

ACKNOWLEDGEMENT

I would like to thank my parents who have supported me throughout this work.

I express my sincere indebtedness towards our guide Bharti Solanki, Jabalpur Engineering College, Jabalpur(M.P) for his invaluable guidance, and sincere regards for his kind approval of the project, time to time counseling and advices.

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I am grateful to entire team of CMC Academy who gave me the first industrial exposure and were kind enough to be co-operative throughout my work period.

Udit Raikwar

0201IT131086

DECLARATION

I hereby declare that the project entitled: " **Timetable Table Generation System**" carried out at CMC Acedamy, Jabalpur which is being submitted as Industrial Training Project of 5th semester in Information Technology to JABALPUR ENGINEERING COLLEGE, JABALPUR(M.P) is an authentic record of my genuine work.

Date:

Place: Jabalpur

GOVERNMENT ENGINEERING COLLEGE



BONAFIDE CERTIFICATE

This is to certify that the project report entitled “**TIME TABLE GENERATION SYSTEM**” submitted by “**Udit Raikwar**” in partial fulfillment of the requirements for the award of the **Degree Bachelor of Engineering** in **INFORMATION TECHNOLOGY**. Engineering is a bonafide record of the work carried out under my guidance and supervision at Jabalpur Engineering College, Madhya Pradesh.

INTERNAL

EXTERNAL

SIGNATURE

SIGNATURE

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Development of Timetable Generation

Project Title :-

Development of Time Table generation system for a college.

Problem Statement :-

A college timetable is a temporal arrangement of a set of lectures and classrooms in which all given constraints are satisfied. Creating such timetables manually is complex and time-consuming process. By automating this process with computer assisted timetable generator can save a lot of precious time of administrators who are involved in creating and managing course timetables. Since every college has its own timetabling problem, the commercially available software packages may not suit the need of every college. Hence we have developed practical approach for building lecture course timetabling system, which can be customized to fit to any colleges timetabling problem.

This project introduces a practical timetabling algorithm capable of taking care of both strong and weak constraints effectively, used in an automated timetabling system. So that each teacher and student can view their timetable once they are finalized for a given semester but they can't edit them. The workload on all teachers should be uniform. The teacher who is assigned with the subject having practical must be engaged with the lab slot during practical session i.e. he should not be engaged with other slots while the practical session is going on.

Requirements Specification (RS)

Following is a template for the RS document. Some example requirements are entered in to it to show how to use the template. Make sure that you enter even the smallest/most trivial requirements also. That would help in validating the system during testing.

<u>No.</u>	<u>Requirement</u>	<u>Essential or Desirable</u>	<u>Description of the Requirement</u>	<u>Remarks</u>
<u>RS1</u>	The system should have a login	Essential	A login box should appear when the system is invoked.	The logins are assigned by the mail-admin.
<u>RS2</u>	The system should lock the login id if wrong password is entered 3 times in a row	Optional	This feature will improve the robustness of the application.	Since this id is generated by college and do not have significance in real world therefore this feature is not essential.
<u>RS3</u>	The system should list the courses offered in the current semester	Essential	The list of courses offered in all the departments in the current semester should be available for the student to select from.	Admin Interface should be provided to update the list of courses.
<u>RS4</u>	The system should allow to edit the data of time table	Essential	This feature will help to update time table with new information.	Admin should be provided to maintain time table.
<u>RS5</u>	The system should have help screens	Essential	Help about the various features of the system should be provided in sufficient detail in a Q&A format.	The timetable policy should also be part of the help.

RS6	The system should inform teachers when there is modification in time table by a notification	Optional	This feature will help in maintaining correct and update information to everyone.	Since modification is informed on notice board so no need of email.
RS7	The system should automatically modify time table if holiday is there	Optional	This feature will generate accurate time table as per Indian Calendar.	Since India has so many public holidays therefore Principal will take decision.

Module :-

1. Time Table for Teacher.
2. Time Table for Student.
3. Maintain Time Table.
4. List of Public and National holidays.

Functionality :-

• Functionality of Module 1 :-

This module contains information about Teachers-

1. Teacher_id –

(i) - Contains 8 characters, each teacher will have unique, teacher_id. (Eg. TId_IT01)

(ii) - Id must be valid.

(iii) – Maximum trials for id login will be 3 times.

2. Name – First name and Last name. (Max word limit 25 char)

3. Subjects – Must have knowledge of at least 2 subjects.

4. Qualification – Must be graduated.
5. Experience – It will update yearly.
6. View Time Table for current session.

Day	Period 1	Period 2	Period 3	Period 4	Period 5
Monday	IT (3sem)	IT (1sem)	-----	IT (5sem)	-----
Tuesday	-----	IT (3sem)	IT (7sem)	-----	-----
Wednesday	IT (1sem)	-----	-----	IT (5sem)	IT (7sem)
Thursday	IT (3sem)	-----	IT (1sem)	-----	-----
Friday	-----	-----	-----	IT (7sem)	IT (5sem)

- **Functionality of Module 2 :-**

This module contains information about Students-

1. Student_id – Contains 8 characters, each student will have unique, student_id. (Eg. SId_IT010001)
2. Name – First name and Last name. (Max word limit 25 char)
3. Year/Sem – Session 1 (July - Dec), for odd semester.
Session 2 (Jan - May), for even semester.
4. View Time Table for current session.

Day	Period 1	Period 2	Period 3	Period 4	Period 5
Monday	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)
Tuesday	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)
Wednesday	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)
Thursday	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)

Friday	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)	Sub.name (faculty name)
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- **Functionality of Module 3 :-**

This module is for Admin, Admin is responsible for modification, edit and changes-

1. Decide current session – First or Second.
2. Select semester –

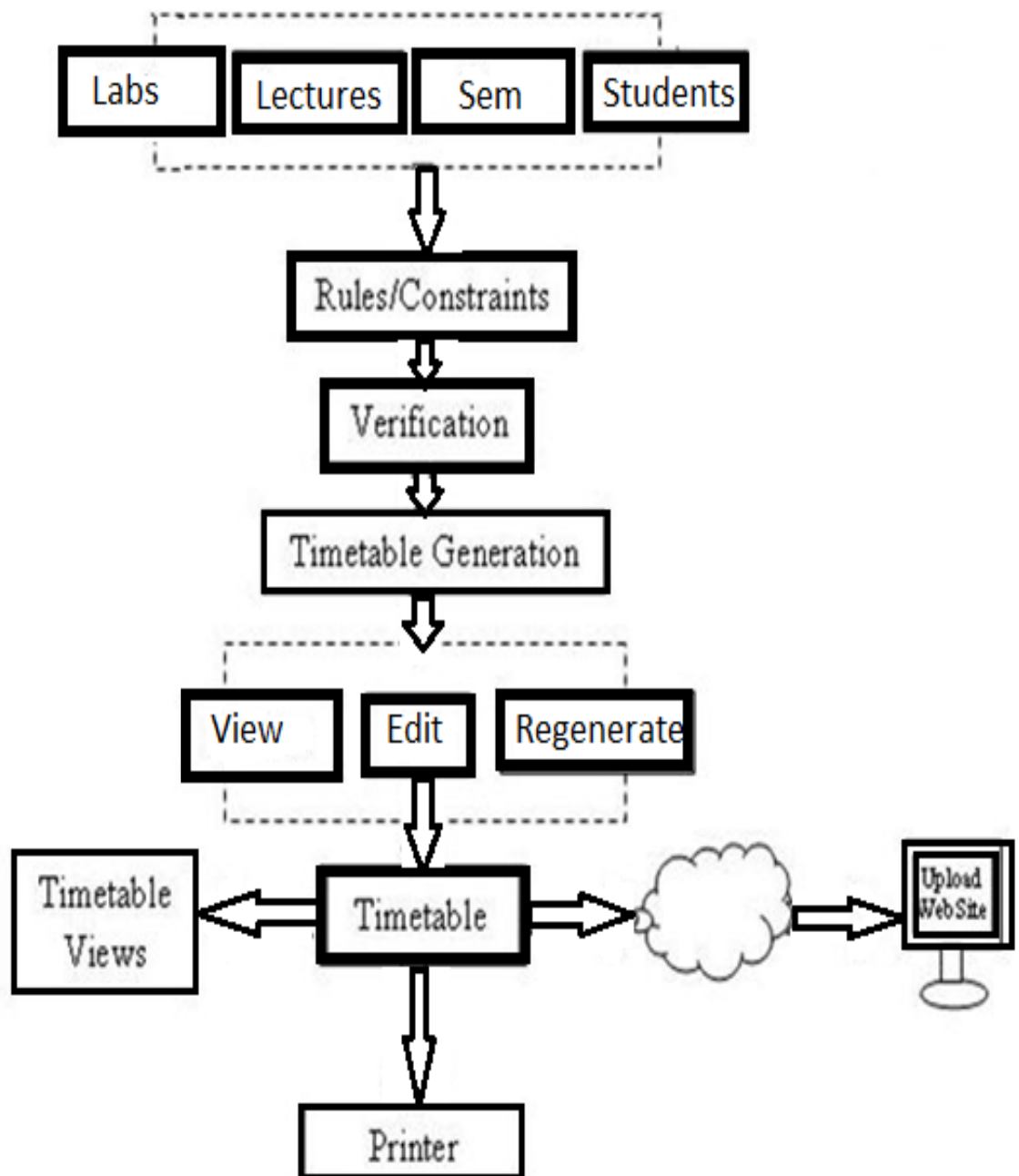
First Session	Second Session
• First semester	• Second semester
• Third semester	• Fourth semester
• Fifth semester	• Sixth semester
• Seventh semester	• Eight semester

3. (i) - Time Table for Teacher.
(ii) – Time Table for Student.
4. Modify/View –
 - (i) – Each class will be of duration 1 hour.
 - (ii) – Maximum 5 lectures a day.
 - (iii) – Teacher must have knowledge of 2 subjects.
 - (iv) – Maximum 3 lectures of any teacher a day.
5. Assign Teachers for each day (must satisfy above conditions).

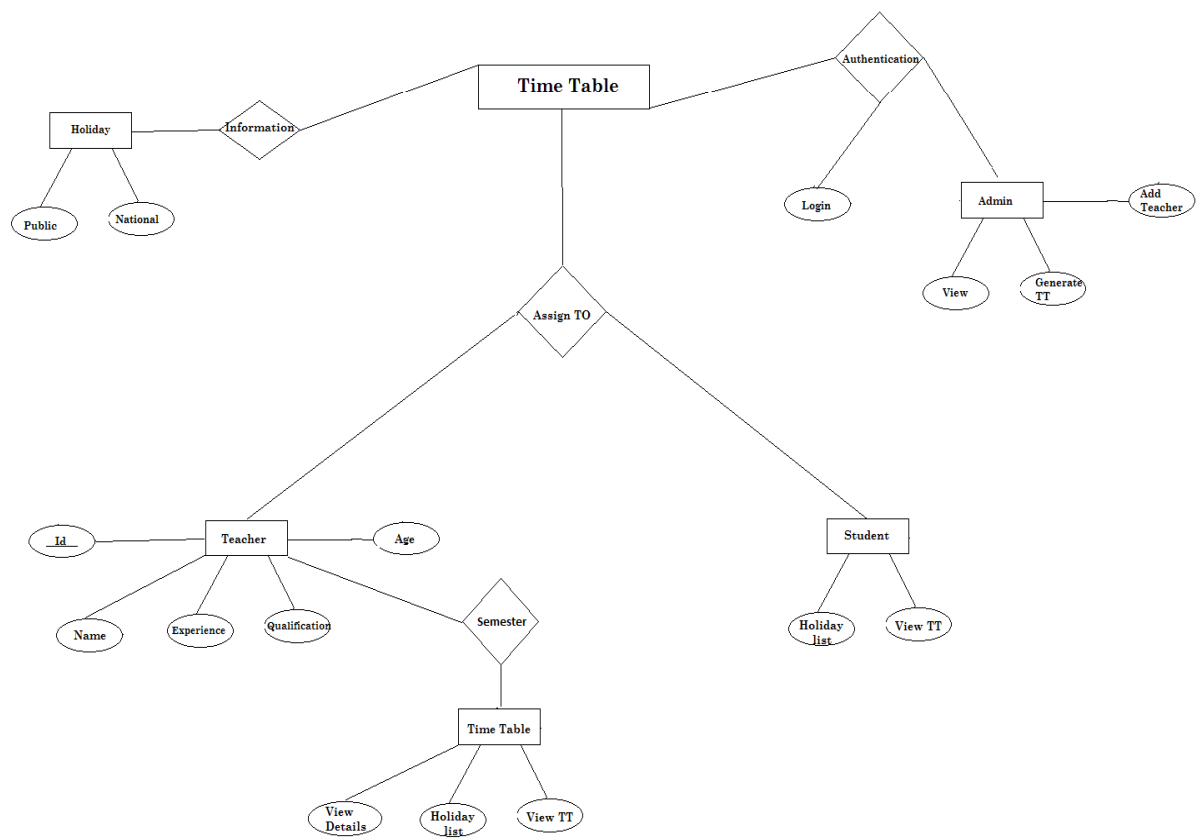
- **Functionality of Module 4 :-**

List of public and national holiday. India being a festive country contains so many holidays (public), so to maintain religious equality/respect we required to celebrate festival. Therefore admin should have a list of national and public holiday.

General view of Time Table Generation



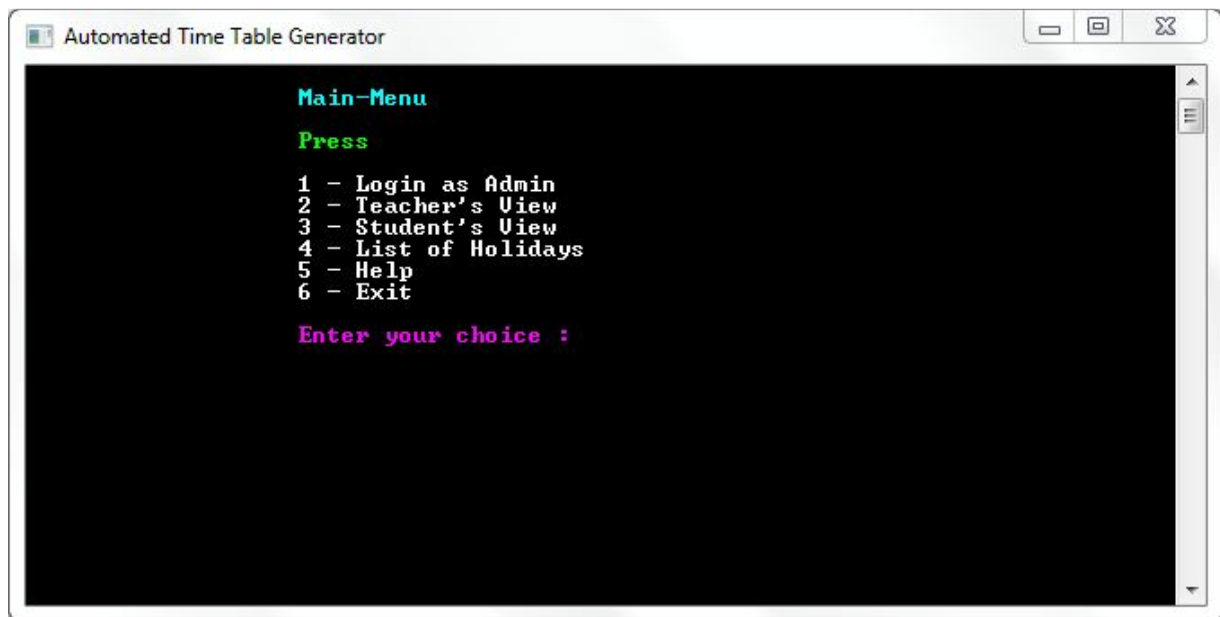
ER Diagram



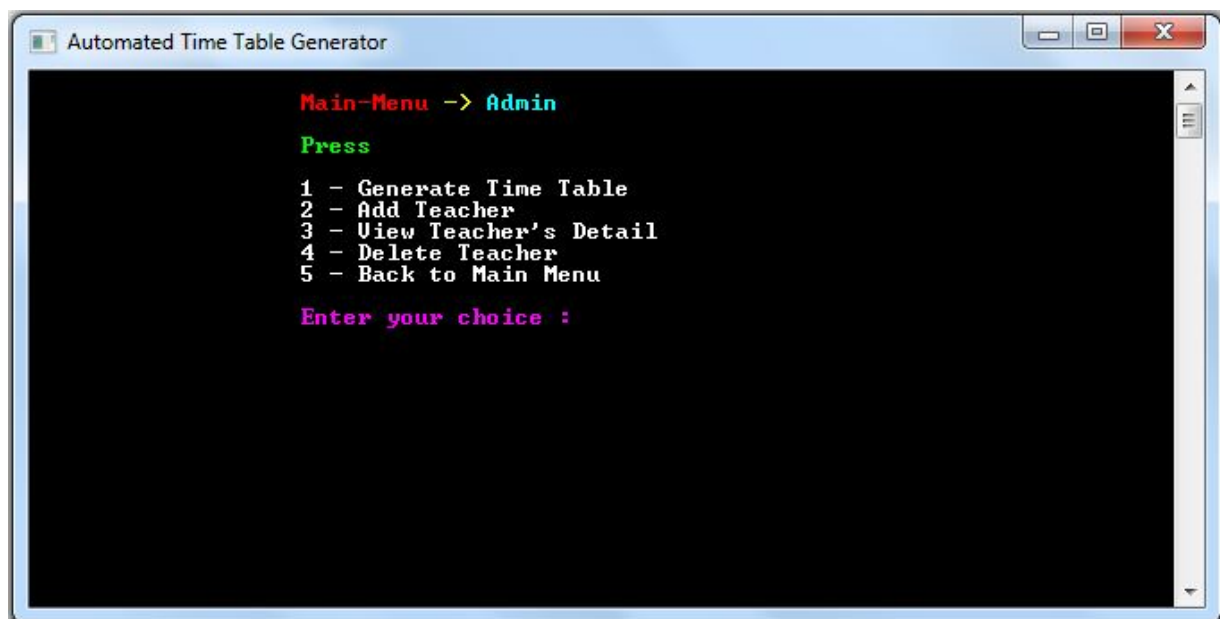
Screenshots :-

Here we have screenshots for all modules. This screenshot is the tentative view of automated time table generator program.

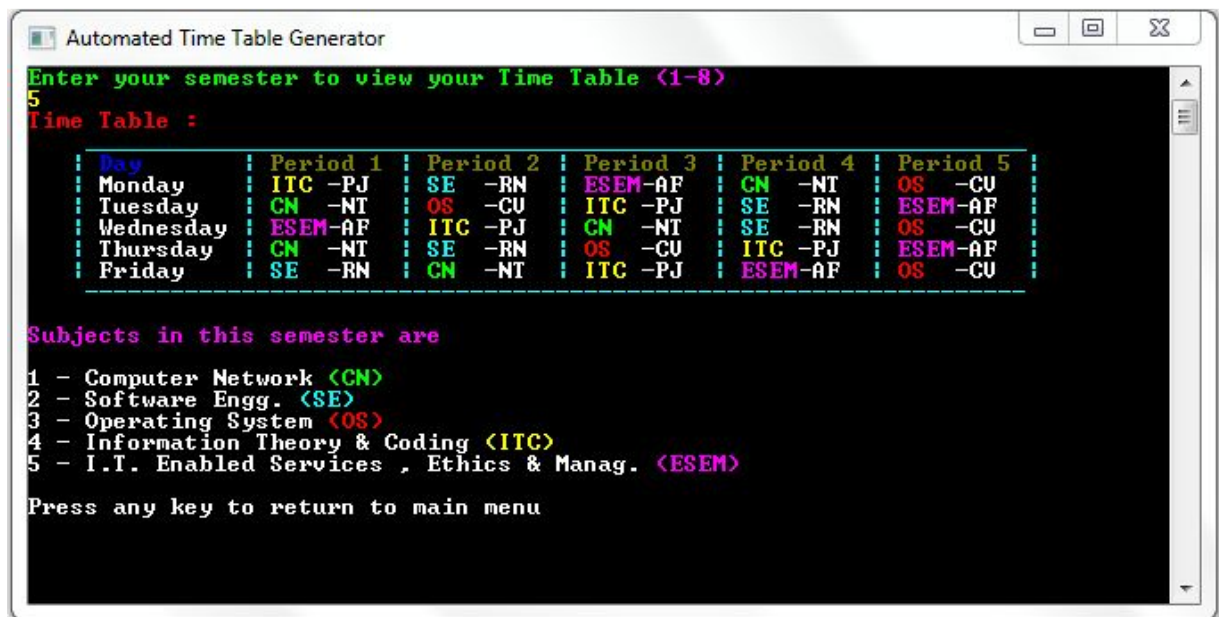
Main Menu view-



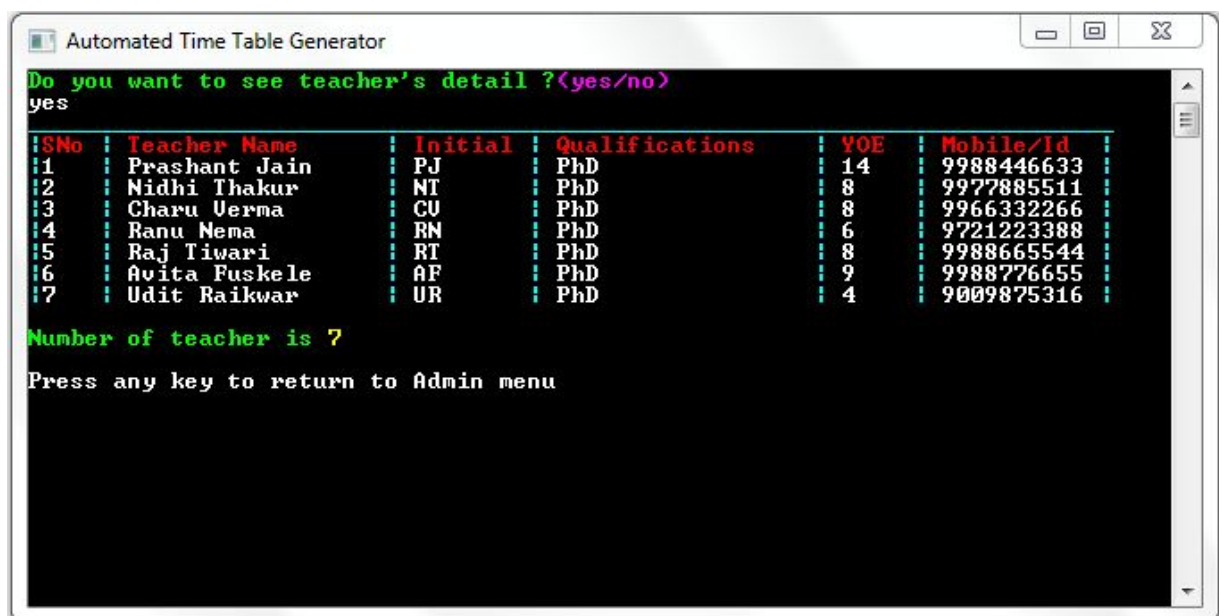
Admin view after entering correct password-



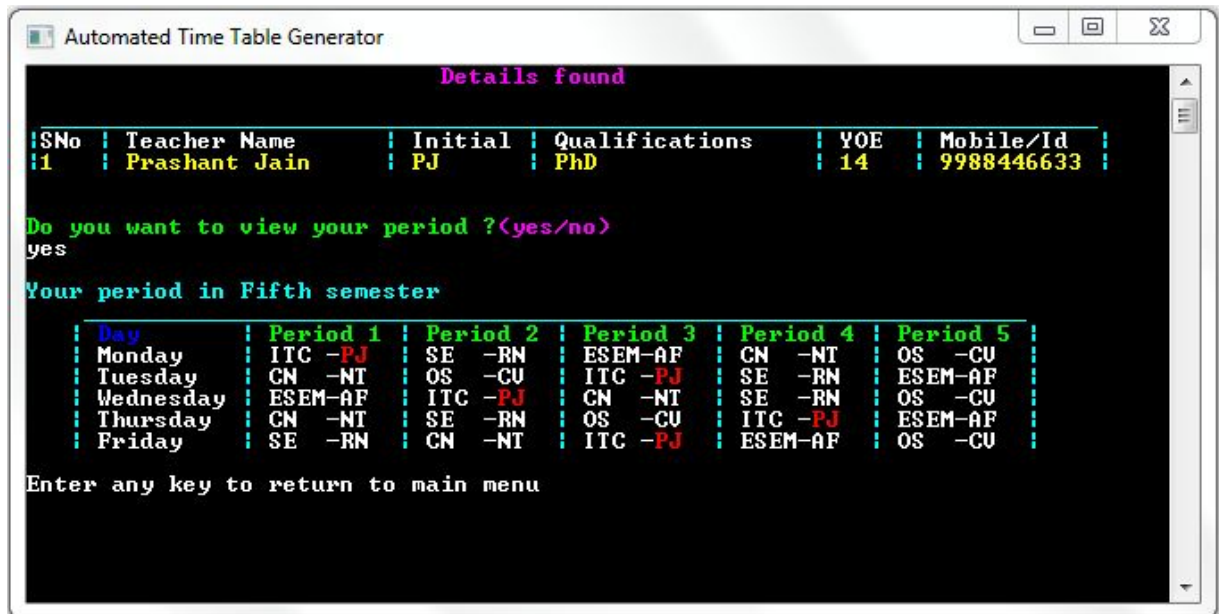
Student's view for Time Table -



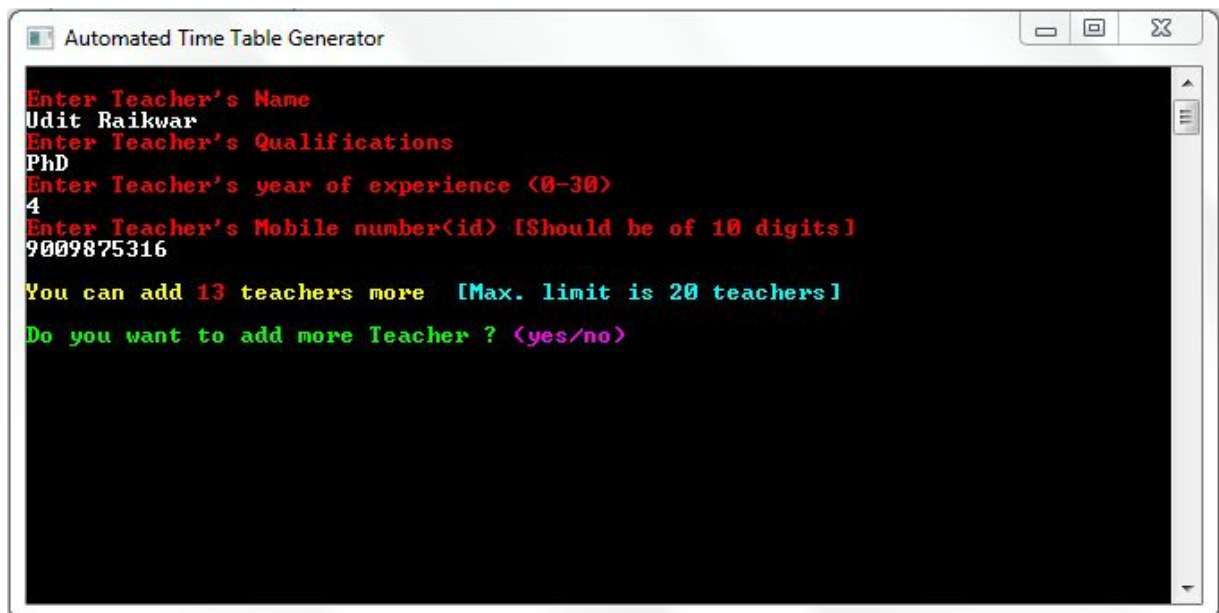
Teacher's details view -



Teacher's personal Time Table view -



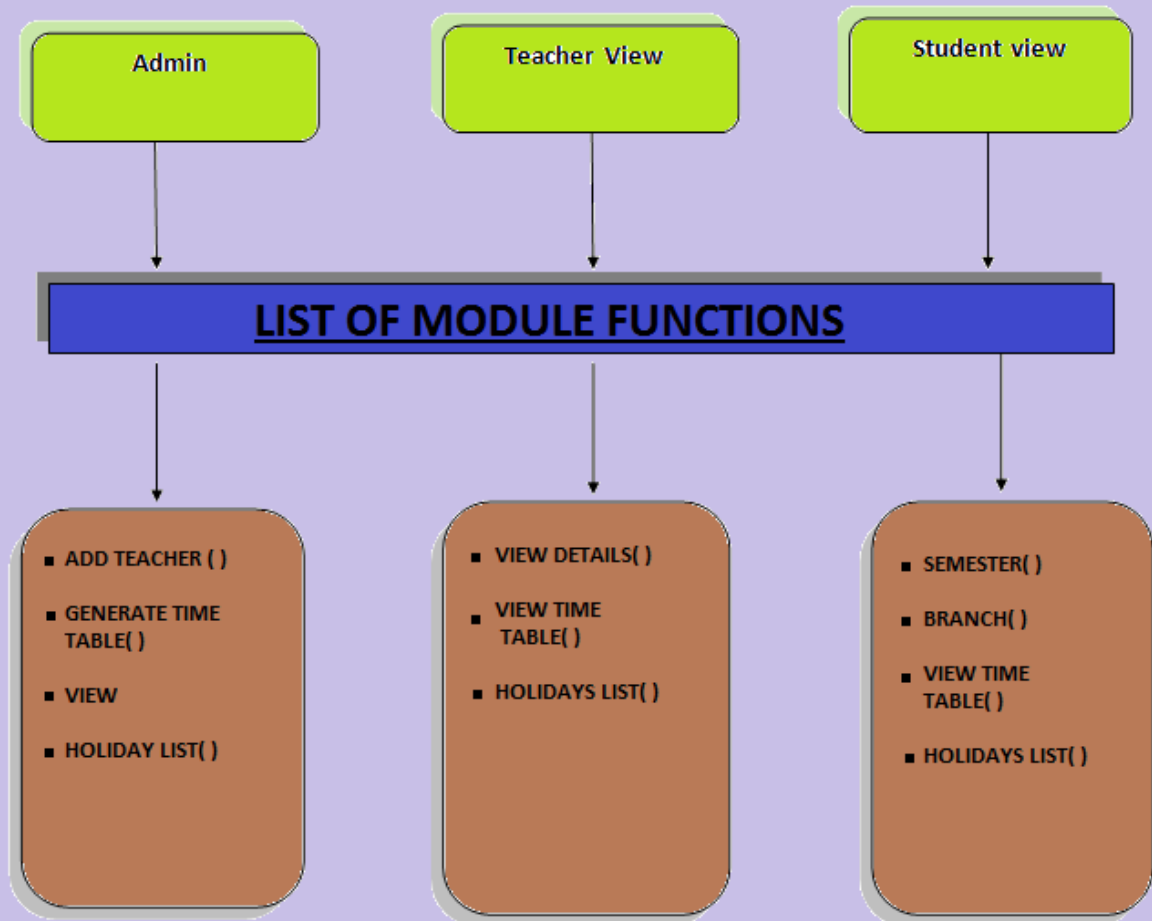
Adding Teacher -

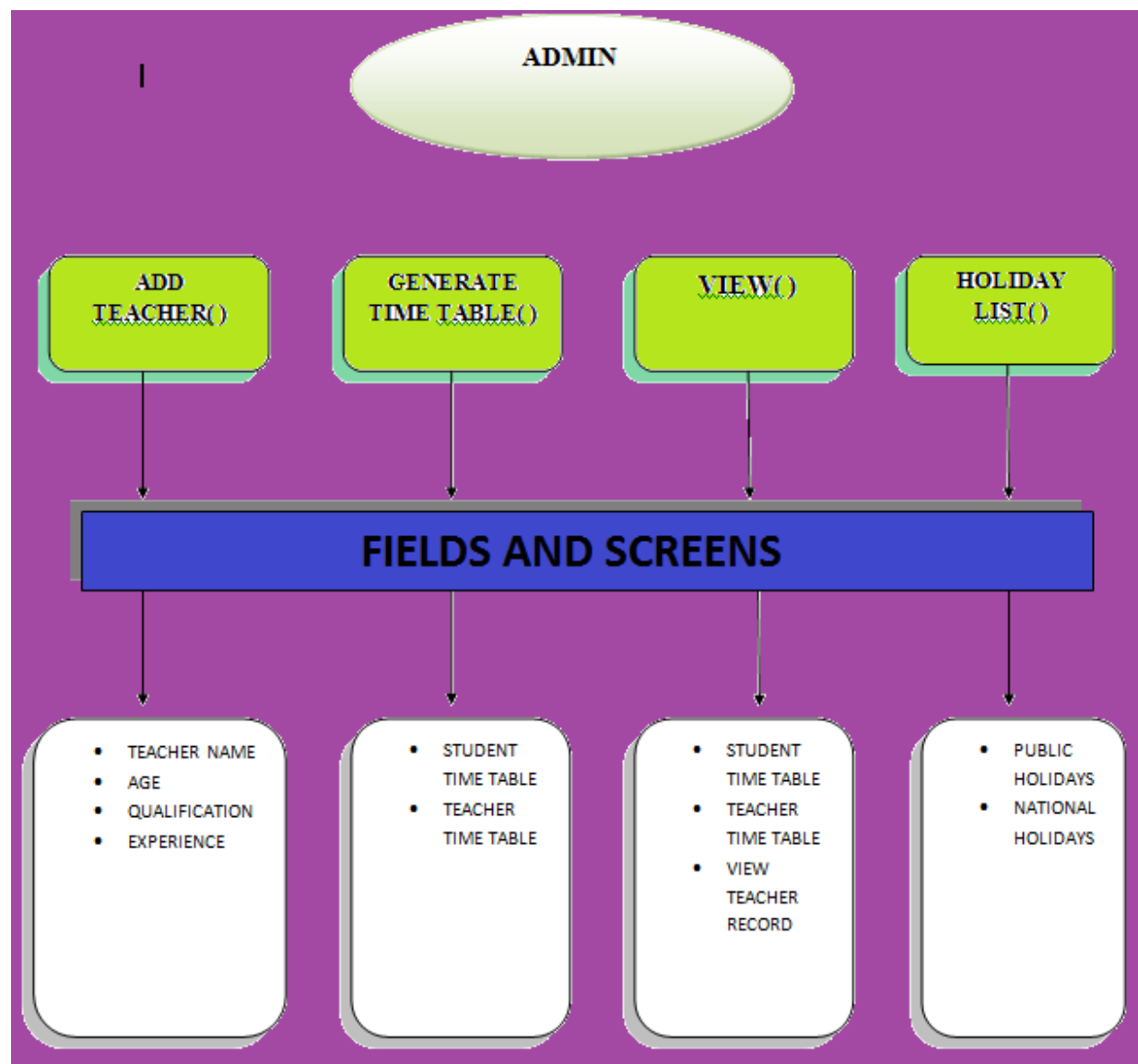


Holidays view -

```
Administrator: Automated Time Table Generator
National Holidays
Jan-26-Republic Day
Aug-15-Independence Day
Oct-2-Gandhi Jayanti
Public Holidays
January
14-MAKAR SANKRANTI
24-BASANT PANCHMI
February
3-RAUIDAS JAYANTI
17-MAHA SHIVRATRI
March
6-HOLI
10-RANGPANCHMI
21-GUDI PADWA
28-RAMNAUMI
April
2-MAHAVIR JAYANTI
3-GOOD FRIDAY
4-HANUMAN JAYANTI
14-DR.AMBEDKAR JAYANTI
21-PARSHURAM JAYANTI
May
4-BUDH PURNIMA
July
18-EID
August
29-RAKSHABANDHAN
September
5-JANMASHTMI
October
20-MAHASHIVRATRI
November
9-DHANTERAS
25-GURU NANAK JAYANTI
December
24-EID MILAD
Enter any key to return to main menu
```


HIGH LEVEL DESIGN





**TEACHER MAIN
MODULE**

**VIEW
RECORDS()**

**SEMESTER
SUBJECTS()**

**VIEW TIME
TABLE()**

**HOLIDAY
LIST()**

FIELDS AND SCREENS

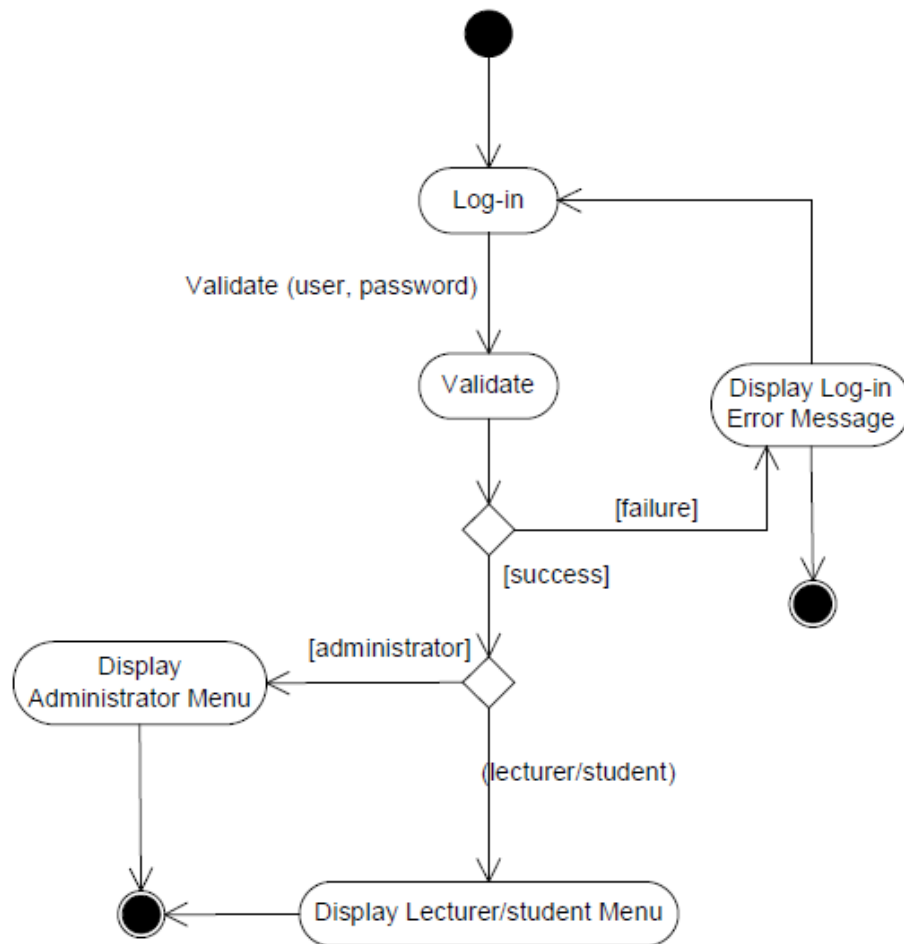
- NAME
- ID
- AGE
- EXPERIENCE
- QULIFICATION

- SEM 1
- SEM 2
- SEM 3
- SEM 4
- SEM 5
- SEM 6
- SEM 7
- SEM 8

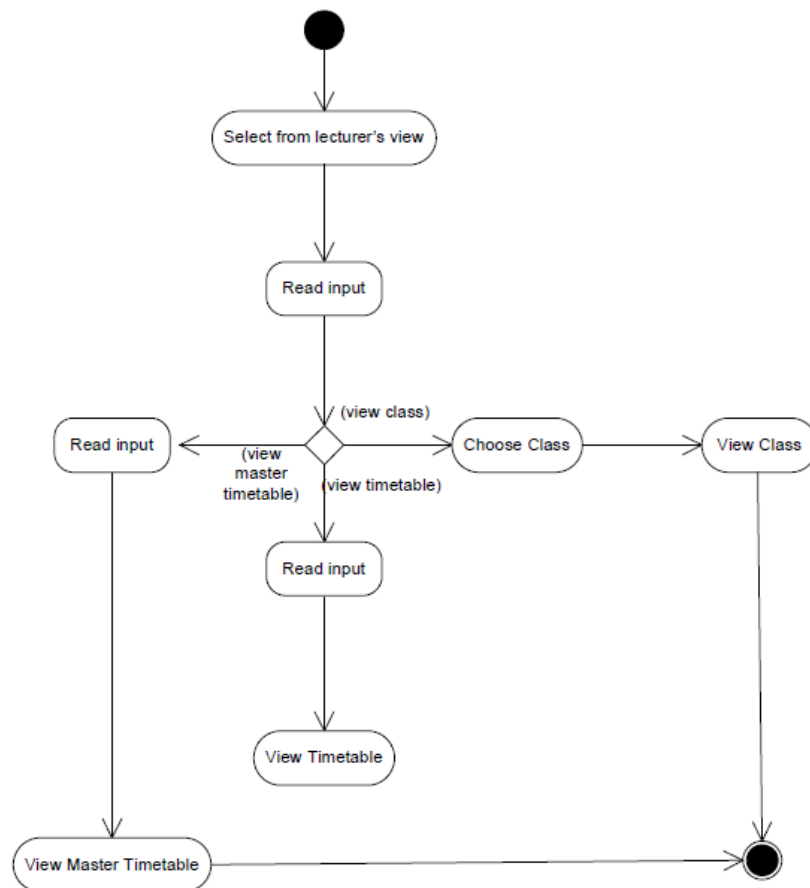
- SELECT DAY
MON
TUE
WED
THUR
FRI
- SELECT ALL

- MONTH
JAN
FEB
MAR
MAY
JUNE
JULY
AUG
SEP
OCT
NOV
DEC

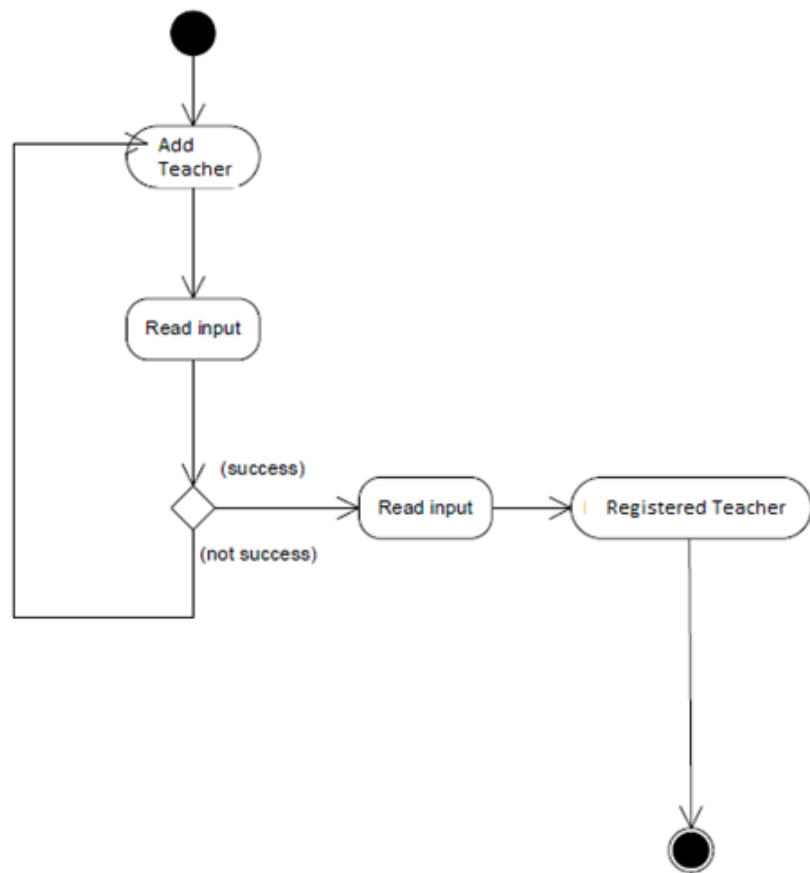
FLOWCHARTS



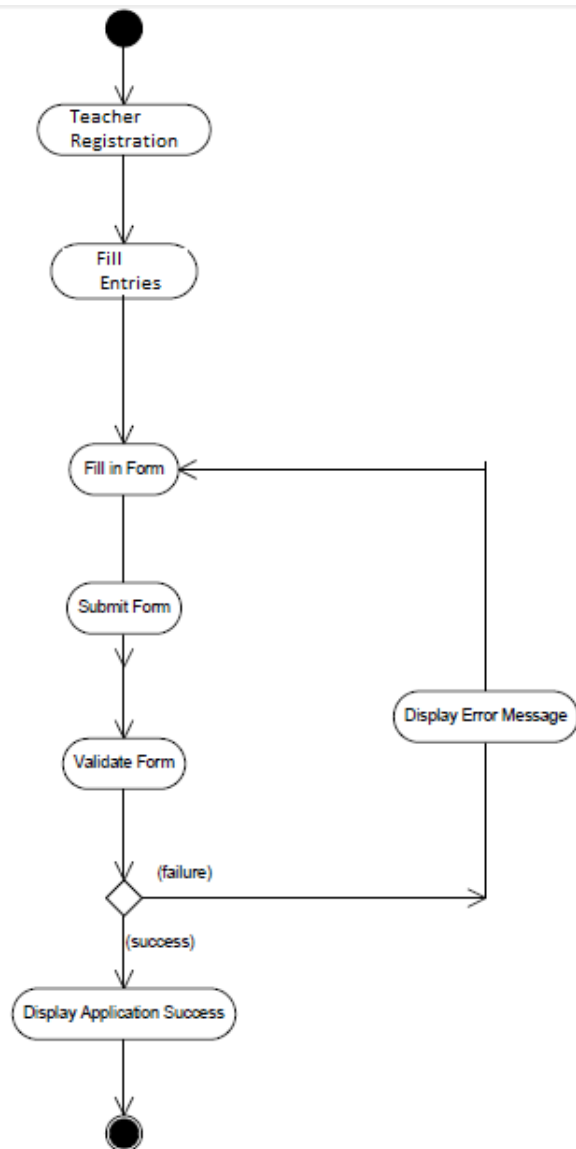
Activity diagram for Log-in



Activity diagram for View Timetable

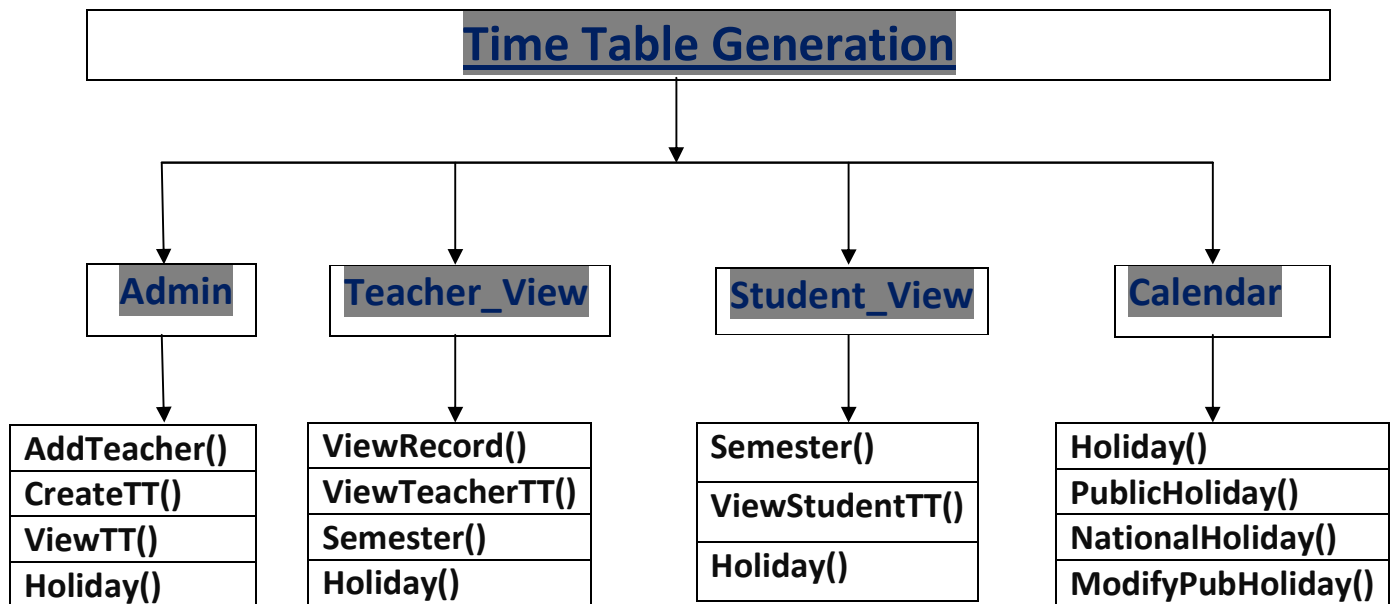


ADD TEACHER



Activity diagram for Registration Teacher

LOW LEVEL DESIGN



Low Level Design Of Admin Module

Function Name – AddTeacher()

Function Prototype	Void AddTeacher()
Return Type	Void
Input Parameter	Void
Calling Function	Void Admin()
Called Function	
Description	This function will add new teacher

Function – CreateTT()

Function Prototype	Void CreateTT()
Return Type	Void
Input Parameter	Void
Calling Function	Void Admin()
Called Function	
Description	This function will generate time table for teacher

Function – ViewTT()

Function Prototype	Void ViewTT()
Return Type	Void
Input Parameter	Void
Calling Function	Void Admin()
Called Function	
Description	This function will display time table for teacher

Function – Holiday()

Function Prototype	Void Holiday()
Return Type	Void
Input Parameter	Char
Calling Function	Void Admin()
Called Function	PublicHoliday() , National Holiday()
Description	This function will display list of holidays, both public and national. Month will be taken as input parameter. And public and national holiday in that particular month will be displayed.

Low Level Design Of Teacher Module

Function – ViewRecord()

Function Prototype	Void ViewRecord()
Return Type	Void
Input Parameter	Char
Calling Function	Void Teacher_View()
Called Function	
Description	This function will display teacher's record.

Function – ViewTeacherTT()

Function Prototype	Void ViewTeacherTT()
Return Type	Void
Input Parameter	Char
Calling Function	Void Teacher_View()
Called Function	
Description	This function will display time table of teacher after checking id.

Function – Semester()

Function Prototype	Void Semester()
Return Type	Void
Input Parameter	Int
Calling Function	Void Teacher_View()
Called Function	
Description	This function will display list of subject corresponding to semester.

Function – Holiday()

Function Prototype	Void Holiday()
Return Type	Void
Input Parameter	Char
Calling Function	Void Teacher_View()
Called Function	PublicHoliday() , National Holiday()
Description	This function will display list of Public and National Holiday. Month will be taken as input parameter. And public and national holiday in that particular month will be displayed.

Low Level Design Of Student Module

Function – Semester()

Function Prototype	Void Semester()
Return Type	Void
Input Parameter	Int
Calling Function	Void Student_View()
Called Function	
Description	This function will display list of subject corresponding to semester. Semester will be taken as input parameter.

Function – ViewStudentTT()

Function Prototype	Void ViewStudentTT()
Return Type	Void
Input Parameter	Int

Calling Function	Void Student_View()
Called Function	
Description	This function will display time table as per semester.Semester will be taken as input parameter.

Function – Holiday()

Function Prototype	Void Holiday()
Return Type	Void
Input Parameter	Char
Calling Function	Void Student_View()
Called Function	PublicHoliday() , NationalHoliday()
Description	This function will display list of holidays, both public and national. Month will be taken as input parameter. And public and national holiday in that particular month will be displayed.

Low Level Design Of Calender Module

Function – Holiday()

Function Prototype	Void Holiday()
Return Type	Void
Input Parameter	Char
Calling Function	Void Calender()
Called Function	PublicHoliday() , National Holiday()
Description	This function will display list of holidays, both public and national. Month will be taken as input parameter. And public and national holiday in that particular month will be displayed.

Function – PublicHoliday()

Function Prototype	Void PublicHoliday()
Return Type	Void
Input Parameter	Void
Calling Function	Void Holiday()
Called Function	
Description	This function will display list of Public holiday.

Function – NationalHoliday()

Function Prototype	Void NationalHoliday()
Return Type	Void
Input Parameter	Void
Calling Function	Void Holiday()
Called Function	
Description	This function will display list of National holiday.

Function – ModifyPubHoliday()

Function Prototype	Void ModifyPubHoliday()
Return Type	Void
Input Parameter	Void
Calling Function	Void Holiday()
Called Function	
Description	This function will modify list of Public holiday. This function allows you to power to grant public holiday or not.

Unit Test Plan

Below is the Unit Test Plan for Admin Module

S.No.	Condition	Expected O/P	Actual O/P
1.	Enter security code to enter admin	Show admin page and option	
2.	Enter wrong security code	Show error message "Invalid code"	
3.	Enter 3 times wrong security code	Show error message "You are not authorized person"	
4.	Enter option , Add Teacher	Show page where teacher details is to be filled	
4.(i)	Field 1- Enter name , in between 4 to 30 character	Proceed to next option	
4.(ii)	Field 1- Enter name , less than 4 character	Show error message "Please enter your complete name"	
4.(iii)	Field 1- Enter name , more than 30 character	Show error message "Please don't write your middle name"	
5.	Field 2- Enter age , enter any character other than number	Show error message "Please enter age according to format"	
5.(i)	Field 2- Enter age between 22-52	Proceed to next option	
5.(ii)	Field 2- Enter age not in between 22-52	Show error message "You are not eligible"	
6.	Field 3- Enter experience (int)	Proceed to next option	
6.(i)	Field 3- Enter	Show error message	

	experience , greater than age	"invalid entry"	
7.	Field 4- Select option for qualifications	Show option for qualifications which is needed in this job/work	
7.(i)	Field 4- Select wrong option from list	Show error message "Invalid selection"	
7.(ii)	Field 4- Select correct option from list	Show message "Teacher is added"	
8.	Select option to add more Teacher or exit	Show option to add more teacher or exit	
8.(i)	Select wrong option from list	Show error message "Invalid selection"	
8.(ii)	Select correct option from list	Proceed to next option	
9.	Create Time Table , input incorrect constraint/values	Show error message "Invalid entry"	
9.(i)	Enter correct values	Show message "Time Table generated"	
10.	Select correct option to View Time Table	Display Time Table	
10.(i)	Enter incorrect option	Show error message "Invalid selection"	
11.	Select correct choice to view Holiday	Display Holiday	
11.(i)	Enter incorrect option	Show error message "Invalid selection"	
12.	Select correct option to exit	Return to Main Menu	

Below is the Unit Test Plan for Teacher Module

S.No.	Condition	Expected O/P	Actual O/P
1.	Enter Teacher_id to enter teacher desk	Show teacher dashboard & options	
2.	Enter wrong Teacher_id	Show error message "Invalid id , please try again"	
3.	Enter 3 times wrong Teacher_id	Show error message "It seems that you forget your id , contact admin for help"	
4.	Select option to view your details.	Display details related to Teacher_id	
5.	Select option to view your Time table	Display Time table for that specific teacher only	
6.	Select option to view semester wise subject	Display subject as per entered semester	
7.	Select option to view Holiday	Display Holiday	
8.	Enter wrong choice	Show error message "Invalid selection"	

Below is the Unit Test Plan for Holiday Module

S.No.	Condition	Expected O/P	Actual O/P
1.	Select option to view Holiday	Display internal option (i.e. Public & National Holiday)	
2.	Select option to view Public & National Holiday	Display field to request month initial.	
2.(i)	Enter incorrect choice	Show error message "Invalid choice , enter correct option"	
2.(ii)	Enter incorrect month's initial	Show error message "Invalid initial , please go to help to know about initials"	
3.	Enter month initials correct	Display Public & National Holiday as per month	
4.	Select option to modify Public Holiday	Show field to choose holidays from Public Holiday	
5.	Enter wrong choice	Show error message "Invalid selection"	

Below is the Unit Test Plan for Student Module

S.No.	Condition	Expected O/P	Actual O/P
1.	Select option to view your Time table and enter correct semester	Display Time table as per entered semester	
1.(i)	Select option to view your Time table and enter incorrect semester	Show error message "Semester not exist , please enter correct semester"	
2.	Select option to view semester wise subject	Display subject as per entered semester	
3.	Select option to view Holiday	Display Holiday	
4.	Enter wrong choice	Show error message "Invalid selection"	