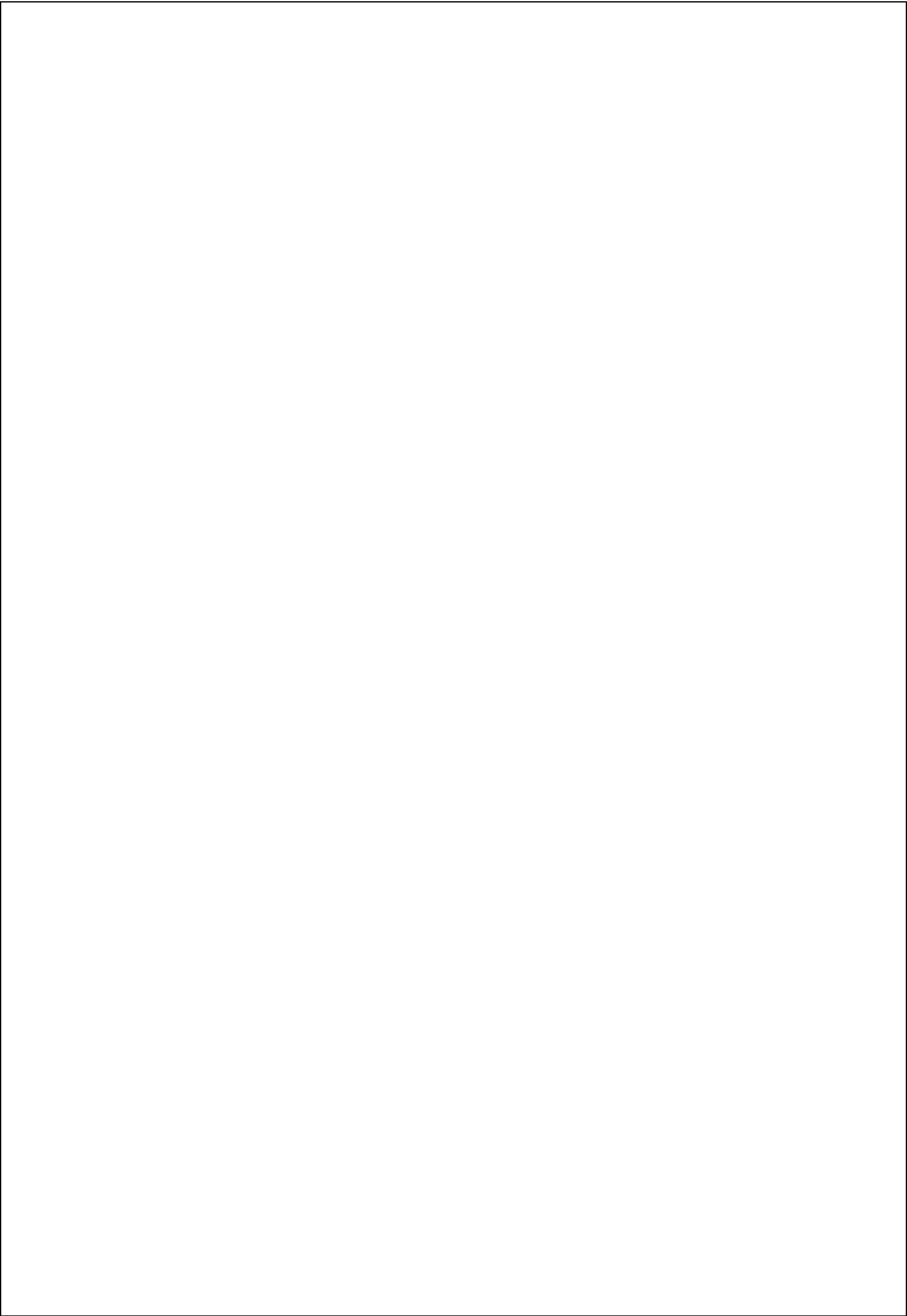
Student Tracking System is an online system developed for tracking students as they entered and exited the college campus by using RFID(Radio Frequency Identification). This system solves the Problems that the safety of children on their way to college and back home as its a cause for increased concern especially amongst working parents.

When a student enters in college campus or leaves campus by using scanner (which scan each RFID when student passes) at entrance then a message sent to parent's mobile number automatically that whether their child is entering or leaving and report is generated in database for faculties so that they can crosscheck with attendance. Even faculty can also send custom message to parents or student regarding student presence in college.

In this system not only faculty can check student entry but also student can check their entry at front gate by using their enrollment id and otp(one time password).

Only registered faculty by administrator and registered students by faculty can access this system.

The project is developed using Eclipse as front end and MY SQL Administrator as back end.



## **ACKNOWLEDGEMENT**

It gives me immense pleasure to express my deepest sense of gratitude and sincere thanks to my highly respected and esteemed guide **Mrs. Archana Tomar , Department of Computer Science and Engineering at Institute Of Technology And Management, Gwalior,** for their valuable guidance, encouragement and help for completing this work. Their useful suggestions for this whole work and co-operative behavior are sincerely acknowledged.

I would like to express my sincere thanks to **Dr. B K Singh, Director of Institute of Technology And Management, Gwalior** for giving me this opportunity to undertake this project.

I also wish to express my gratitude to **Dr. Rishi Soni , HOD, Computer Science and Engineering** for his kind hearted support.

At the end I would like to express my sincere thanks to all my friends and others who helped me directly or indirectly during this project work.



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# CHAPTER 1

## INTRODUCTION

### 1.1 AIM AND OBJECTIVE:

**Student Tracking and Parent Notification System** is a system provides us simple interface for maintenance of student information about the presence in college campus or not. This system is made to use by school, educational institutions, colleges or organizations to maintain records of their students daily.

Now-a-days working parents find difficulty to manage to attend parent-teacher meeting in institutions. Sometimes if they cannot go to these type of meetings then they fails to get updates about their child in school or college.

To get this problem solve with less human efforts this **Student Tracking System is created** where parents can get updates about their child presence in college on daily basis not only this teachers can send message to parents about their child attendance or performance.

In this system each student have RFID Card which when scans, automatically sends sms to parents about their children location.

By using this technology they can save a lot of time, money and manpower. Almost all the work is computerized. So the accuracy is maintained. Maintaining backup date-to-date is very easy as MySQL database is used for it. Faculty can do their work or verification from remote location. Even Students can also check their updates by using their enrollment numbers.

The system has **four levels of interaction** or four **modules**:

1. **Administrator level**
2. **Teacher level**
3. **Student level**
4. **Parents level**

**Administrator level:** From the name itself we know that it is administrator's part. Any changes is needed in the system regarding faculty registration, updation or deletion, he enter this level and will make enough changes .He is the only authorized person to alter the details in database about whom faculty of department can alter students details and other important areas of the system.

**Faculty level:** From the name itself we know that it is faculties part. Any changes is needed in the system regarding Student registration, updation or deletion, he/she enter this level and will make enough changes .He is added by admin and authorized to alter the Student details in database.he can add new student detail,update and issue rfid card to each student.Faculty can also broadcast message to parents and students.

**Student level:** This is student part which is created for students to check their enteries while entering and leaving the college.Students are registered by their department faculties.they can access their part by simple using their enrollment number as their login id and opt as password which is automatically delivered to their mobile number.OTP is only generated when then enrollment number is registered otherwise he will automatically reach to index page.

**Parents:** Parents can see the marksheet, results and attendance of students.

## **CHAPTER 2**

### **PROJECT/PROBLEM SELECTION**

#### **2.1 PURPOSE OF THE PROJECT:**

Purpose of this project is to provide day-to-date update about children to their parents and. This also make easy for teachers not to call or wait for parents to come and meet them and parents to get to know where his child at that time.

This website provides all the services at very low cost. Our purpose behind the development of this website is that as we all know that people are going to busy in their works so much and they cannot keep an eye on their child activity all time, so our website will help them to provide the facility to make their concern fearless. This project is not only useful for parents but also for faculty to check attendance with student presence so that they can create new attendance criteria for students to maintain regularity.

#### **2.2 PROJECT OBJECTIVE:**

Aim to create this project is to help parents and teachers to get student records easily and by doing this with ease by using latest technology called RFID (Radio-frequency identification(RFID) is the use of wireless non contact system that uses radio frequency electro magnetic fields to transfer data from a tag attached to an object,for the purposes of automatic identification and tracking.

#### **2.3 SCOPE OF THE PROJECT:**

Without this student tracking system it was very difficult to maintain and manage the student location record would be seems like impossible job. Even it is not possible for teachers to call or update parents all the time. In any institute or college thousands of students studies. To maintain record of each individual would be difficult which includes their personal details, educational qualifications, background informations and all information related to them. With RFID we can store more data on database and can access or use it by using rfid card.

This project deals with the maintenance of Student records, attendance details etc.; the main aim of this project is to computerize the maintenance of Student Attendance record and track it from anywhere.

## **INTRODUCTION OF RFID**

- Radio-frequency identification(RFID) is the use of wireless non contact system that uses radio frequency electro magnetic fields to transfer data from a tag attached to an object,for the purposes of automatic identification and tracking.
- Radio Frequency identification(RFID) is generic term that is used to describe that transmits the identity of an object or person wirelessly,using radio waves.It's grouped under the broad category of automatic identification technologies.
- RFID tags are used in many industries. An RFID attached to an automobile during production can be used to track its process through assembly line, RFID identity cards can give employees access to locked areas of a building, and RF transponders mounted in automobiles can be used to bill motorists for access to toll roads or parking.
- RFID is a technology that incorporates the use of electromagnetic or electrostatic coupling in the radio frequency portion of the electromagnetic spectrum uniquely identify an object, animal or person it is an automatic identification method, relying on storing and remotely retrieving data whenever required using devices called RFID tags and transponder. It is also called dedicated short range communication(DSRC).

## **ADVANTAGES OF RFID**

- The read only Tag code data is 100% secure and cannot be changed or duplicated.
- Very robust Tags that can stand extreme conditions and temperatures. Tags are available in a great range of types, sizes and materials
- No need for physical contact between the data carrier and communication devices. The Tags can be used repeatedly, Relatively low maintenance cost.
- No line of sight necessary to read/write data. This makes it possible to use Tags in harsh environments and in closed containers/structures. When using Bar-code scanners have to have line of sight to read them.
- Bar code only provides a manufacturer and product type. They don't identify unique items but it can identify the item(not just its manufacturer and category).
- Extremely low error rate, No line of sight required
- Long read range, Portable database
- Multiple tags read/write, Tracking people, items, and equipment in real time.

## **CHAPTER 3**

### **SYSTEM STUDY**

#### **3.1 EXISTING SYSTEM**

The existing system is a manual one which needs a lot of paper works that consumes more time, money and human effort. Searching is also difficult when they are manually processed. Recovery of data lost by accidental damage of stored papers is not possible in the present system. Taking hard copy backups consumes extra memory space, time and money.

The existing system is subjected to close study and the problem areas are identified. The solutions are given as a proposal. The proposal is then weighed with the existing system analytically and the best one is selected. The proposal is presented to the user for endorsement. The current system will do all the steps manually. The parents have to come to college or schools for getting updates about their children. It will need a lot of effort and time. Every work should be done manually. Even teachers also have to wait for PTM (parents teacher meeting) to inform parents about students behavior, performance, regularity. And if some parents do not attends these monthly PTM then either teacher has to call them or wait for next PTM. Now-a-days student security is a major concern for parents and college management due to increase in accident ratio in cities. And it is impossible for college management to inform parents daily if their child is absent for a day or for long duration. Since there are a lot of events occurring daily, it's time consuming and also generates a lot of workload. There is no provision for tracking the student location for both parents and faculties. Existing system needs more staff for the work .It is a risky job to maintain each student report for editing or any other purposes .Updating the records are difficult and time consuming. Institutes cannot arrange PTM regularly until some reports have to show to parents. Under the current system there is no other mean to deliver information to parents.

#### **Drawbacks of Existing System**

The main drawback of the system is its manual environment. It will lead's to a lot of workload and complexities. It requires more man power. There is no online facility for tracking students or informing parents.

### **Important drawbacks**

- Manual arranging information leads to a lot of paper works.
- More man power is required.
- Parents and teacher communication is must.
- Parents have to go to institution for PTM leads to wastage of time and money.
- Tracking of student location for security is impossible.
- Informing parents on phone calls is not possible, only face to face communication is possible.

### **3.2 PROPOSED SYSTEM**

The proposed system is a solution for the above mentioned problems. Almost all the work is automated .So the manpower and the workload is considerably reduced. Since it is an online system the parents and teachers are equally benefited along with the security of student. By using this system we can save a lot of paper work, money and time. Parents not need to institution all the time they get updates daily on message. Teachers can also send broadcast messages to students as well as student. Every report automatically saves in database.

For this student have provided a unique rfid card. He can use this id to log in the website for current status of their entry in and exit from college. All the manual work is computerized .A lot of man power and time is saved .Since the conventional system has a lot of paper works, it is very risky and error prone .Proposed system is user friendly and transactions are recorded accurately. Searching the records and editing is very easy.

### **3.3 FEASIBILITY STUDY:**

System analysis is the process of identification of the objectives and requirements, evaluation of alternative solutions and recommendation for a more feasible solution. In other words, system analysis is the step-by-step process of gathering, recording and interpreting facts. It is the reduction of an entire system by studying the various operations. It includes studying the problems encountered in the present system and introducing a new computer system into an organization

The feasibility study is carried out to select the best system that meets performance requirement. Feasibility study is used to determine of whether or not a project is work doing.

This process followed in making this determine called feasibility study. This type of study determines if a project can and should be taken.

The key considerations are invoked in the feasibility invoke analysis are:

- Technical Feasibility
- Economic Feasibility
- Operational Feasibility

### **3.3.1 TECHNICAL FEASIBILITY:**

Technical Feasibility centers on the existing computer system (hardware/ software) and also it can support the modification. In manual processing there are more chances of errors, creating lot of complications, less technical or logical. Through proposed system we can set this process in a very systematic pattern, which is more technical, full proof, authentic, safe and reliable.

**For example**, if the current computer is operating at 80 percent capacity - an arbitrary ceiling - then running another application could overload the system or require additional Hardware. This involves financial considerations to accommodate technical enhancements. If the budget is a serious constraint, then the project judged is not feasible. In this project, all the necessary cautions have been taken care to make it technically feasible. Using a key the display of text/object is very fast. Also, the tools, operating system and programming language used in this localization process is compatible with the existing one.

### **3.3.2 OPERATIONAL FEASIBILITY:**

Operational feasibility is mainly related to the human organizational & political aspects. This feasibility study answers questions like: Will the system be used if it is developed and implemented? Will there be resistance from users that will undermine the possible application benefits?

To get the answer of these questions, many methods are used like interviews, questionnaire, records checking and observation. This feasibility study is generally carried out by one or two persons who are familiar with information system techniques, who understands the business and who are skilled in system analysis and design.

The essential questions that help in testing the operational feasibility of a system as follows:

- What changes will be made in the system?
- What organizational structures are?



- What new skills will be required? Do the existing staff members have these skills? If not, can they be trained in due course of time?
- Operational feasibility study is carried out by a small group of people who are familiar with information system technique who understand the parts of the business that are relevant to the project and are skilled in system analysis and design process?

The feasibility study is carried out by a small group of people who are familiar with information system techniques, understand the part of business or organization that will be involved or affected by a project, and are skilled in the system analysis & design process

Operational feasibility is the mainly related to the human organizational. This feasibility study answers question like:

- ✓ Will the system we used if it is developed and implemented?
- ✓ Will there be resistance from users that will undetermined the possible application benefit. This application is extensible..

### **3.3.3 ECONOMICAL FEASIBILITY:**

Economic analysis is the most frequently used method for evaluating the effectiveness of the candidate system. More commonly known as cost/benefit analysis, the procedure is to be determining the benefits and savings that are expected from a candidate and compare them with costs. If benefits outweigh costs, then the decision is made to design and implement the system.

A systems financial benefit must exceed the cost of developing that system. i.e. a new system being developed should be a good investment for the organization. Economic feasibility considers the following:

- The cost to conduct a full system investigation.
- The cost of hardware and software for the class of application.
- The benefits in the form of reduced cost or fewer costly errors.
- The cost if nothing changes (i.e. the proposed system is not developed)

## **CHAPTER 4**

### **SYSTEM ANALYSIS**

#### **4.1 REQUIREMENT SPECIFICATION**

##### **4.1.1 HARDWARE REQUIREMENT:**

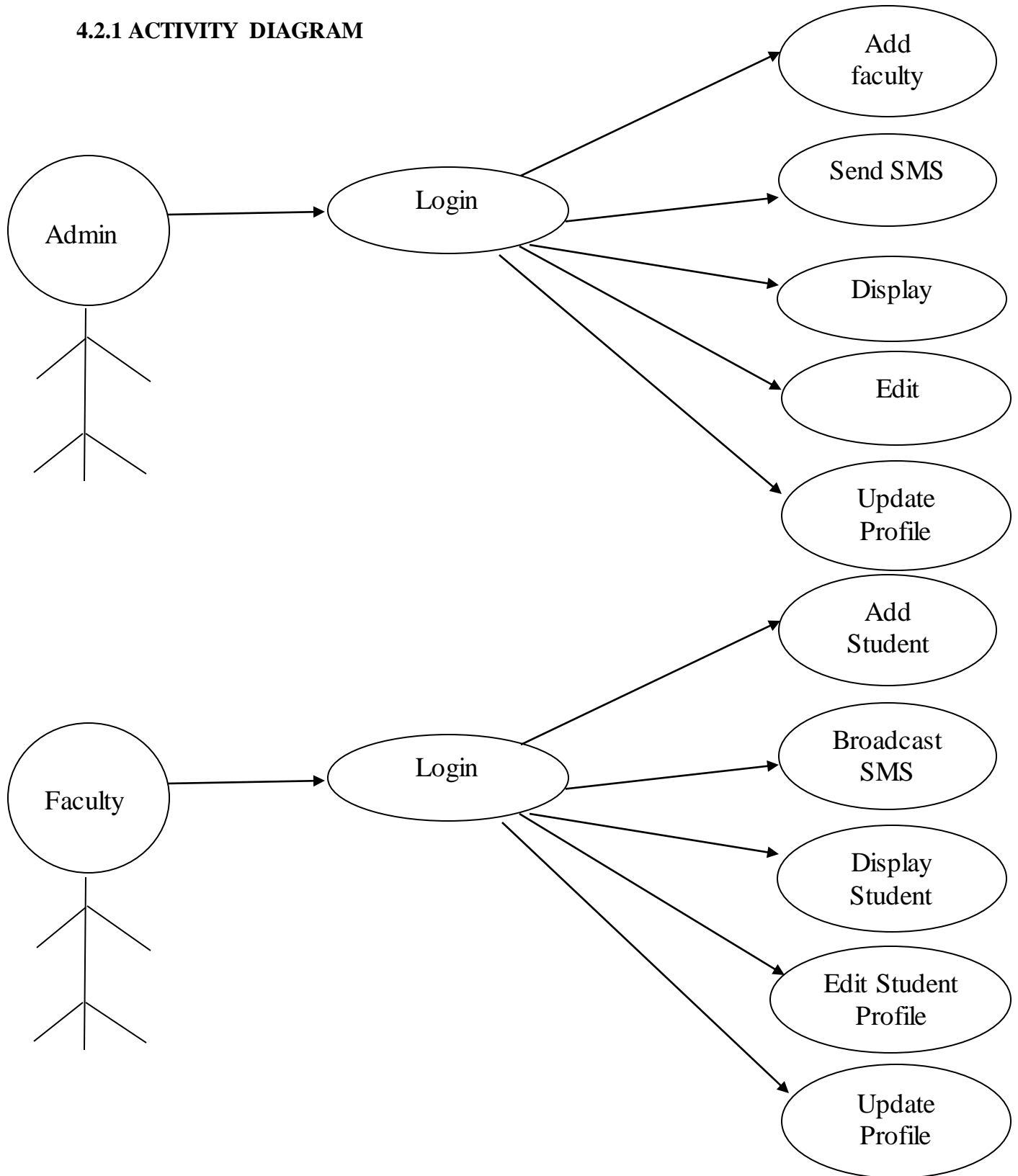
RAM	:	1 GB (or above)
Hard Disk	:	40 GB (or Above)
Processor	:	System with x86 or x64 processor
External devices	:	SERIAL CABLE, RFID SCANNER,RFID CARD

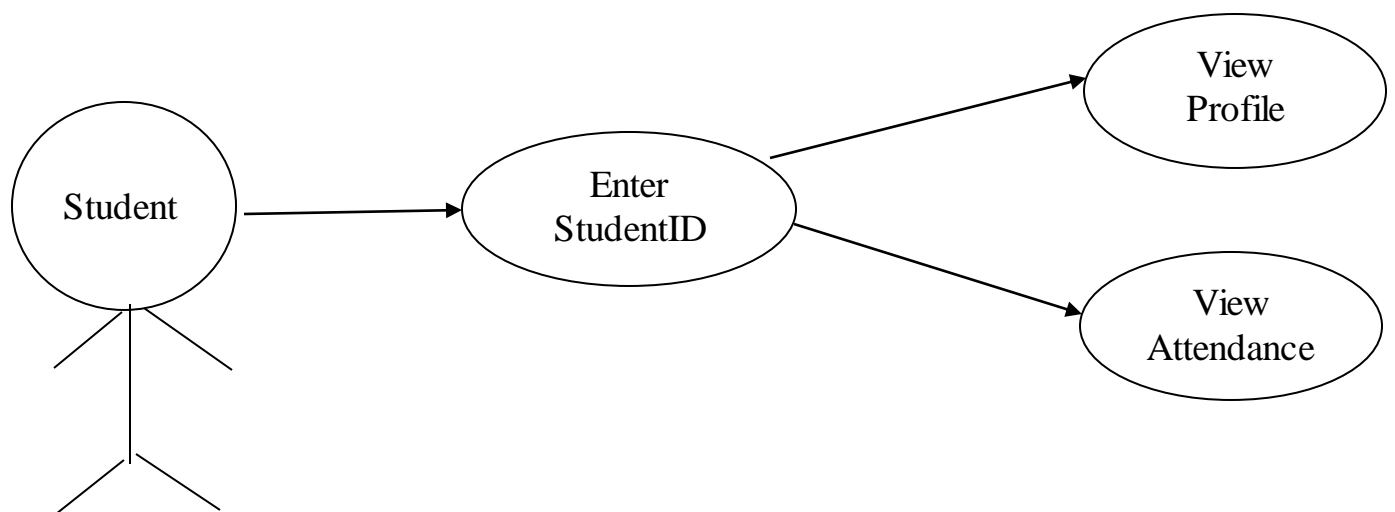
##### **4.1.2 SOFTWARE REQUIREMENT:**

Operating system	:	Windows xp above,Linux or Mac
Front End	:	Eclipse(HTML,JSP,Servlet, ECMA Script)
Back End	:	My SQL
Application Server	:	Web Browser
Client Programming	:	HTML,ECMA Script
Connectivity	:	JDBC
Server	:	Apache tomcat 8.0,Servlet,JSP

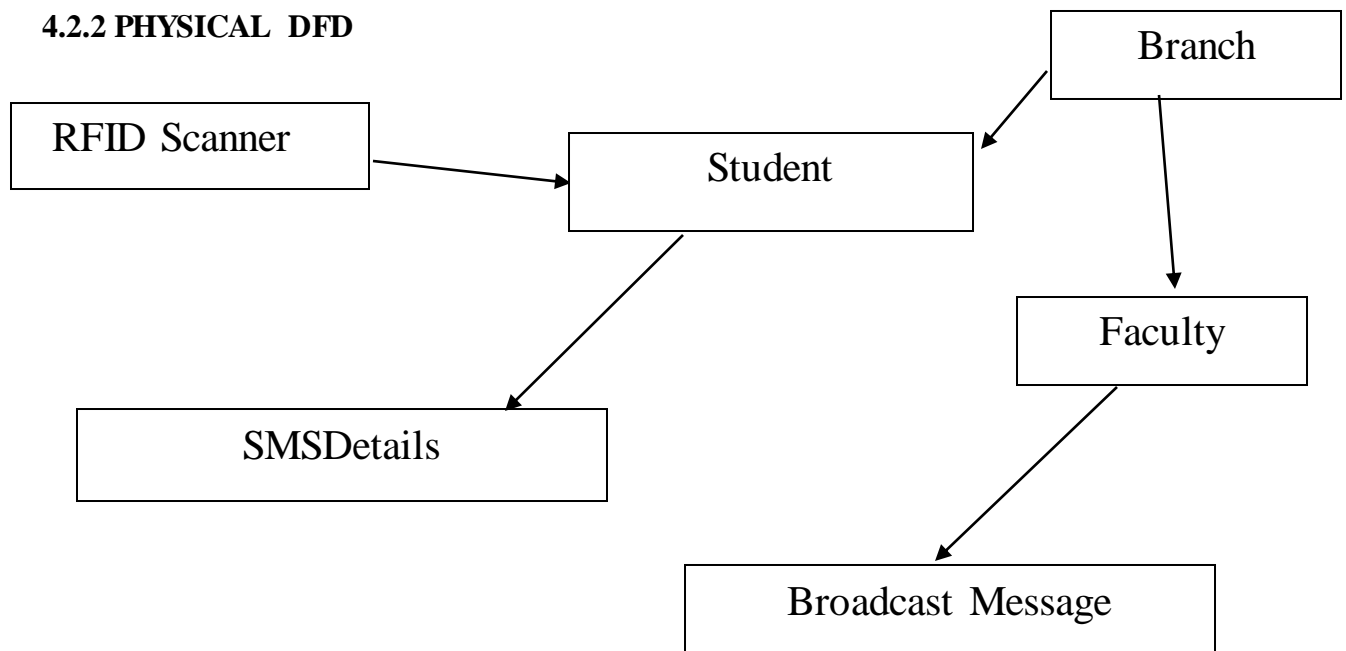
## 4.2 SOFTWARE ANALYSIS

### 4.2.1 ACTIVITY DIAGRAM

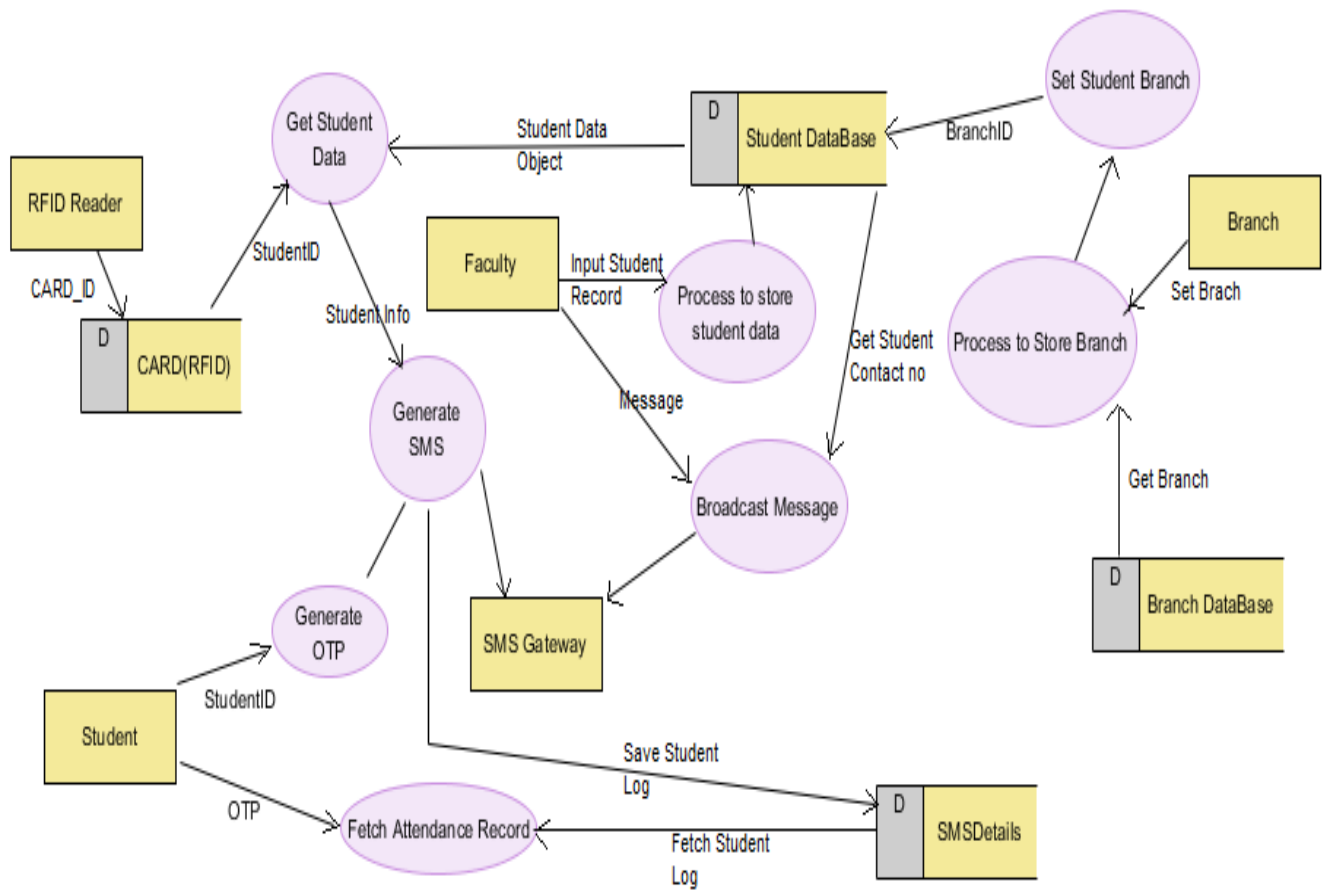




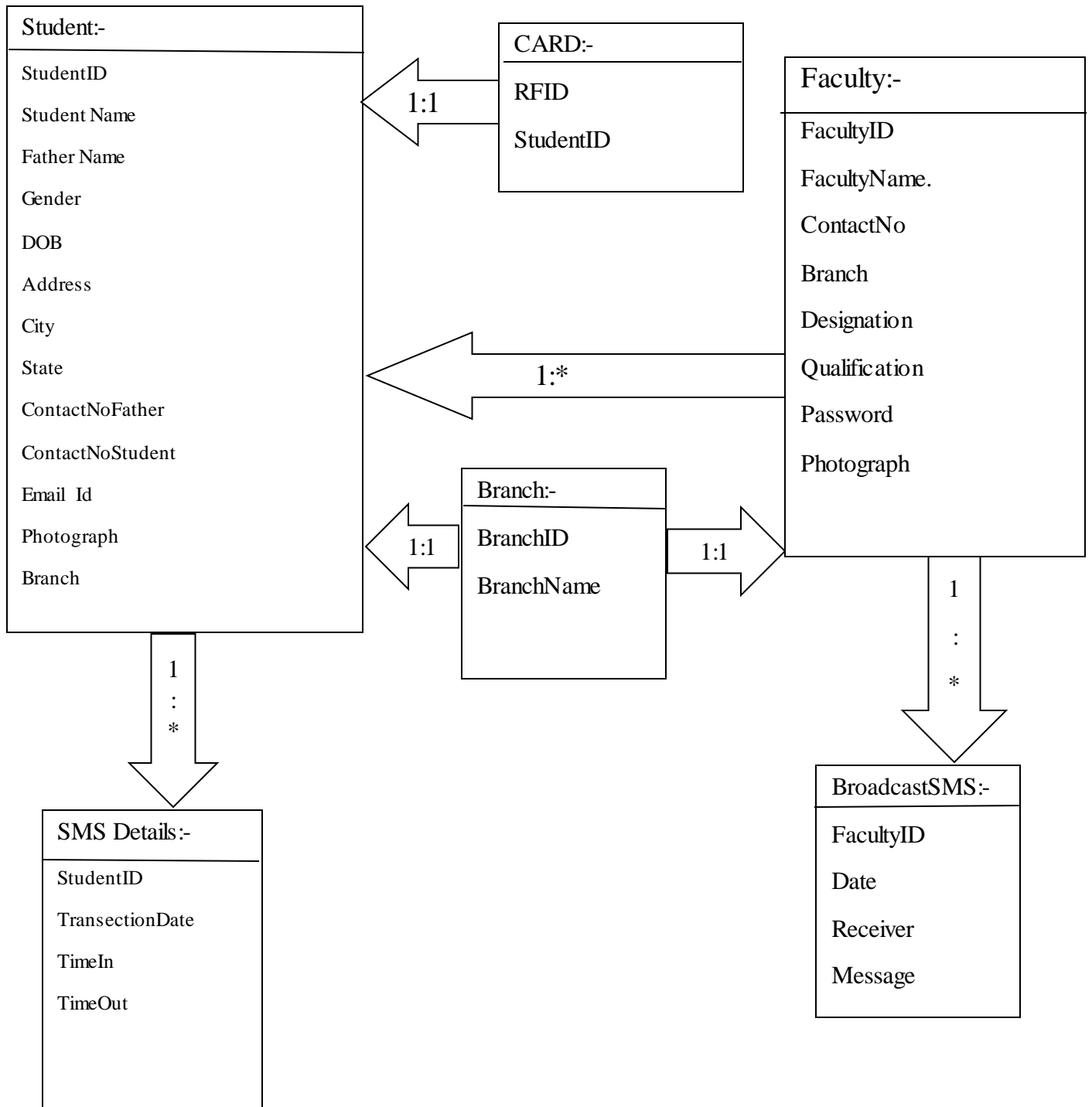
#### 4.2.2 PHYSICAL DFD



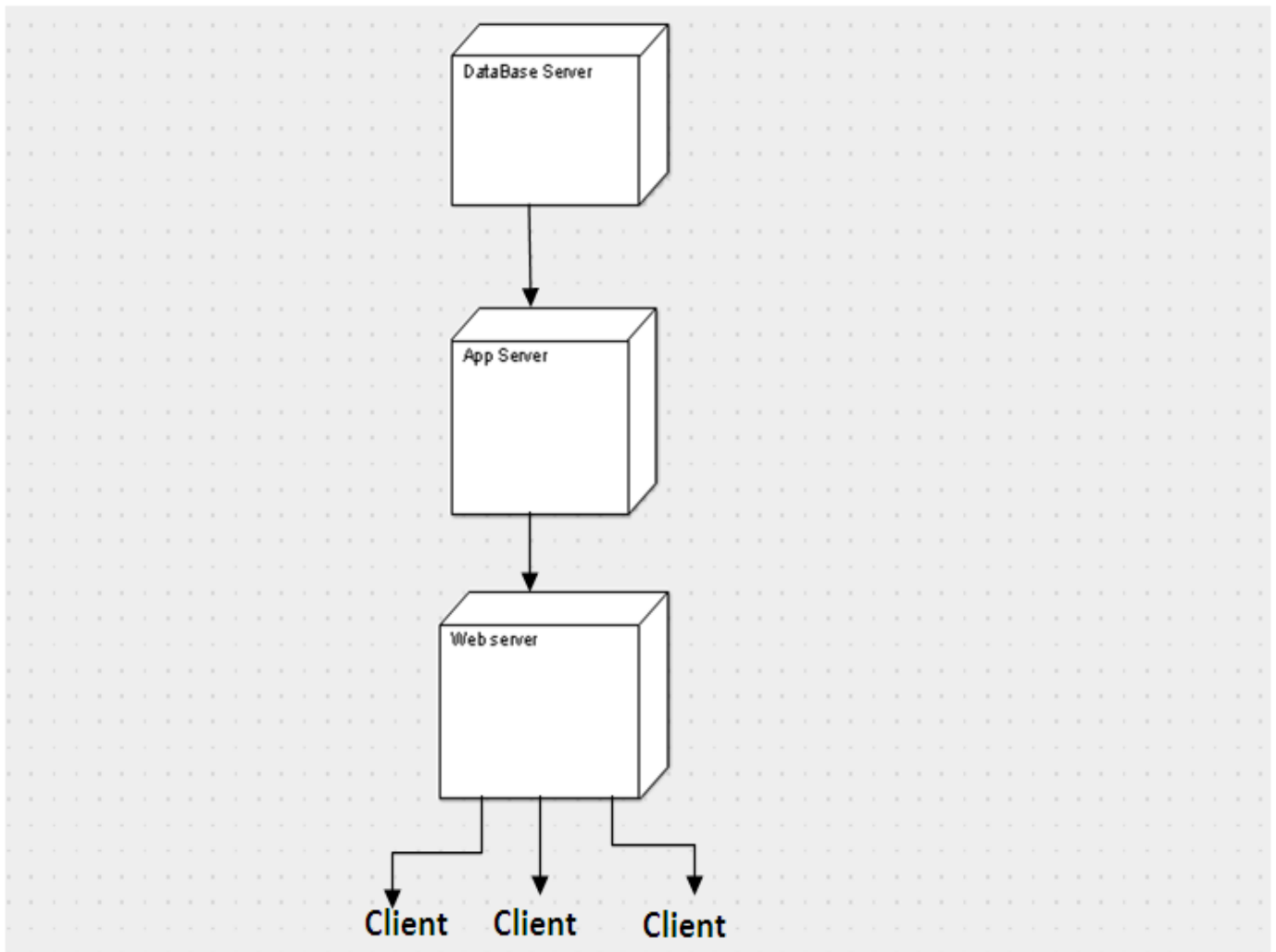
### 4.2.3 LOGICAL DFD



#### 4.2.4 CLASS DIAGRAM



#### 4.2.4 DEPLOYMENT DIAGRAM



Deployment Diagram

## CHAPTER 5

### LOGICAL AND PHYSICAL DESIGN OF SYSTEM

**System Design:** System design is an important step in any project. There is a variety of ways by which the system can be designed. Here the system has been developed using the top down integration approach. This technology integrates analyzing, designing, coding and testing which are the software designing concepts. The design proceeds from highest level. Top down technique provides an orderly and systematic framework to the project.

**Input Design:** Input design is the process of converting user-originated inputs to a computer based format, Input data are collected and organized into a group of similar data. Inaccurate input data is the most common cause of data processing errors. Effective input design minimizes errors made by data entry operators. The goal of designing input data is to make data entry as easy, logical and free from errors as possible.

**Output Design:** Computer output is the important and direct source of information to the user. Efficient, Intelligible Output design should improve the system's relationships with the user and helps in decision making. They also provide a permanent hard copy of these results for later consultation.

**Logical Design:** The DFD so far are known as logical data flow diagrams. They specify various logical processes performed on data, i.e. the type of operations performed. A logical DFD does not specify who does the operations, whether it is done manually or with a computer and also where it is done. A physical DFD specifies these.

**Physical Design:** A physical DFD is easily drawn the fact gathering stage. A physical DFD is a good starting point in developing logical DFD; it is sometimes useful to depict physical movement of materials.

The data flow diagram shows the logical flow of a system and defines the boundaries of the system. For a candidate system, it describes the inputs (source), outputs (destination), database (files) and procedures (data flow), all in a format that meet the user's requirements.



## **5.1 NO. OF MODULES**

This project includes the following modules for development of the project. These are as follows: -

- 1. ADMIN LOGIN FORM:** This form shows the Login name and password when admin enter a valid admin name and password then he/she can operate the application.
- 2. ADMIN HOME:** This form is a menu-based form that displays the menu for operation of the application. It includes Faculty register form ,update faculty record, send message,update profile & logout.
- 3. FACULTY LOGIN FORM:** This form shows the Login name and password when employee enters a valid employee name and password then he/she can operate the application.
- 4. FACULTY HOME:** This form is a menu-based form that displays the menu for operation of the application. It includes student register form ,update student record,broadcast message ,send message,update profile & logout etc.

## **5.2 DATABASE DESIGN**

### **1. Table Name - AdminLogin**

<b>Column Name</b>	<b>Datatype</b>
username	Varchar(45)
password	Varchar(45)

### **2. Table Name – cities**

<b>Column Name</b>	<b>Datatype</b>
cityid	INT(11)
cityname	VARCHAR(45)
stateid	INT(11)

### **3. Table Name – branch**

<b>Column Name</b>	<b>Datatype</b>
branchid	VARCHAR(48)
branchname	VARCHAR(45)

#### 4. Table Name – card

Column Name	Datatype
Rfid	VARCHAR(45)
Studentid	VARCHAR(45)

#### 5. Table Name – states

Column Name	Datatype
stateid	INT(11)
statename	VARCHAR(45)

#### 6. Table Name - faculty

Column Name	Datatype
facultyid	VARCHAR(45)
Facultyname	VARCHAR(45)
Emailid	VARCHAR(45)
Contactno	VARCHAR(45)
Mobileno	VARCHAR(45)
Qualification	VARCHAR(145)
Designation	VARCHAR(45)
Branch	VARCHAR(45)
Password	VARCHAR(45)
Photograph	VARCHAR(145)

#### 7. Table Name – smsdetails

Column Name	Datatype
transectionid	INT(10)
Transectiondate	DATE
Studentid	VARCHAR(45)
Timein	VARCHAR(45)
Timeout	VARCHAR(45)

#### 8. Table Name – student

Column Name	Datatype
studentid	VARCHAR(25)
Studentname	VARCHAR(45)
Fathername	VARCHAR(45)
Dob	DATE
Address	VARCHAR(150)
State	VARCHAR(45)
City	VARCHAR(45)
Phone	VARCHAR(45)
Email	VARCHAR(45)

Contactnofather	VARCHAR(45)
Contactnostudent	VARCHAR(45)
Currentaddress	VARCHAR(150)
Branch	VARCHAR(45)
Semester	VARCHAR(45)
Photograph	VARCHAR(45)

### **5.3 VERSION CONTROLLING**

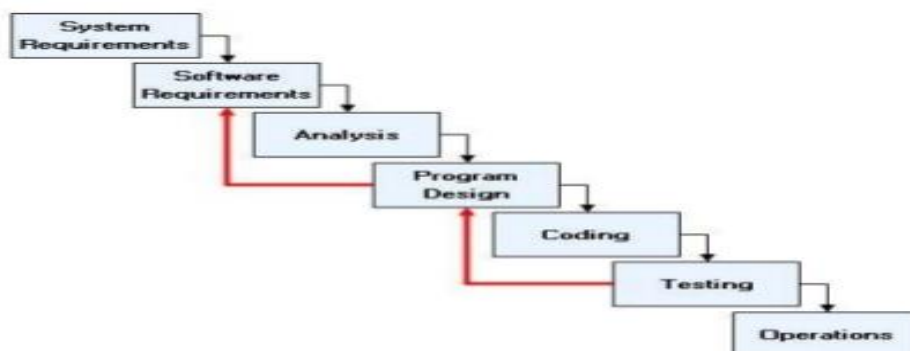
Version control is a system that records changes to a file or set of files over time so that you can recall specific versions later.

In this project we have used GIT DRCS . Distributed revision control systems (DRCS) take a peer-to-peer approach, as opposed to the client-server approach of centralized systems. Rather than a single, central repository on which clients synchronize, each peer's working copy of the codebase is a bona-fide repository. Distributed revision control conducts synchronization by exchanging patches (change-sets) from peer to peer. This results in some important differences from a centralized system.

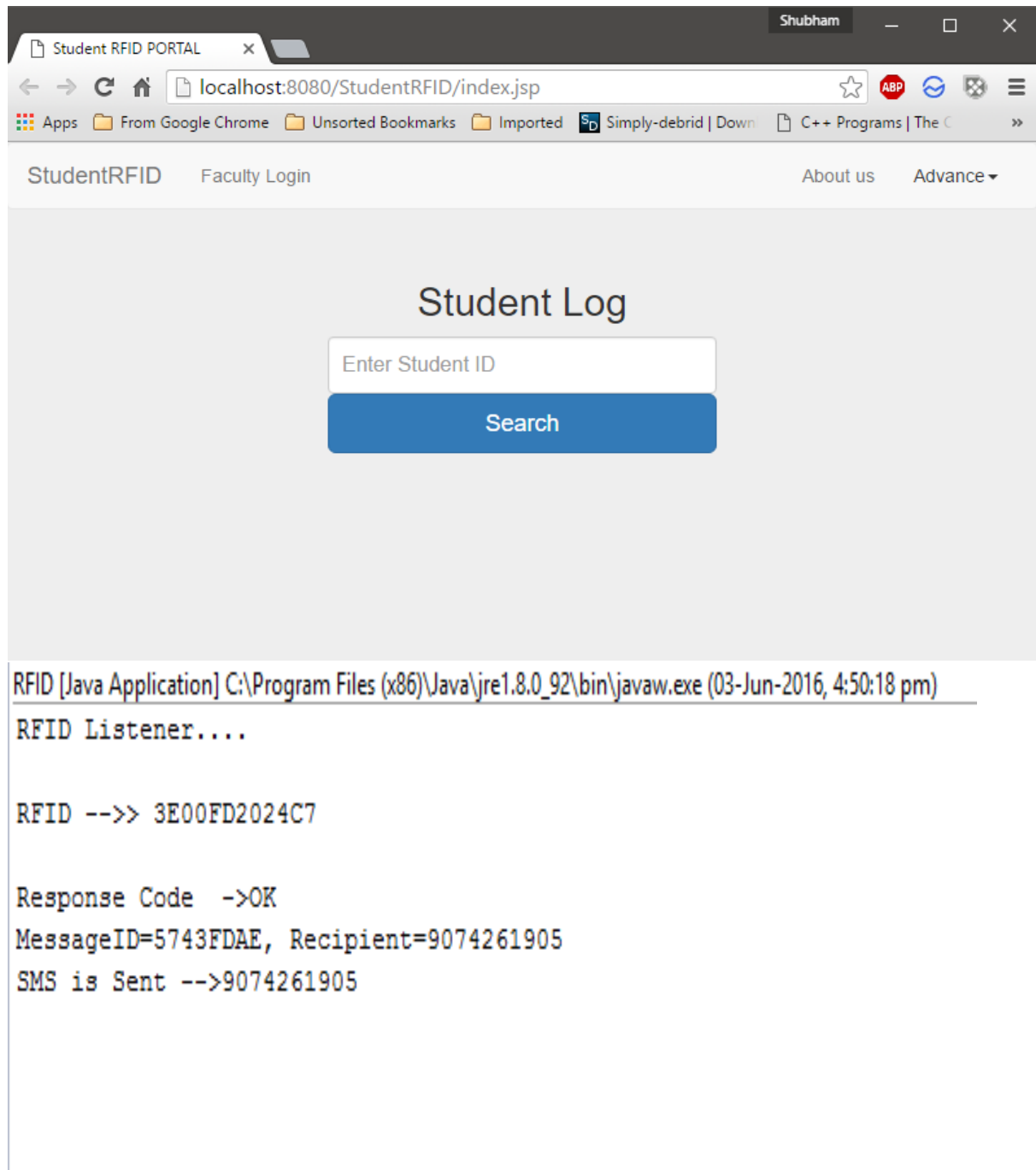
<https://www.github.com/shubham6618/StudentRFID.git>

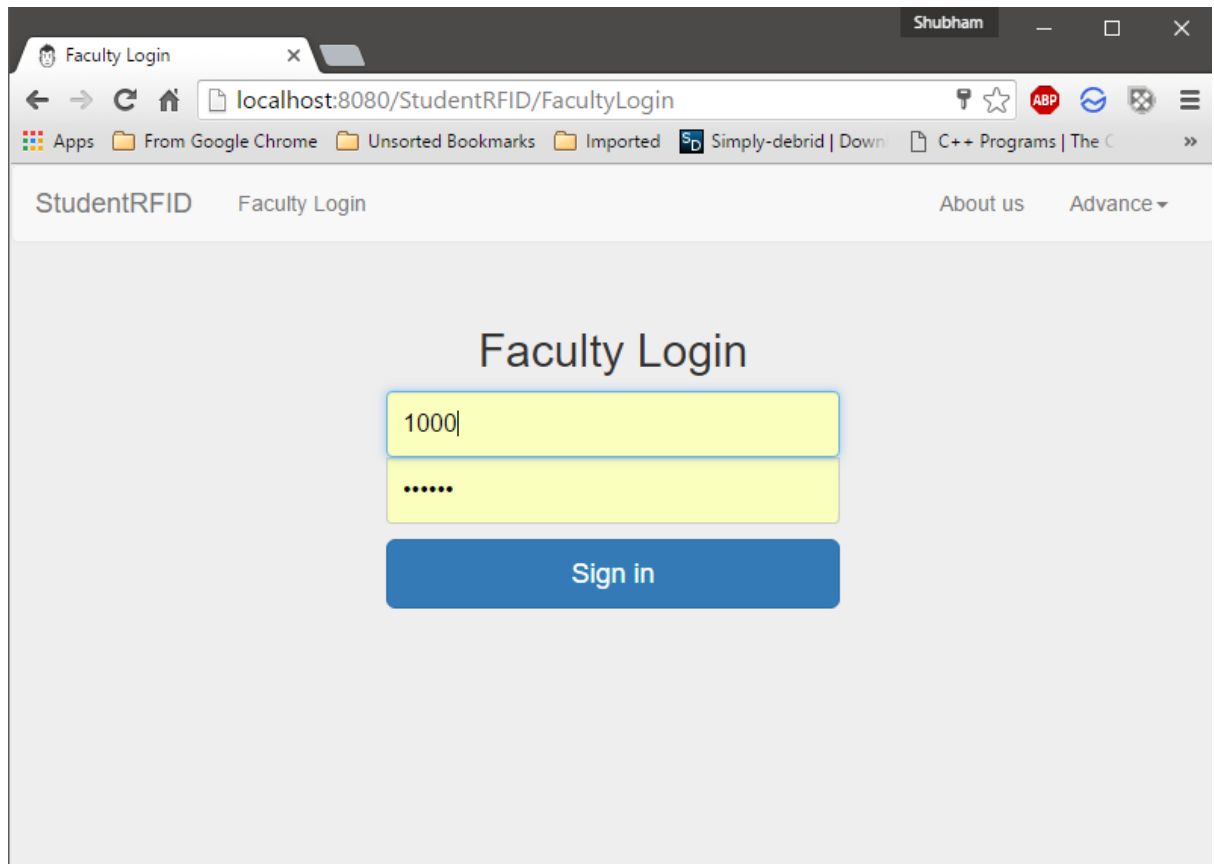
### **5.4 PROJECT DEVELOPMENT APPROACH:**

I have used the iterative model for software development lifecycle. An iterative life cycle model does not attempt to start with a full specification of requirements. Instead development deigns by specifying and implementing just part of the software, which can then be reviewed In order to identify further requirements. This process is then repeated, producing a new version of the software for each cycle of model.



## 5.4 LAYOUT





Shubham

localhost:8080/StudentRFID

localhost:8080/StudentRFID/FacultyHome

☆ ABP

Apps From Google Chrome Unsorted Bookmarks Imported Simply-debrid | Down C++ Programs | The C Network Tricks and H

Faculty ID:1000 Broadcast Message Send SMS Student ▾

Fri Jun 03 16:34:28 IST 2016 LOGOUT Account Settings ▾

Branch: CSE

Receiver: All Parent ▾  
All Parent  
All Student

Message:

Send Reset

localhost:8080/StudentRFID/ x

localhost:8080/StudentRFID/FacultyHome

Apps From Google Chrome Unsorted Bookmarks Imported Simply-debrid | Down C++ Programs | The C Network Tricks and H

Faculty ID:1000 Broadcast Message Send SMS Student ▾

Fri Jun 03 16:34:28 IST 2016 LOGOUT Account Settings ▾

Mobile No:

Message:

Send Reset

localhost:8080/StudentRFID/

Shubham

localhost:8080/StudentRFID/FacultyHome

ABP

AppsFrom Google ChromeUnsorted BookmarksImportedSimply-debrid | DownC++ Programs | The CNetwork Tricks and H

Faculty ID:1000Broadcast MessageSend SMSStudent

Fri Jun 03 16:34:28 IST 2016LOGOUTAccount Settings

### Student Register

Student Id:	
Name:	
Father's Name:	
Birth Date:	
Address:	
State:	Select
City:	
Phone No:	
Email Id:	
Contact No(Father):	
Contact No(Student):	



Shubham

localhost:8080/StudentRFID x

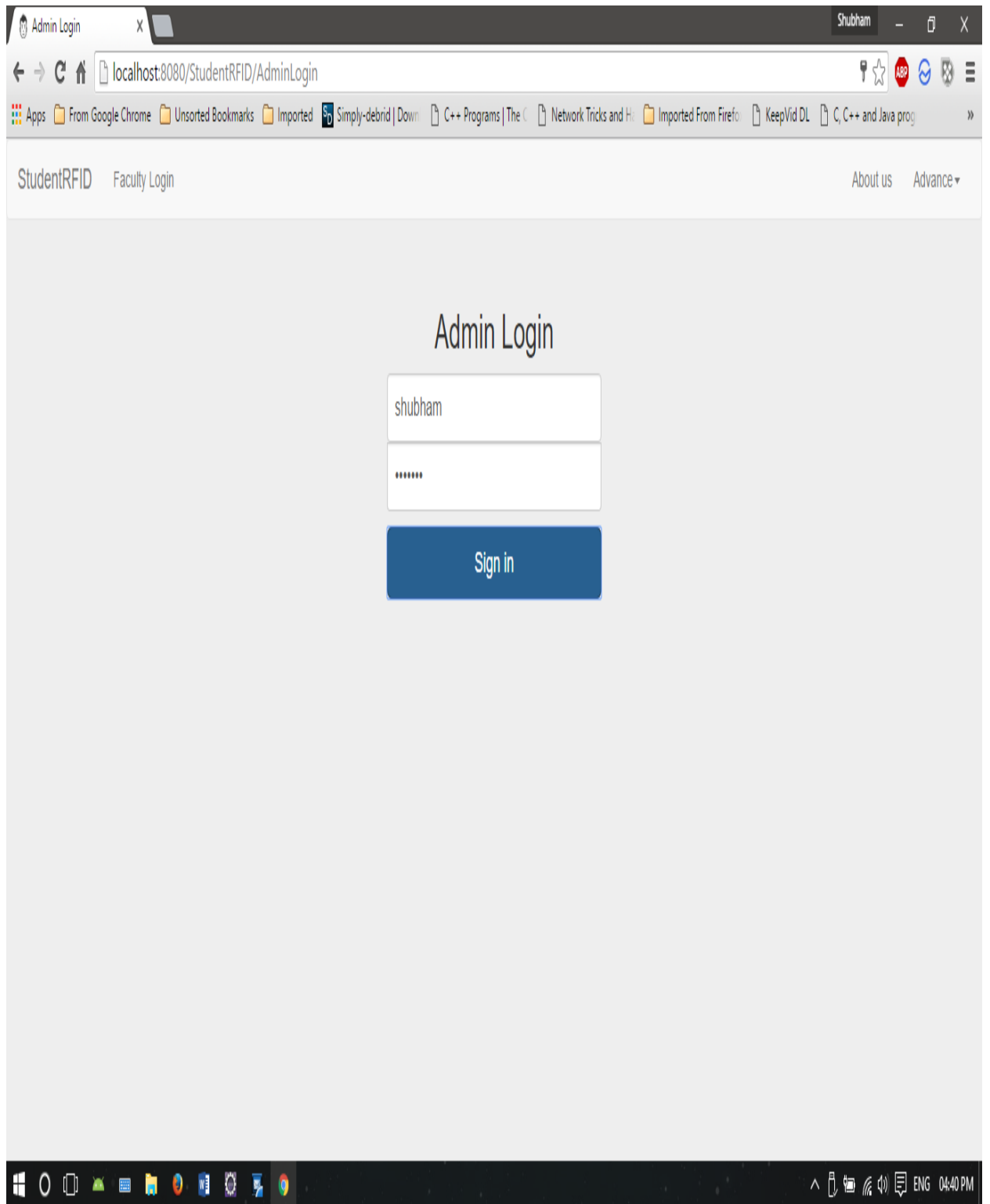
localhost:8080/StudentRFID/FacultyHome

Apps From Google Chrome Unsorted Bookmarks Imported Simply-debrid | Down C++ Programs | The C Network Tricks and H

Faculty ID:1000 Broadcast Message Send SMS Student

Fri Jun 03 16:34:28 IST 2016 LOGOUT Account Settings

StudentID	Date	Timein	Timeout
5646546545	0116-05-06	15:11:45	null
0905cs131151	2016-05-06	15:35:10	15:37:37
0905cs131151	2016-05-07	15:38:41	null
0905cs131151	2016-05-08	15:39:7	15:43:45
0905cs131151	2016-05-10	15:44:22	15:44:27
0905cs131151	2016-05-24	12:12:30	12:18:49
0905cs131035	2016-05-27	12:12:12	13:01:15
0905cs131151	2016-06-02	15:39:25	15:44:54
0905cs131151	2016-06-03	16:33:19	16:33:37



Shubham

localhost:8080/StudentRFID

localhost:8080/StudentRFID/AdminHome

Admin ID:shubham Register Faculty drop-down Fri Jun 03 16:40:02 IST 2016 LOGOUT Account Settings

## Faculty Register

**Faculty Id:**

**Faculty Name:**

**Email Id:**

**Contact No:**

**Mobile No:**

**Qualifications:**

**Designation:**

**Branch:**

**password:**

**Photograph:**  No file chosen

Shubham

localhost:8080/StudentRFID

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Apps

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C++ Programs | The C

Network Tricks and Ha

Admin ID:shubham

Register Faculty

drop-down

Fri Jun 03 16:40:02 IST 2016

LOGOUT

Account Settings

Show 10 entries

Search:

FacultyId Name	Emailid contactno	mobilen	qualification	Designation	branch	PhotoGraph	Update
1000 harshal sharma	harshalsharma@gmail.com 1234564897	564654654	ghjghj	ghjghjghj	CSE		Edit/De
64534 4646	4654654 6465465	465465	46	646	CSE		Edit/De
gkgkjgkj gj	gkj gkj	gkj	gkj	gkj	CSE		Edit/De
hkjhjk lhjkh	kjl hk	jhkjl	hkjlh	kh	CSE		Edit/De
hkjhkhkhkhkj hkjhkj	h kjh	kjh	kjh	kjh	CSE		Edit/De
jkjhkkj	lkh	hki	lhki	lih	CSF		Edit/De

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Admin ID:shubhamRegister Facultydrop-down ▾Fri Jun 03 16:40:02 IST 2016LOGOUTAccount Settings ▾

[List of Faculties](#)

Faculty Register

Faculty Id:

64534

Name:

4646

Email

4654654

Contact No:

6465465

Mobile no:

465465

Qualifications:

46

Designation:

646


Branch:

CSE

Password:

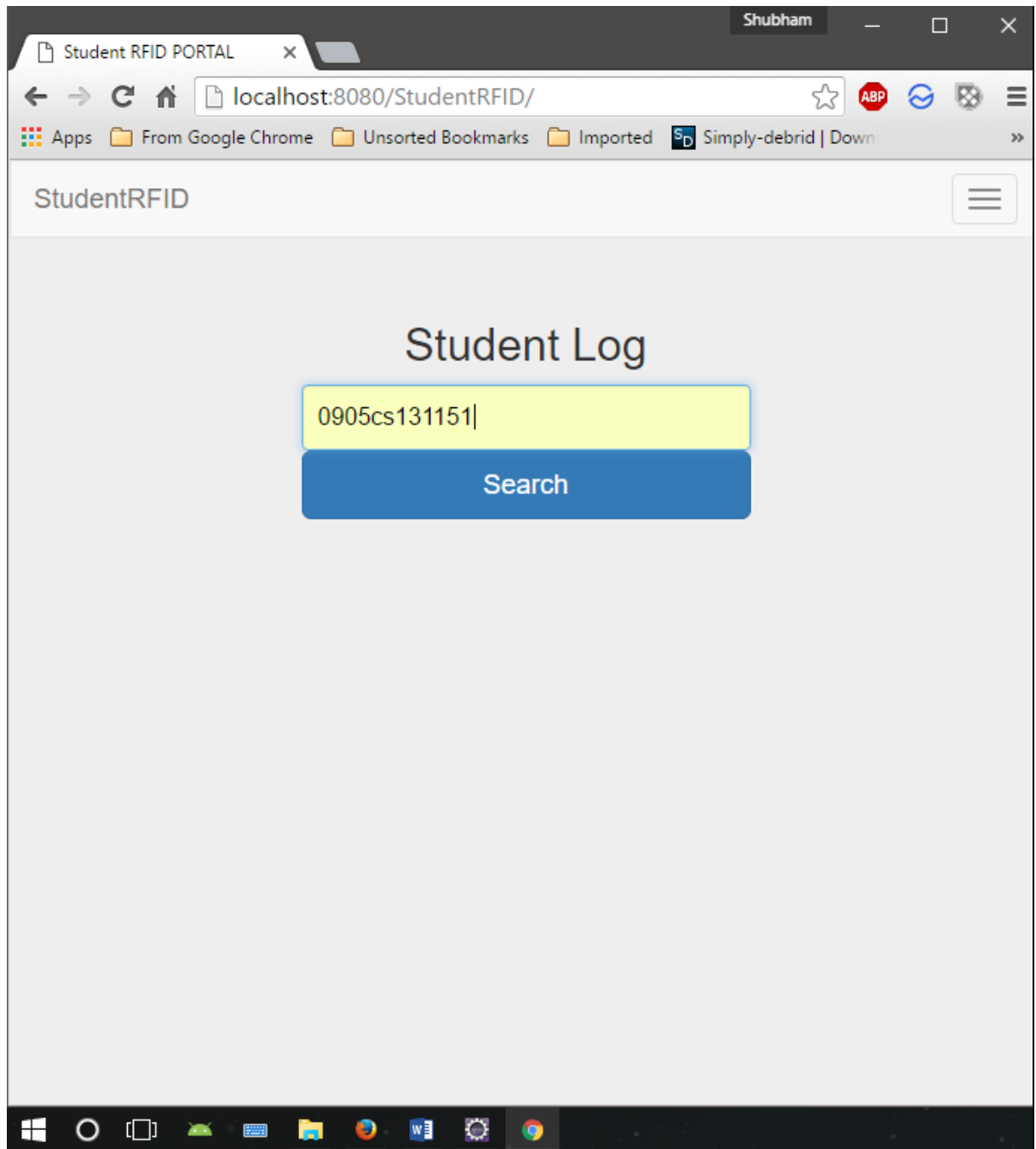
Edit

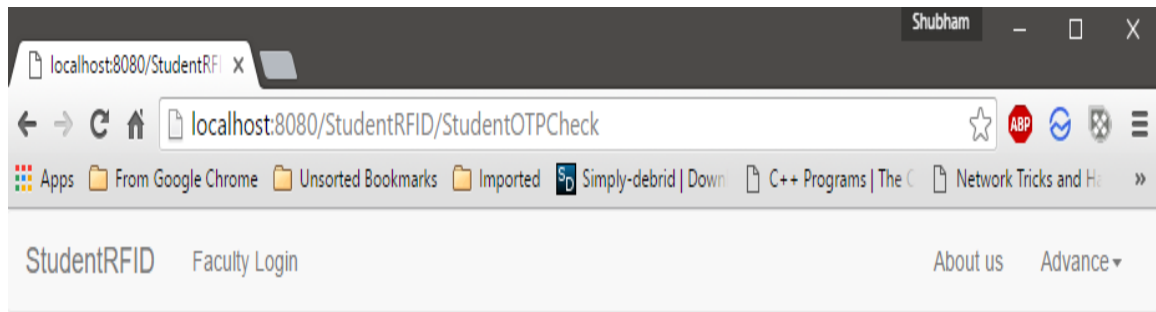
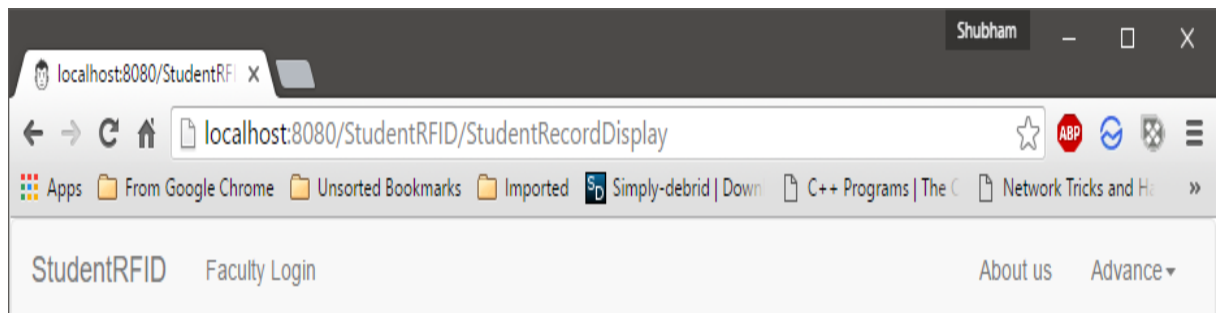
Delete



Choose File

No file chosen



**StudentID:**0905cs131151 **Name:**Shreya Gupta **FatherName:**Guptaji **Branch:**CSE

Date	Timein	Timeout
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2016-05-07	15:38:41	null
2016-05-08	15:39:7	15:43:45
2016-05-10	15:44:22	15:44:27
2016-05-24	12:12:30	12:18:49
2016-06-02	15:39:25	15:44:54
2016-06-03	16:33:19	16:33:37



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## CHAPTER 6

### SYSTEM TESTING

#### 6.1 TEST CASE DESIGN

##### 6.1.1 BLACK BOX TESTING:

The technique of testing without having any knowledge of the interior workings of the application is Black Box testing. The tester is oblivious to the system architecture and does not have access to the source code. Typically, when performing a black box test, a tester will interact with the system's user interface by providing inputs and examining outputs without knowing how and where the inputs are worked upon.

**Black-box testing** is a method of [software testing](#) that examines the functionality of an application (e.g. what the software does) without

peering into its internal structures or workings. This method of test can be applied to virtually every level of software testing: [unit](#), [integration](#), [system](#) and [acceptance](#). It typically comprises most if not all higher level testing, but can also dominate [unit testing](#) as well

##### 6.1.2 WHITE BOX TESTING:

White box testing is the detailed investigation of internal logic and structure of the code. White box testing is also called glass testing or open box testing. In order to perform white box testing on an application, the tester needs to possess knowledge of the internal working of the code.

**white-box testing** (also known as **clear box testing**, **glass box testing**, **transparent box testing**, and **structural testing**) is a method of testing [software](#) that tests internal structures or workings of an application, as opposed to its functionality (i.e. [black-box testing](#)). In white-box testing an internal perspective of the system, as well as programming skills, are used to design test cases. The tester chooses inputs to exercise paths through the code and determine the appropriate outputs. This is analogous to testing nodes in a circuit, e.g. [in-circuit testing](#) (ICT).

While white-box testing can be applied at the [unit](#), [integration](#) and [system](#) levels of the [software testing](#) process, it is usually done at the unit level. It can test paths within a unit, paths between units during integration, and between subsystems during a system-level test. Though this

method of test design can uncover many errors or problems, it might not detect unimplemented parts of the specification or missing requirements.

## **6.2 TEST EXECUTION:**

### **6.2.1 UNIT TESTING**

Unit testing is a way of testing software components. The "Unit" is the thing being tested. You can do both black and white box testing with unit tests; the concept is orthogonal to white/black-box testing.

The developer carries out unit testing in order to check if the particular module or unit of code is working fine. The Unit Testing comes at the very basic level as it is carried out as and when the unit of the code is developed or a particular functionality is built.

Unit testing deals with testing a unit as a whole. This would test the interaction of many functions but confine the test within one unit. The exact scope of a unit is left to interpretation. Supporting test code, sometimes called scaffolding, may be necessary to support an individual test. This type of testing is driven by the architecture and implementation teams. This focus is also called black-box testing because only the details of the interface are visible to the test.

Limits that are global to a unit are tested here. In the construction industry, scaffolding is a temporary, easy to assemble and disassemble, frame placed around a building to facilitate the construction of the building. The construction workers first build the scaffolding and then the building. Later the scaffolding is removed, exposing the completed building.

Similarly, in software testing, one particular test may need some supporting software. This software establishes an environment around the test. Only when this environment is established can a correct evaluation of the test take place. The scaffolding software may establish state and values for data structures as well as providing dummy external functions for the test. Different scaffolding software may be needed from one test to another test. Scaffolding software rarely is considered part of the system. Sometimes the scaffolding software becomes larger than the system software being tested. Usually the scaffolding software is not of the same quality as the system software and frequently is quite fragile.

### **6.2.2 INTEGRATION TESTING**

Testing (sometimes called integration and testing, abbreviated I&T) is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing and before validation testing. Integration testing takes as its input modules that have been unit tested, groups them in larger aggregates, applies tests defined in an integration test plan to those aggregates, and delivers as its output the integrated system ready for system testing.

The purpose of integration testing is to verify functional, performance, and reliability requirements placed on major design items. These "design items", i.e. assemblages (or groups of units), are exercised through their interfaces using black box testing, success and error cases being simulated via appropriate parameter and data inputs. Simulated usage of shared data areas and inter-process communication is tested and individual subsystems are exercised through their input interface. Test cases are constructed to test whether all the components within assemblages interact correctly, for example across procedure calls or process activations, and this is done after testing individual modules, i.e. unit testing. The overall idea is a "building block" approach, in which verified assemblages are added to a verified base which is then used to support the integration testing of further assemblages.

Some different types of integration testing are big bang, top-down, and bottom-up. Other Integration Patterns are: Collaboration Integration, Backbone Integration, Layer Integration, Client/Server Integration, Distributed Services Integration and High-frequency Integration.

### **6.2.3 VALIDATION TESTING**

The assurance that a product, service, or system meets the needs of the customer and other identified stakeholders. It often involves acceptance and suitability with external customers. Validation is intended to ensure a product, service, or system (or portion thereof, or set thereof) result in a product, service, or system (or portion thereof, or set thereof) that meets the operational needs of the user. For a new development flow or verification flow, validation procedures may involve modelling either flow and using simulations to predict faults or gaps that might lead to invalid or incomplete verification or development of a product, service, or system (or portion thereof, or set thereof). A set of validation requirements (as defined by the user), specifications, and regulations may then be used as a basis for qualifying a development

flow or verification flow for a product, service, or system (or portion thereof, or set thereof). Additional validation procedures also include those that are designed specifically to ensure that modifications made to an existing qualified development flow or verification flow will have the effect of producing a product, service, or system (or portion thereof, or set thereof) that meets the initial design requirements, specifications, and regulations; these validations help to keep the flow qualified. It is a process of establishing evidence that provides a high degree of assurance that a product, service, or system accomplishes its intended requirements. This often involves acceptance of fitness for purpose with end users and other product stakeholders. This is often an external process.

It is sometimes said that validation can be expressed by the query "Are you building the right thing?" and verification by "Are you building it right?" "Building the right thing" refers back to the user's needs, while "building it right" checks that the specifications are correctly implemented by the system. In some contexts, it is required to have written requirements for both as well as formal procedures or protocols for determining compliance.

## **CHAPTER 7**

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