A Project Report on

Chatbot For Efficient Resource Allocation And Management

Submitted in partial fulfillment of the requirements for the award
of the degree of

Bachelor of Engineering

in

Information Technology

by

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UNIVERSITY OF MUMBAI

Academic Year 2019-2020

Approval Sheet

This Project Report entitled ***"Chatbot For Efficient Resource Allocation And Management"*** Submitted by ***"Manasi Ghadge"(16104019),"Anuja Dhumale" (16104034), "Gitika Daki"(16104005)*** is approved for the partial fulfillment of the requirenment for the award of the degree of ***Bachelor of Engineering*** in ***Information Technology*** from ***University of Mumbai***.

(Ms. Nahid Shaikh)
Co-Guide

(Dr.Uttam D. Kolekar)
Guide

(Mr. Kiran Deshpande)
Head Department of Information Technology

Place:A.P.Shah Institute of Technology, Thane
Date:

CERTIFICATE

This is to certify that the project entitled ***"Chatbot For Efficient Resource Allocation And Management"*** submitted by ***"Manasi Ghadge" (16104019),"Anuja Dhumale" (16104034),"Gitika Daki" (16104005)*** for the partial fulfillment of the requirement for award of a degree ***Bachelor of Engineering*** in ***Information Technolgy***,to the University of Mumbai,is a bonafide work carried out during academic year 2019-2020.

(Ms. Nahid Shaikh)
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(Dr.Uttam D. Kolekar)
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Principal

External Examiner(s)

1.

2.

Place:A.P.Shah Institute of Technology, Thane
Date:

Declaration

We declare that this written submission represents our ideas in our own words and where others' ideas or words have been included, We have adequately cited and referenced the original sources. We also declare that We have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in our submission. We understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources which have thus not been properly cited or from whom proper permission has not been taken when needed.

_____

(Manasi Ghadge(16104019))

_____

(Anuja Dhumale(16104034))

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(Gitika Daki(16104005))

Date:

Abstract

Chat-agents commonly known as the chatbots have gained immense attention from multiple fields. It is basically the participants' queries and the responses received. Here in this report we have discussed about having a chatbot in educational institution. When considering an institution regardless, whether it is a school or university it is consequential that the students are edified in a congruous environment.This generalizes that the infrastructure should fascinate every requisite as cardinal or required by the students or the faculty in that environment. Present day process implies that all the work is done manually and is bound to wreak mistakes. In order to minimize the mistakes it is predictable to have a computer availed web-predicted system that will invigilate the infrastructure allotment taking these factors into consideration. The system will thereby contribute in reducing the manual efforts taken by the time-table coordinator and also the time taken for the process. We aim at providing a system that will be effective for institutions, so that henceforth rather than doing the work manually, the system will be made use of.

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Chapter 1

Introduction

Chatbot for Efficient Allocation and management of laboratories is a system that is being developed to minimize the workload on the staff that is responsible for generating or preparing the allotment of infrastructure taking into account the heterogeneous factors that are essential for the respective system. Basically the chatbot acts is the agent designed to have an intelligent conversation in response to the user queries.
Here the based chatbot will act as a mediator between the user and the system. The chatbot will receive queries from the user and will respond to the particular queries in return. This system will make the process of infrastructure allotment easier and thereby reduce the manual work. The requirements that are taken into consideration include the following:

Hardware Requirements : Hardware requirement will be the first and foremost requirement. Processors as well as RAM capacity of individual PC's contribute alot to requirement gathering from user. So hardware factors must be checked in advanced.

Software Requirements : Software requirement is the second requirement that must be taken into consideration.The labs wherein the sessions will be conducted must satisfy the most crucial requirement, that is the software required for the lab session to be conducted. In the case of dynamic changes it is tough to find or locate the lab which has the same software on the computer systems.

Student Capacity : Even if the located lab fulfills the criteria of appropriate software and hardware it is essential that the number of students that the lab can accommodate must also be checked. It is difficult to manage if the number of students are more. The timetable coordinator has to try out a number or permutations and combinations to generate a scheduled timetable. It fixates on the efficient timetable manually.

Timeslot : The system will also be considering the timeslots for which users or faculties want to allot a particular lab. Based on the system proposed it is regarded that it can be eectively used by colleges and schools:

Schools : Just like in colleges where the proposed system can be acclimated to allot the labs when necessary, it can also be used in schools. In schools the system can be made use of for allotting the classrooms instead of labs. Here only in place of the lab requisites the subject requisites shall be specified.

Colleges : In colleges the system can be used for the lab allotment process. Not only when generating the timetable but also when, in the case of dynamic changes in the schedule or timely change. The system can be optimally used in the educational organizations with the primary aim of reducing the manual efforts taken by the faculty members.

Chapter 2

Literature Review

The papers referred are as mentioned below:

1. **Automatic timetable generator Saritha M,Pranav Kiran Vaze,Pradeep, Mahesh N R International Journal of Advanced Research in Computer Science and Software Engineering, Volume 7, Issue 5, May 2017,ISSN: 2277 128X.**
   -The author has implemented an Automatic Timetable Generator software that is utilized for the Purpose of generating timetable automatically. The software is based on JavaFX. The author has made use of a Genetic Algorithm for the implementation of the Automatic Timetable Generator. In here the Timetable scheduler aims At Developing a software for the college to manage the timetable formation. Also it is implemented for the purpose of minimizing the errors that are encountered when the entire process is done manually.
   It is meant to be The comprehensive timetable management solution. The system focuses on resource optimization. Here the factors that are accounted while displaying the output are as follows: Input Interface, Database Capabilities and Processing Capabilities and lastly the System architecture respectively. The implemented system is able to solve the 'Lecture-course timetabling problem'.
   Also the constraints that the system is able to satisfy or ful

   ll are: the time slots for any subjects do not overlap each other, there is minimum one hour gap between the lectures of one faculty, the timeslots of the faculty are not repeated.

2. **Timetable generation and Leave management system Shashikala K,Shruthi C R,Vinutha N,Roopalakshmi S SSN (Online) 2394-2320 International Journal of Engineering Research in Computer Science and Engineering(IJERCSE) Vol5.**
   The author has designed a Timetable Generation and Leave Management system. Here the timetable generator manages the generation of timetable automatically whereas the leave management system handles the leave application of the faculty members. In this system the admin will have to log in to the system and the faculty details will be entered into the system prior, depending upon this data the system will generate the

timetable accordingly.
The leave management system here is integrated with the timetable generation system and thereby manages the leave applications of the faculty members in the institution respectively. In the leave management system, cancellation of the leave option is also available making it easier for the faculty to make any required changes without undergoing a specific procedure. Also it makes use of a scheduling algorithm.
This system has aimed on developing a practical approach for the construction of lecture-course timetabling system. In the system the authorized users are only given access. The administrator is the chief user. Only the administrator has the right to access to the database and alter or make changes in the existing infrastructure. The system has a friendly user interface so that the users are able to use the system in an effective manner.

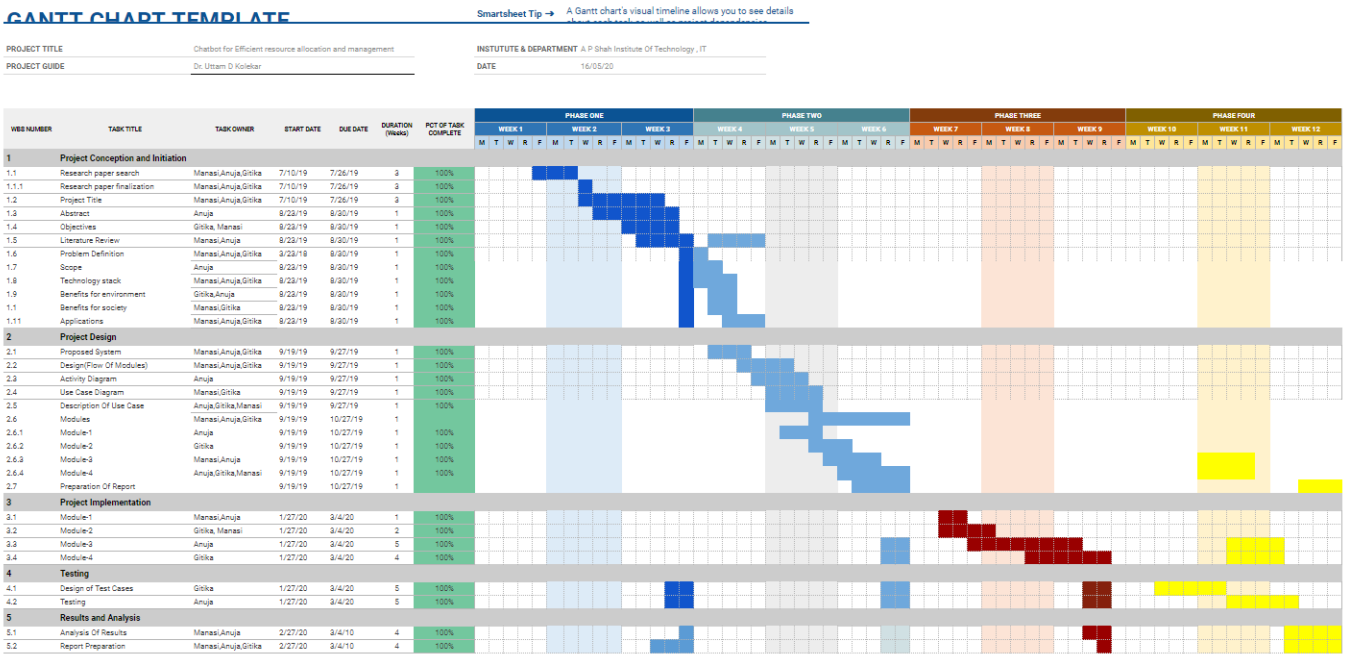
3. **Automatic and effective allocation for examination seats Neelkanth Sharma, Abhishek Mahale,Ashwini Andhale,Yogesh Joshi International Journal of Engineering Research and Management (IJERM) Volume 3 Issue 5- May 2017.**
The author has implemented an Automatic and Effective Allocation for Examination Seats using Android Application. In this system the admin will receive a document which comprises of the student exam number and the subject name by the university. To check about the block number that is assigned to them, the students as well as the faculty must login to the system.
They will have unique id's for the login purpose. The allocation will be done taking into account factors such as: number of the students, size of the block, and the paper code respectively. The students will thereby be allotted into a classroom depending on their strength. Faculty members will also be assigned specific classrooms.
The allocation of faculty members will be done randomly on the basis of their department. The system will notify the students and staff regarding the classrooms that have been allotted to them. The allocation of the students and the faculty members is done using an algorithm called as Parsing algorithm. It is an Android based application. The system can further be used for future implementations as well.

4. **Timetable Generator Albert Chai MengFatt , ChaiWeeKee , Lee Cheeheong PuahSuet Ni, Alvis Yeo Kok Yong, Mark Yeo Soon Hock, and Edmond C Prakash School of Computer Engineering Nanyang Technological University Singapore - 639 798**
The Software Engineering Approach Timetable Generator system is being imple mented by the author. In here the prime objective of the author was to implement an online application. This system allows the user to generate a timetable of his/her choice according to the choices available, that best suits the user.
The main purpose of the system is giving users the exibility to choose the timetable as per their preferences. This is the major change from the other systems that are available or being implemented. For the purpose of implementation a commercial CASE tool along with a UML notation.
The step-by-step analysis, implementation and design are done with the help of the above techniques. The management of the database is done online by the administra-

tors. The software specifications considered are: The initial design specifications, First refinement of design specification, the potential list, DFD that is used for the timetable generator, a use case diagram and last but not the least the class diagram. The author has made use of the prototype model for the implementation of this system.
Since the algorithm suits best with the uncertainty of the algorithm implementation in regard to the subject combinations. The further stage after the detailed design implementation is the final implementation, testing of the prototype, quality analysis of the developed system and lastly the deployment.

5. **Review of integrated applications with AIML based chatbot Md. Shahriare Satu, Md.Hasnat Parvez, Shamim-AL-Mamun 1st International Conference on Computer Information Engineering, 26-27 November,2015.**
The author has implemented a chatbot with the help of ML. In comparison to the other systems this system has been implemented with a different approach. This system was easy to use as a user friendly GUI was utilized for the designing of the interface. The system can be used very effciently and effectively in case of the small scale implementations.
Here the prime factor that made the system more effective is the use of AIML algorithms for the implementation.The system can handle some integrated applications as well. Although the system has a great implementation on the smaller applications, it faces a problem when implementing for larger applications or complex Applications.
Further changes or restructuring of the system can be done in order to enhance the features and overcome the shortcomings in the existing architecture respectively. The implementation of the existing Architecture is done wherever necessary in the real world.

Gantt Chart:



GANTT CHART TEMPLATE

Smartsheet Tip → A Gantt chart's visual timeline allows you to see details

PROJECT TITLE: Chatbot for Efficient resource allocation and management
PROJECT GUIDE: Dr. Uttam D Kolekar
INSTITUTE & DEPARTMENT: A P Shah Institute Of Technology , IT
DATE: 16/05/20

WBS NUMBER	TASK TITLE	TASK OWNER	START DATE	DUE DATE	DURATION (Weeks)	PCT OF TASK COMPLETE
1	**Project Conception and Initiation**					
1.1	Research paper search	Manasi,Anuja,Gitika	7/10/19	7/26/19	3	100%
1.1.1	Research paper finalization	Manasi,Anuja,Gitika	7/10/19	7/26/19	3	100%
1.2	Project Title	Manasi,Anuja,Gitika	7/10/19	7/26/19	3	100%
1.3	Abstract	Anuja	8/23/19	8/30/19	1	100%
1.4	Objectives	Gitika, Manasi	8/23/19	8/30/19	1	100%
1.5	Literature Review	Manasi,Anuja	8/23/19	8/30/19	1	100%
1.6	Problem Definition	Manasi,Anuja,Gitika	3/23/18	8/30/19	1	100%
1.7	Scope	Anuja	8/23/19	8/30/19	1	100%
1.8	Technology stack	Manasi,Anuja,Gitika	8/23/19	8/30/19	1	100%
1.9	Benefits for environment	Gitika,Anuja	8/23/19	8/30/19	1	100%
1.1	Benefits for society	Manasi,Gitika	8/23/19	8/30/19	1	100%
1.11	Applications	Manasi,Anuja,Gitika	8/23/19	8/30/19	1	100%
2	**Project Design**					
2.1	Proposed System	Manasi,Anuja,Gitika	9/19/19	9/27/19	1	100%
2.2	Design(Flow Of Modules)	Manasi,Anuja,Gitika	9/19/19	9/27/19	1	100%
2.3	Activity Diagram	Anuja	9/19/19	9/27/19	1	100%
2.4	Use Case Diagram	Manasi,Gitika	9/19/19	9/27/19	1	100%
2.5	Description Of Use Case	Anuja,Gitika,Manasi	9/19/19	9/27/19	1	100%
2.6	Modules	Manasi,Anuja,Gitika	9/19/19	10/27/19	1	
2.6.1	Module-1	Anuja	9/19/19	10/27/19	1	100%
2.6.2	Module-2	Gitika	9/19/19	10/27/19	1	100%
2.6.3	Module-3	Manasi,Anuja	9/19/19	10/27/19	1	100%
2.6.4	Module-4	Anuja,Gitika,Manasi	9/19/19	10/27/19	1	100%
2.7	Preparation Of Report		9/19/19	10/27/19	1	
3	**Project Implementation**					
3.1	Module-1	Manasi,Anuja	1/27/20	3/4/20	1	100%
3.2	Module-2	Gitika, Manasi	1/27/20	3/4/20	2	100%
3.3	Module-3	Anuja	1/27/20	3/4/20	5	100%
3.4	Module-4	Gitika	1/27/20	3/4/20	4	100%
4	**Testing**					
4.1	Design of Test Cases	Gitika	1/27/20	3/4/20	5	100%
4.2	Testing	Anuja	1/27/20	3/4/20	5	100%
5	**Results and Analysis**					
5.1	Analysis Of Results	Manasi,Anuja	2/27/20	3/4/10	4	100%
5.2	Report Preparation	Manasi,Anuja,Gitika	2/27/20	3/4/10	4	100%

PHASE ONE: WEEK 1, WEEK 2, WEEK 3
PHASE TWO: WEEK 4, WEEK 5, WEEK 6
PHASE THREE: WEEK 7, WEEK 8, WEEK 9
PHASE FOUR: WEEK 10, WEEK 11, WEEK 12

Figure 2.1: Gantt Chart

Chapter 3

Project Design

3.1 System Architecture

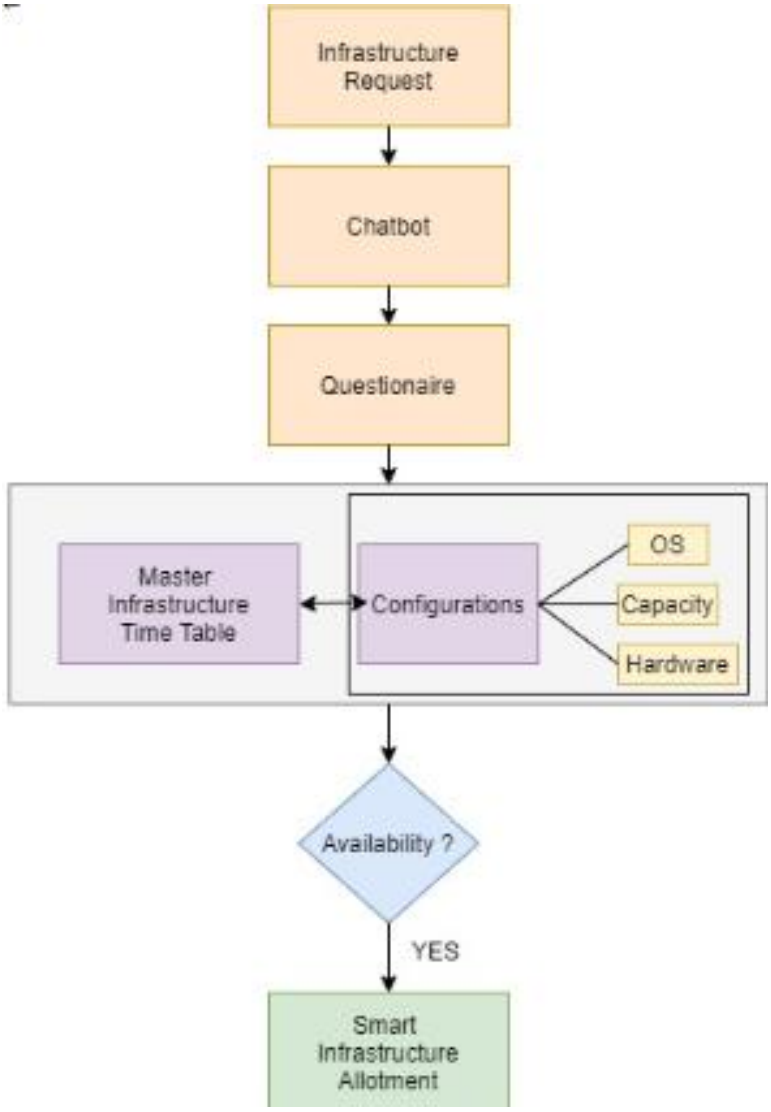


Figure 3.1: Proposed System

In proposed system all the work that is done manually in the existing architecture will be done with the help of application. The time required by the timetable coordinator will be reduced and it will also simplify the complex task. The proposed system architecture can be used in all the colleges so that the allotting process of the labs is done with the help of this architecture and not manually. The manual process is a hectic process and also in case of any subtle changes it becomes difficult for the timetable coordinator to manage the changes. In the proposed system, the master timetable will be provided as an input to the application and based on that the questionnaire will be conducted in the chatbot. The specific requirements are taken care of, such as: OS,student capacity, Software requisites, and others.Then the chatbot will then provide options based on the data that is fed prior in the database. It is the users call as to which alternative he has to choose.

The proposed system will merge with other specific components when the implementation comes into the picture. On the basis of the current architecture the new system will be implemented or designed in such a way that the application is able to satisfy all the user requirements in an efficient manner. The comparison of the existing system with the new system architecture is made so that the shortcomings of the existing architecture covercomes in the new implemented structure. The chatbot will be able to do the following:

1) Each user will have a login of its own. This enables that the users have their own space and they can ask their queries accordingly.

2) The admin will be able to see all the conversation in his account. Here as per the bookings made by the users the admin will be able to export the bookings into the database.

3) Also if a particular session is booked the booking for that particular session will be stricken off.

Questionaaire asked by chatbot:

1. What are your hardware requirements?
2. What are your software requirements?
3. What lab capacity do you need?
4. On which date do you need the lab?
5. For what time slot do you need the lab?

3.2 UML Diagrams

3.2.1 Activity Diagram

User Activity Diagram:

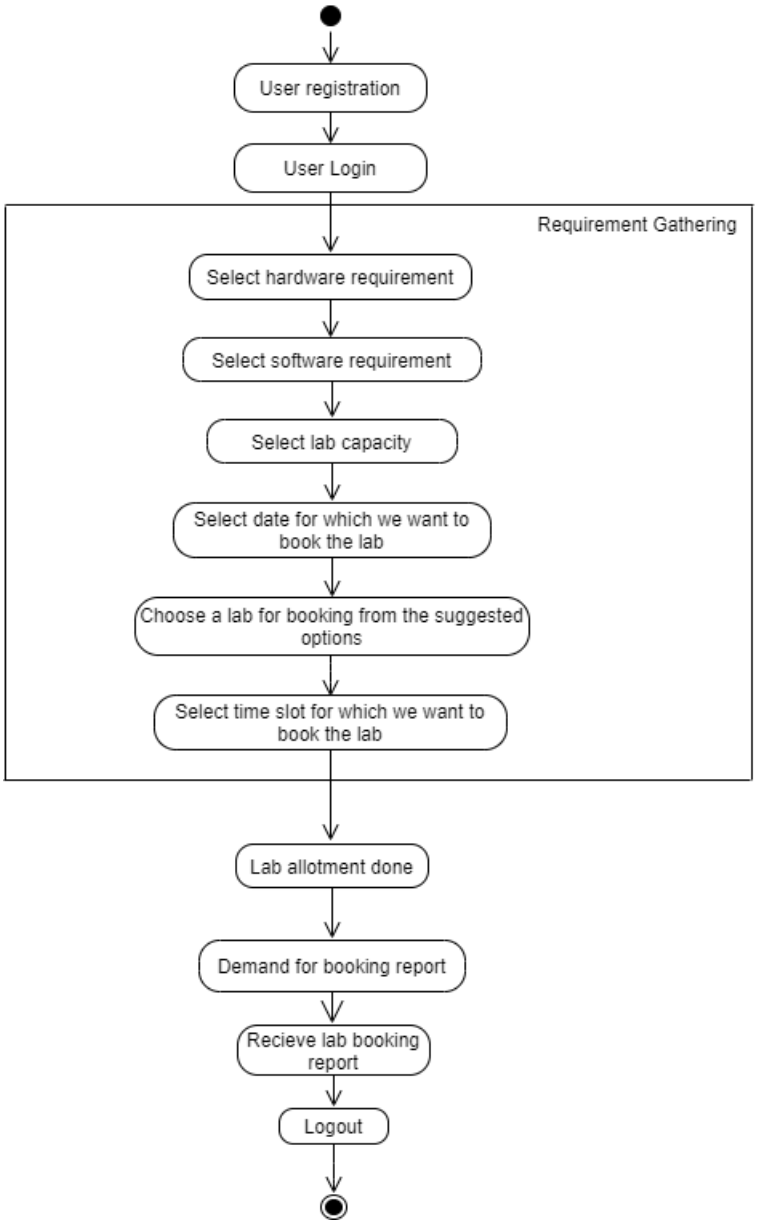


Figure 3.2: User Activity Diagram

The above figure illustrates the flow of the process as in how the whole procedure progresses.Starting from the Registration phase where the new user has to register himself by entering the username and valid password.Once the registration process is done,the user then has to login with the same credentials.Here each user will have a separate space of their own.

Further, the user is now ready to interact with the chatbot.As per the user requirements

the chatbot will allocate a suitable allotment also taking into consideration the availability.Finally once the allotment is done a successful message is delivered by the chatbot to the user.The user can now logout from the system.

Admin Activity Diagram:

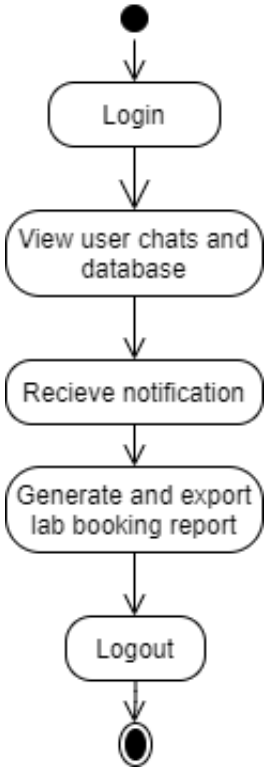


Figure 3.3: Admin Activity Diagram

3.2.2 Use Case Diagram

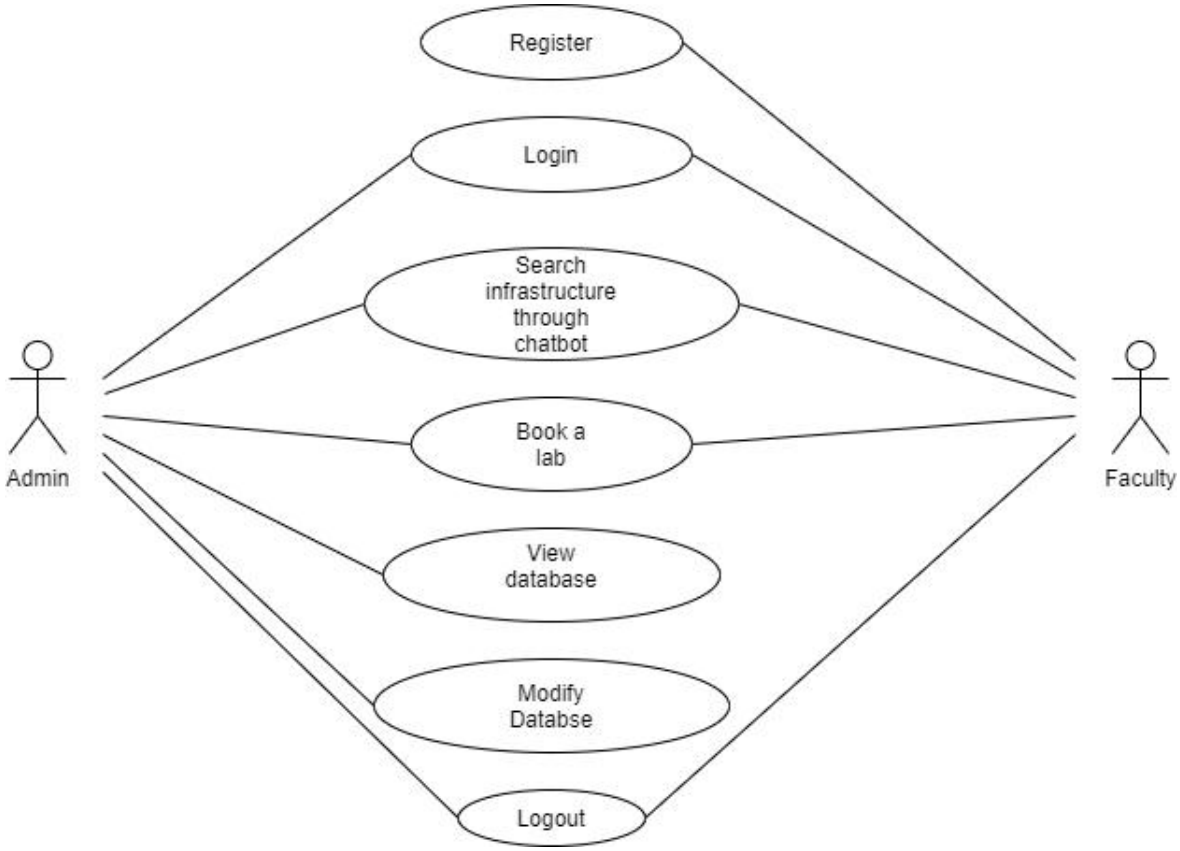


Figure 3.4: Use Case Diagram

The Use Case diagram describes in brief the functioning between the faculty booking a particular slot and the admin monitoring and managing the changes.Here the registration and the login process will be same as mentioned above in the activity diagram.Also the allotment of particular lab will happen in the same fashion.After this the admin comes into picture.Once the slot is booked the admin will have to export the changes in the database.This modification is necessary as the particular slot will not be further available for booking.

3.2.3 Class Diagram

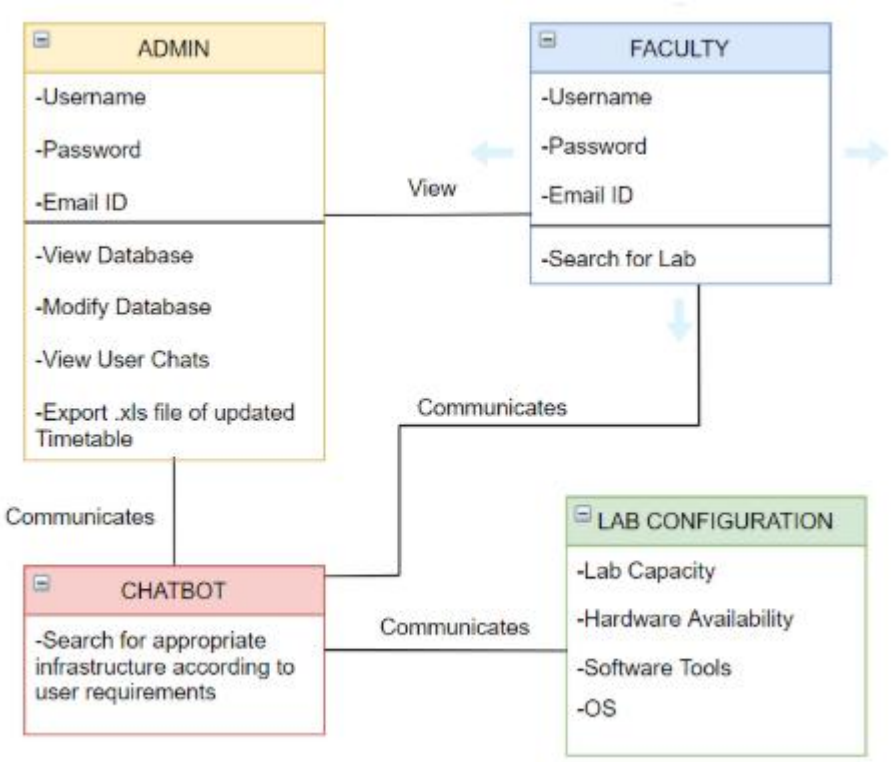


Figure 3.5: Class Diagram

A class diagram shows the relationship between the attributes and operations of all classes in the system.In our system, we have four main classes like Admin,Faculty,Chatbot and Lab configuration.Here Admin,Faculty and Chatbot are interconnected with each other.Chatbot class is further connected with Lab configuration class to find the appropriate labs according to user requirement.

3.2.4 Sequence Diagram

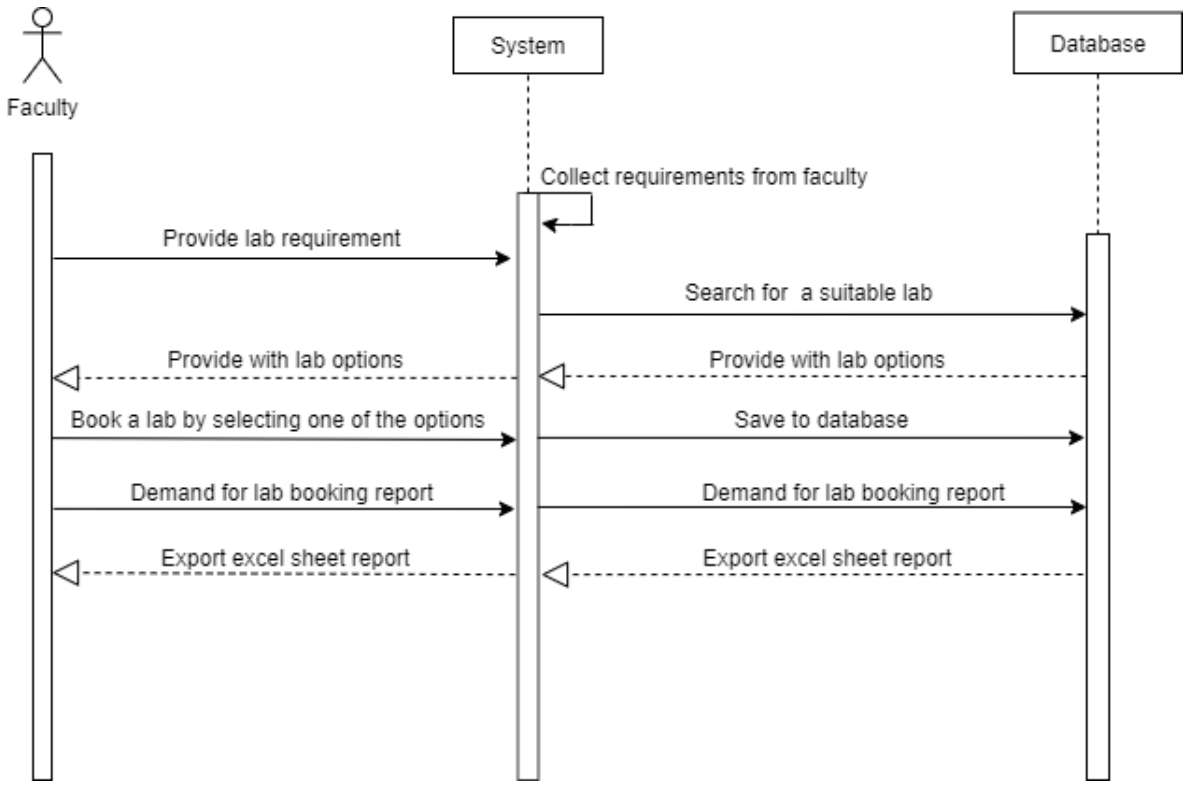


Figure 3.6: Sequence Diagram

Chapter 4

Project implementation

4.1 Code Snippets

```php
<?php
SESSION_START();
include('header.php');
$loginError = '';
if (!empty($_POST['username']) && !empty($_POST['pwd'])) {
	include ('Chat.php');
	$chat = new Chat();
	$user = $chat->loginUsers($_POST['username'], $_POST['pwd']);
	/*echo '<pre>';
	print_r($user);
	exit;*/
	if(!empty($user)) {
		$_SESSION['username'] = $user[0]['username'];
		$_SESSION['userid'] = $user[0]['userid'];
		$_SESSION['is_admin'] = $user[0]['is_admin'];
		$chat->updateUserOnline($user[0]['userid'], 1);
		$lastInsertId = $chat->insertUserLoginDetails($user[0]['userid']);
		$_SESSION['login_details_id'] = $lastInsertId;
		if($_SESSION['is_admin']==false){

			$questions = $chat->get_questions();
			/*echo '<pre>';
			print_r($questions);exit();*/
			//exit;
			/*echo '<pre>';
			echo $chatMessage;
			//echo $result->hardware;
			print_r(json_decode($result,true));
			exit;*/
			/*$questions = file_get_contents('questions.php');
			echo '<pre>';
			print_r($questions);exit;*/
			header("Location:user_index.php");
		}else{

			header("Location:index.php");
		}
	} else {
		$loginError = "Invalid username or password!";
	}
}
?>
```

Figure 4.1: Login page

```
</header>
<section>
    <div id="container_demo" >
        <!--<a class="hiddenanchor" id="toregister"></a>-->
        <a class="hiddenanchor" id="tologin"></a>
        <div id="wrapper">
            <div id="login" class="animate form">
                <form  method="post" autocomplete="on">
                    <h1>Log in</h1>
                                                <?php if ($loginError ) { ?>
                                                        <div class="alert alert-warning"><?php echo $loginError; ?></div>
                                                <?php } ?>
                    <p>
                        <label for="username" class="uname" data-icon="u" > Your username </label>
                        <input id="username" name="username" required="required" type="text" placeholder="myusername"/>
                    </p>
                    <p>
                        <label for="password" class="youpasswd" data-icon="p"> Your password </label>
                        <input id="pwd" name="pwd" required="required" type="password" placeholder="eg. X8df!90EO" />
                    </p>

                    <p class="login button">
                        <input type="submit" value="Login" />
                                                </p>
                                                <p class="change_link">
                                                        Not a member ?
                                                        <a href="register.php" class="to_register"> Go and Register</a>
                                                </p>
                </form>
```

Figure 4.2: User interaction

```
function getavailableLabs($level){
        $select = '';
        if($level=='hardware'){
                $select = 'hardware';
        }
        if($level=='software'){
                $select = 'software';
        }

        if($level=='capacity'){
                $select = 'capacity';
        }

        if($level=='labs'){
                $select = 'lab_no';
        }

        $sql = 'Select distinct '.$select.' from labs where is_active=true';
        if(isset($_SESSION['hardware'])){
                $sql.=' and hardware like "'.$_SESSION['hardware'].'"';
        }

        if(isset($_SESSION['software'])){
                $sql.=' and software like "'.$_SESSION['software'].'"';
        }

        if(isset($_SESSION['capacity'])){
                $sql.=' and capacity="'.$_SESSION['capacity'].'"';
        }
        //echo $sql;
        $labs = mysqli_query($this->dbConnect, $sql);
        $data= array();
        //echo '<pre>';
        while ($row = $labs -> fetch_array(MYSQLI_ASSOC)) {
                //print_r($row);
                $data[]=($level=='labs')?$row['lab_no']:$row[$level];
        }
        return $data;
}
```

Figure 4.3: Database code

Here system will fetch lab according to mentioned requirements.

4.2 GUI designs

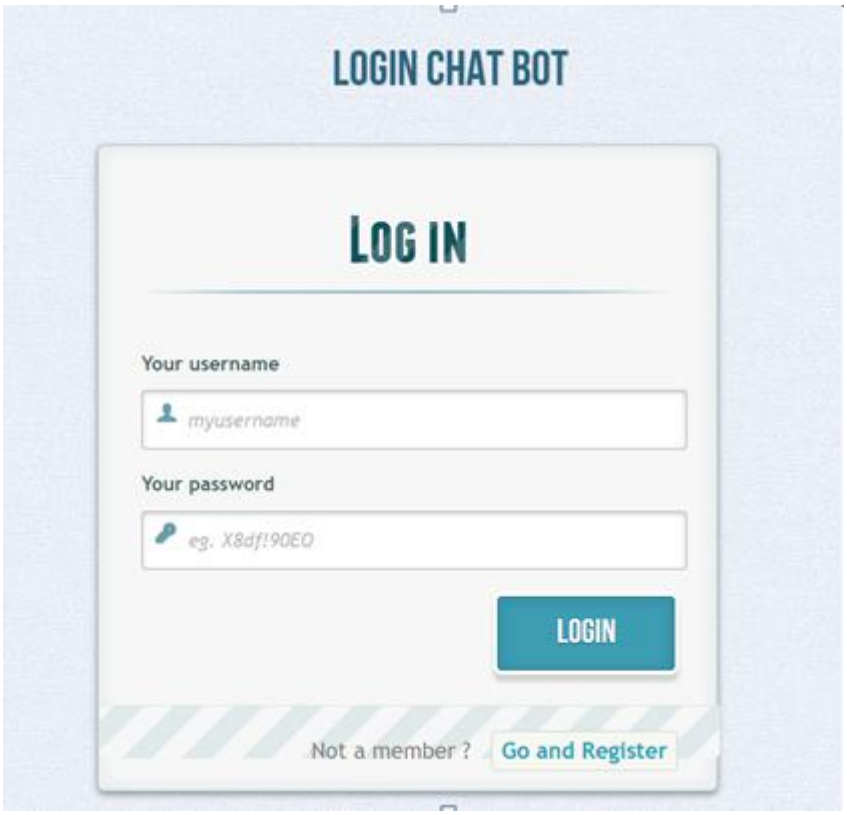


Figure 4.4: Login page for users

Admin or faculty logins into the system through this page.

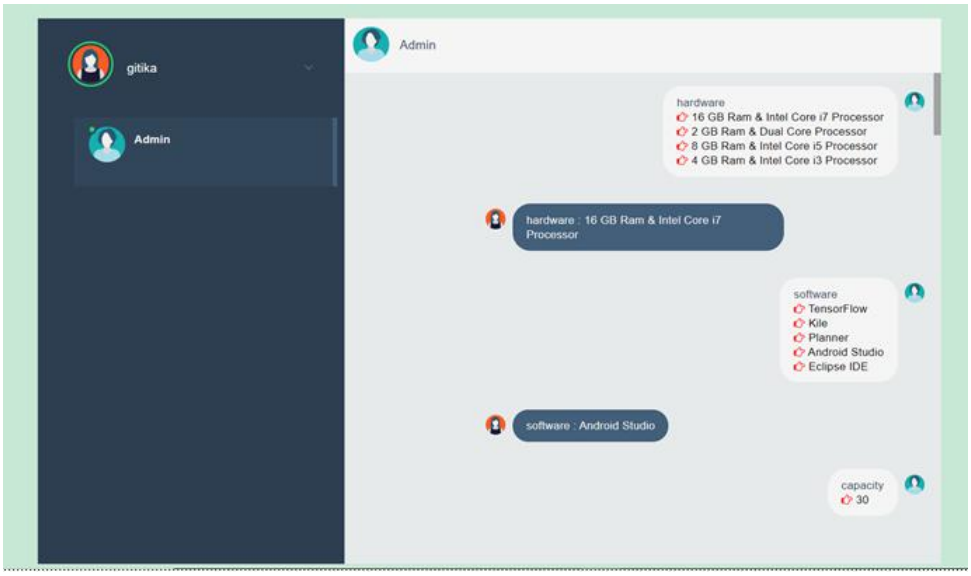


Figure 4.5: Chatbot interaction with user(part 1)

Users starts interacting with the system through chatbot.Chatbot performs questionnaire to ask lab requirements from users.

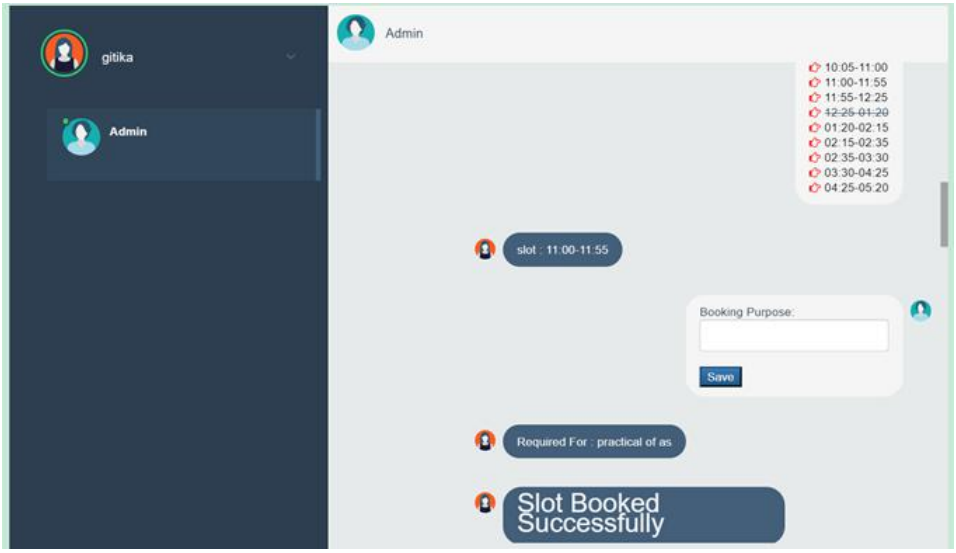


Figure 4.6: Chatbot interaction with user(part 2)

Chatbot asks for various requirements like Software,Hardware,Timeslot,etc

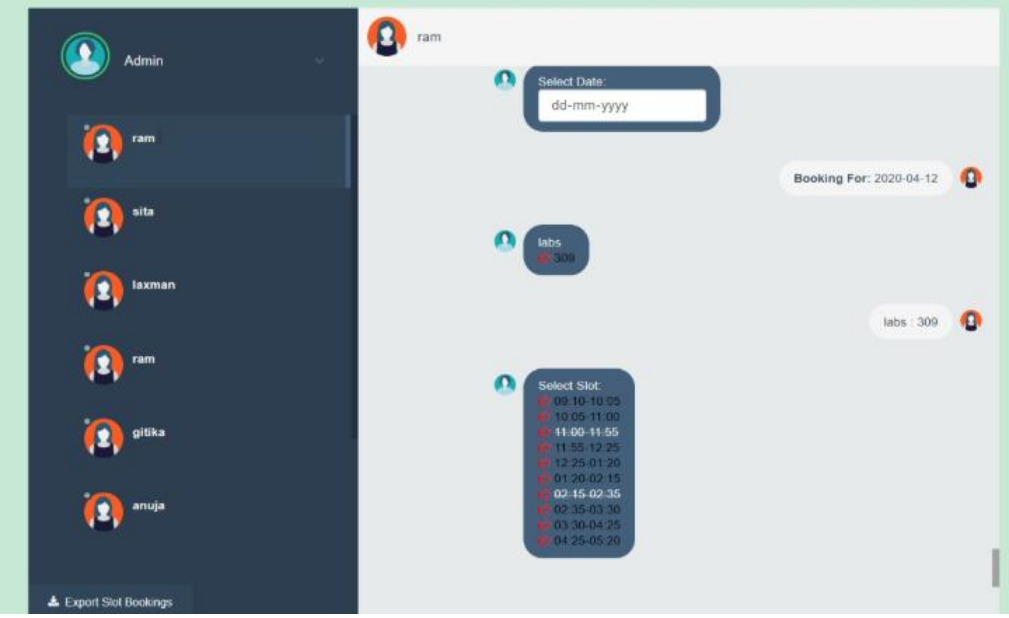


Figure 4.7: Admin interaction with the system

Admin can view the user chats and can check which slots or labs are booked.Admin can also create a report of allocated labs by exporting and excel file.

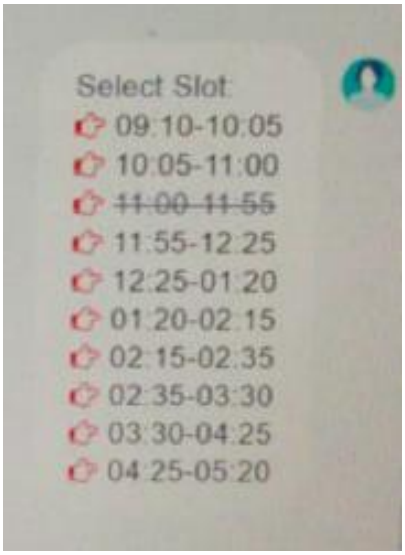


Figure 4.8: Booked slots are automatically striken off

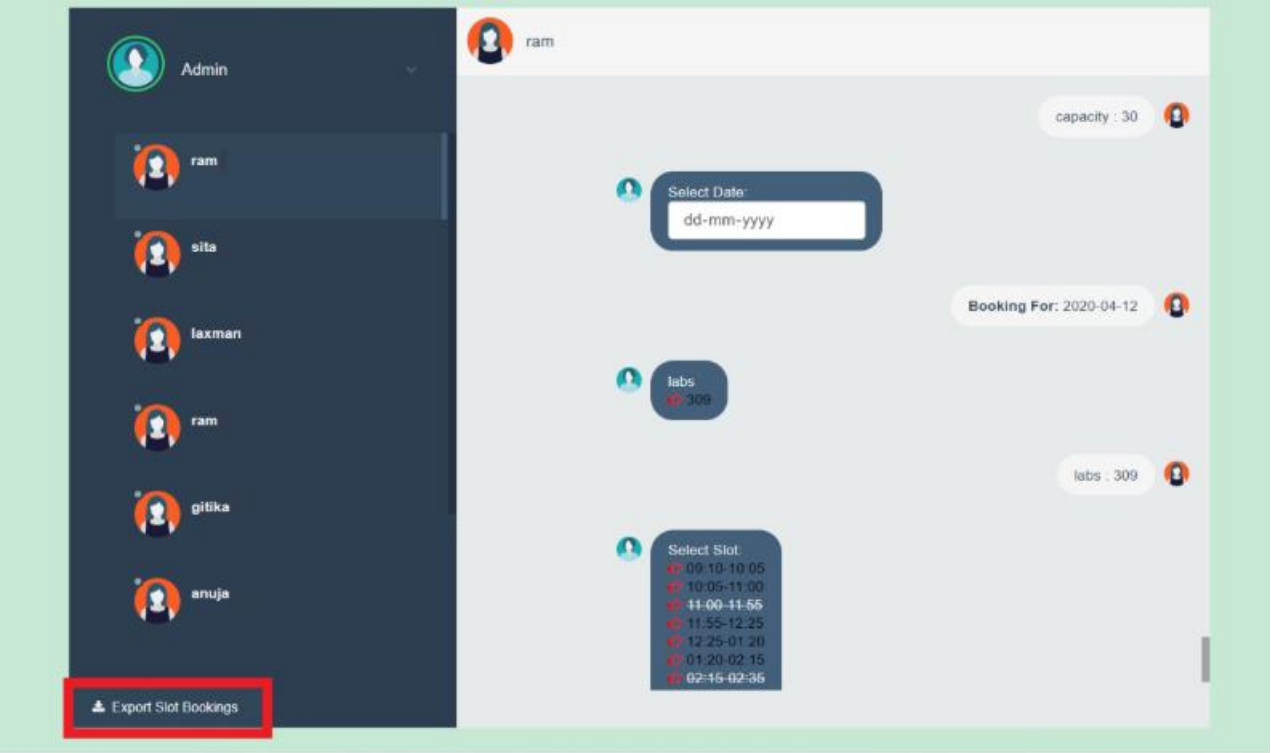


Figure 4.9: Slot bookings report exported by Admin

	A	B	C	D	E	F	G	H	I	J	K	L	M
1													
2	Date	Day	Lab no	09:10-10:0	10:05-11:0	11:00-11:5	11:55-12:2	12:25-01:2	01:20-02:1	02:15-02:3	02:35-03:3	03:30-04:2	04:25-05:20
3	31-12-2019	Tuesday	301									MPL(SF)	
4	31-12-2019	Tuesday	302		SC(PD)			BI(AM) B1				BE APTITUDE CIVIL	
5	31-12-2019	Tuesday	303									BE IT APTITUDE	
6	31-12-2019	Tuesday	308		STQA(SS)			SNL(PD) B2				APTITUDE CIVIL	
7	31-12-2019	Tuesday	309	SPA(8.40-1	SPA(1.10-3	SPA(10.50-12.40)B1						SPA(3.00-4.50)D3	
8	31-12-2019	Tuesday	313			DBRIS (11.20- 1.10) B2						PL(AA) B2	
9	31-12-2019	Tuesday	317		AIP(NS)			CSDL B3			AIP(NS)	NL(KD) B3	
10	31-12-2019	Tuesday	405	MECH PBL				PL(AA)				SPA(3.00-4.50)F	
11	31-12-2019	Tuesday	408	FE CAD(8.40-10.30)					FE CAD(1.10-3.00)				
12	31-12-2019	Tuesday	409						FEA (TE-B3)(1.40-3.30)A2			FEA (TE-B2)	
13	31-12-2019	Tuesday	410					TE-EXTC			BE-EXTC		
14	01-01-2020	Wednesda	301	SPA(8.40-10.30)F1				SDL(RC) B1					
15	01-01-2020	Wednesda	302	UL(ND) B3				BI(AM) B2			UL(ND) B1		
16	01-01-2020	Wednesda	303	PROJECT									
17	01-01-2020	Wednesda	308					SNL(PD) B3					
18	01-01-2020	Wednesda	309	PROJECT								SPA(3.00-4.50)C2	
19	01-01-2020	Wednesda	313	PL(AA) B1							PL(AA) B3		
20	01-01-2020	Wednesda	317		SPA(10.50-12.40)D1						NL(KD) B2		
21	01-01-2020	Wednesda	405			APTITUDE TEST(11.20-1.10)					SPA(3.00-4.50) A		
22	01-01-2020	Wednesda	408	FE CAD(8.40-10.30)		FE CAD(10.50-12.40)					FE CAD(3.00-4.25)		
23	01-01-2020	Wednesda	409	RES (BE-A4)		FEA (TE-B1)(11.20-1.10)			FEA (TE-B3)(1.40-3.30)A1			CSDL B1	
24	01-01-2020	Wednesda	410	BE-EXTC				TE-EXTC			APTITUDE	EXTC	
25	02-01-2020	Thursday	301						Mini Project				
26	02-01-2020	Thursday	302						Mini Project				
27	02-01-2020	Thursday	308					CSM(NS) B1				STQA(SS)	
28	02-01-2020	Thursday	309	SPA(8.40-10.30)A2		SPA(10.50-12.40)E3		SPA(1.10-3.00)D2				SPA(3.00-4.50)B2	
29	02-01-2020	Thursday	313					SNMR(GG) B3				MPL(SF) B3	

Figure 4.10: Slot bookings in excel sheet

Chapter 5

Testing

Results for Functional testing					
Test ID	Test Cases	Input	Expected Output	Actual Output	Result
1	Redirection of Pages	Click on any button	Should be redirected to the next page depending upon the action called	Gets redirected successfully	Passed
2	Proper data input	Enter incorrect data while logging	Should not login giving an error	User not registered	Passed
3	Proper collection of user requirements	User should provide lab requirements	System should ask for all requirements	Collects all requirements successfully	Passed
4	Appropriate lab fetching	User should wait for the system to fetch lab according to given requirements	Fetches suitable lab	able to fetch lab based on collected requirements	Passed
5	Book a slot as per user requirements	user should select the lab	Selected lab,slot is booked for particular user and is not available for other users	Books a selected slot and blocks it for other users	Passed
6	Exporting excel sheet report	User should click on "Export excel sheet report" button	Excel sheet report of booked slots is generated	successfully generates report	Passed

Table 5.1: Functional Testing

Results for Database testing					
Test ID	Test Cases	Input	Expected Output	Actual Output	Result
1	Correct login with credentials	Enter correct login credentials	Successful Login	Login Successful	Passed
2	Incorrect login credentials	Enter incorrect login credentials	Unsuccessful Login	Login Unsuccessful	Passed
3	Reflect booked slots into database	User should book a lab for required slot	Slot gets booked and entry is reflected into database	Entry of booked slot is successfully reflected into database	Passed

Table 5.2: Database Testing

Chapter 6

Conclusion and Future Scope

6.1 Conclusion

Chatbot for efficient resource allocation and management not only curbs the problem of manual labour but also evades the inconsistencies that are present in the existing system. Our system considers academic requirements of the user such as hardware, software, capacity and provides suitable option for infrastructure allotment. It also has a provisioning of slot reservation for further activities to avoid hustle in regular academic schedule.

6.2 Future Scope

In future, we can scale it by booking infrastructure not only for labs but also for lectures.Another functionality, we can add is notifying the concerned faculty after they book a lab.

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