Analysis of Algorithms

Spring 2020

Members Details

Group ID	CS311S20PID34
Registration Number of Group Members	2018-CS-13 2018-CS-35 2018-CS-41
Section	A

Project Details

Project	
Project Title	Activity Scheduling
Executive Summary	Scheduling is the art of planning your activities so that you can achieve your goals and priorities in the time you have available. Auto timetable scheduling system web and cloud based system includes robust classroom timetable scheduling software with a comprehensive class,course scheduling tools developed for schools, college and university administrators and educators to create, manage and modify classroom timetables and curriculum. the online timetabler software extinguishes paper-dependency by proving secure, automated and digitized solutions to coordinate examination schedules, manage exam rooms/centers/ venue, archive important events and dates, allocate students to courses, plan class timings for teachers and students, and this is just the tip of the iceberg. The auto timetable automates class, exam and course scheduling process for students, teachers, and different classrooms by taking into consideration all the possible "what-if" scenarios and outcomes. moreover, the timetabler software incorporates user-centric and simple to use tools for educators to view, organize, and generate master and individual timetables for each teacher/class/grade, develop personalized timetables, create and join and pin to-do lists ,schedule substitute statements for absent staff, manage and organize events on calendar and much more on smartphone, tablet and, computer devices. this system will be having an easy to use and interactive to enter all the inputs like workload of teachers and how many no. of students of which branches are studying the subject in a subject, the data for the rooms and the data for labs.This system will have a well designed

	database to store all the information which will be entered as the input. separate database for maintaining basic information, subjects, teachers and their association and other details database for holding generated timetables and for storing required timetables. This system will have algorithms to process all the data in the database and keeping in view the various constraints like that a teacher should not have two consecutive lectures/labs, proper rooms are allocated for the lectures/tutorial,it will generate the time table.
Business Case	
Outline the business need for the project	*This project is intended to be used by school,colleges and other educational systems but with a little modification it can be used as a task scheduler for personal usage.*
End user of the product	*The user is the one who intends to view the timetable. It can be students/teachers, course/subject coordinator or even the head of the department.Multiple users can connect through the software for viewing the timetable.*
Motivation for Project	*We are currently studying in a university and we have seen many problems regarding time table management i.e. some teachers/students who do not get to visit the notice board at time and do not receive the update, come to take the class according to their previous schedules. Also human generated schedules have a chance of having error but with automated systems this chance is dropped to zero. So we tried to provide a paperless way of sharing the schedules that are highly optimal.*
Description of the project objective(s)	*the final objectives of our project are:* ● *The final system should be able to generate tables in a completely automated way which will save a lot of time and effort of an institute administration.* ● *To make a timetable system generic so that it can work equally well for different schools, colleges and universities.* ● *User defined constraints handling* ● *Ease of use for users of the system so that he/she can make automatic time tables.* ● *Focus on optimization of resources i.e teachers, labs, and rooms.* ● *Provide a facility for everyone to view the time table.*

State the level of impact expected should the project proceed and implications of not proceeding	*[State whether the implementation would have an impact at an operational level and/or strategic level and state the impact(s) in 2-3 lines]*
Functional Requirements	*No teacher can have more than one class at time.* *A classroom must have enough capacity to accommodate all students.* *One class should be assigned to one teacher at a time.*

Benefits	
What benefits are expected/ anticipated?	*The timetable generator allows users to generate timetable for newly occurring changes in less time , with less effort and with more efficiency. it will allow users to work on and view timetable on different platforms and view different information simultaneously. the software will create individual schedules.*

Implementation Details	
Link to Github Repository	https://github.com/ManahilAmeer/CS311S20PID34
Total Number of commits in repository before 8th December 2019	214
Exact contribution of each member	

Commits in github repository by each member

Member Registration No.	Total Commits
2018-CS-13	90
2018-CS-35	35
2018-CS-41	71

Details of commits

Sr. No.	Details of commit	Date	Member Reg No.

Have you used built in algorithms or you have implemented yourself?	We have used a genetic algorithm which is built in.
Formats of input	● *format of input in login form is through dropdown* ● *After login as a admin/student format of input is text and numeric* ● *In signup form in name field input in text form and in email and password field input is in alphanumeric format .In phone number field input is in numeric format.* ● *In the Add Course section the course name and course code is in text format. In seating capacity field input is in integer format.* ● *In addition faculty section input in both instructor id and instructor name fields input is given in text format.* ● *The Add room section in room number field input is in alphanumeric format and in max seating capacity field input is in integer format.* ● *In addition, the department section input is in text form.* ● *In add department course the course id field is in alphanumeric format and in department name input is in numeric format.* ● *In the Add course instructor section in both fields input is given in alphanumeric format.* ● *In the Add time section input is given in alphanumeric format.*
Validations	*List the validations that you have applied on input with complete details*

Format of output	*list of outputs are:*
	● *Time table:*
	  In time table section output is in table form and that table will contain Id, Department, Course(Number, max # of students), Rooms(capacity), Instructor(ID), Meeting time columns.
	● *Course list:*
	  in course list window output will be in table form and that table will contain Course id, Course Name, Course Code,

<table>
<tr>
<td></td>
<td>

Max # of students.
- *Faculty list:*
  in faculty list window output is in table form and that table will contain Id and instructor Name columns.
- *Room list:*
  In Room list window output is in table form which contains Room no and seating capacity columns.
- *Department list:*
  In department list window output is in table form which contains only one column which is the department name.
- *Department course list:*
  In department Course list section there will be a table containing Department name and course id columns.
- *Course instructor list:*
  In Course Instructor list there will be table showing columns of course id and Instructor id.

</td>
</tr>
<tr>
<td>Deployment</td>
<td>*Have you deployed your project in any format? If yes, provide the details*</td>
</tr>
</table>

Details of algorithms

In this section, you are required to provide details of algorithms used in the project with the pseudo code, one paragraph description of each algorithm, complexity and correctness.

Interfaces for your project

SCHEDULEGENERATOR   ⌂ Home   👤 About Us   ➡ Log In

Activity Scheduling Tool
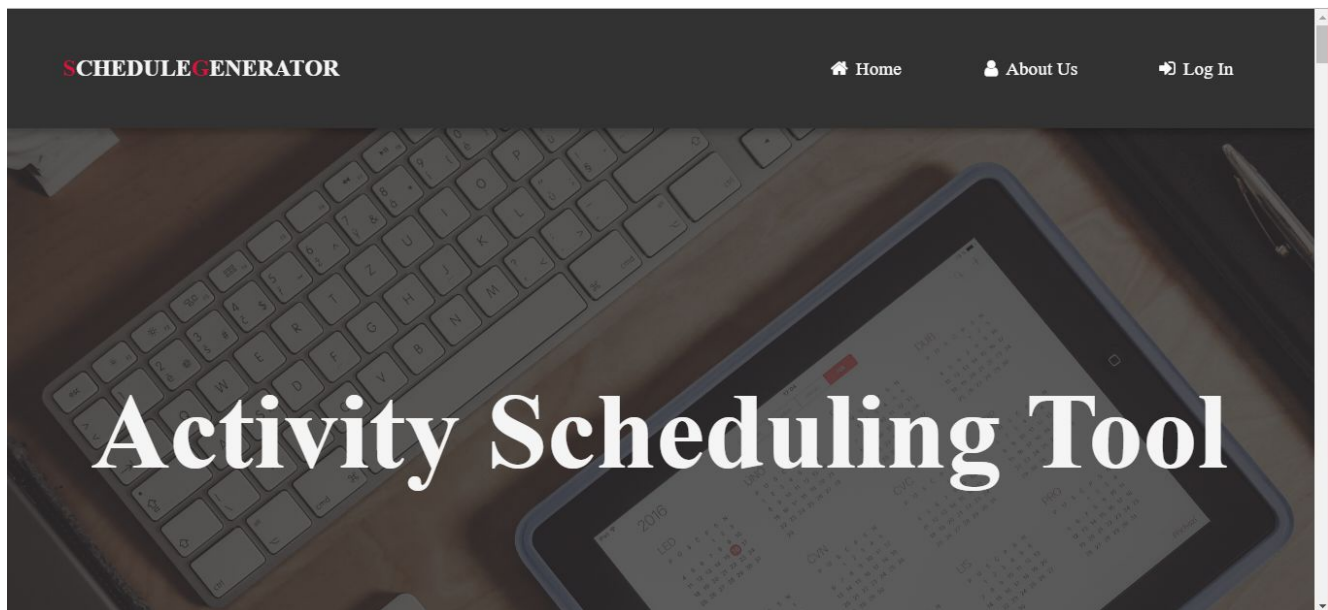
[above picture will be our main page for the web application]
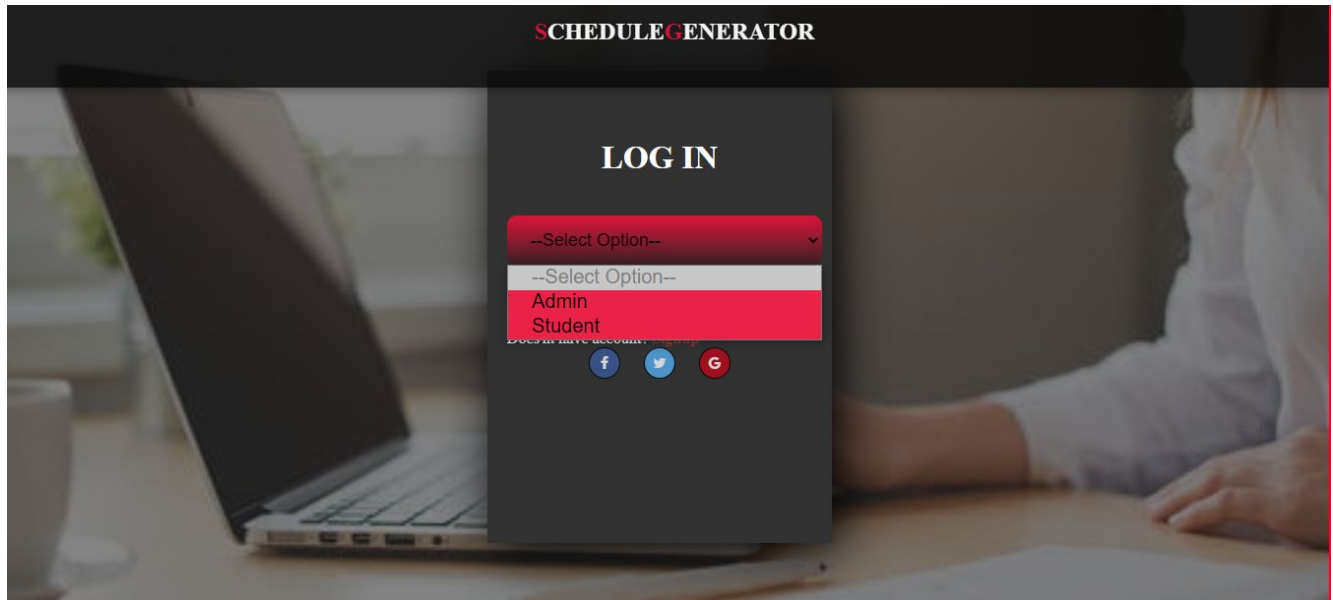
[when we click on login button above window will show]

[by clicking on admin following window will open]
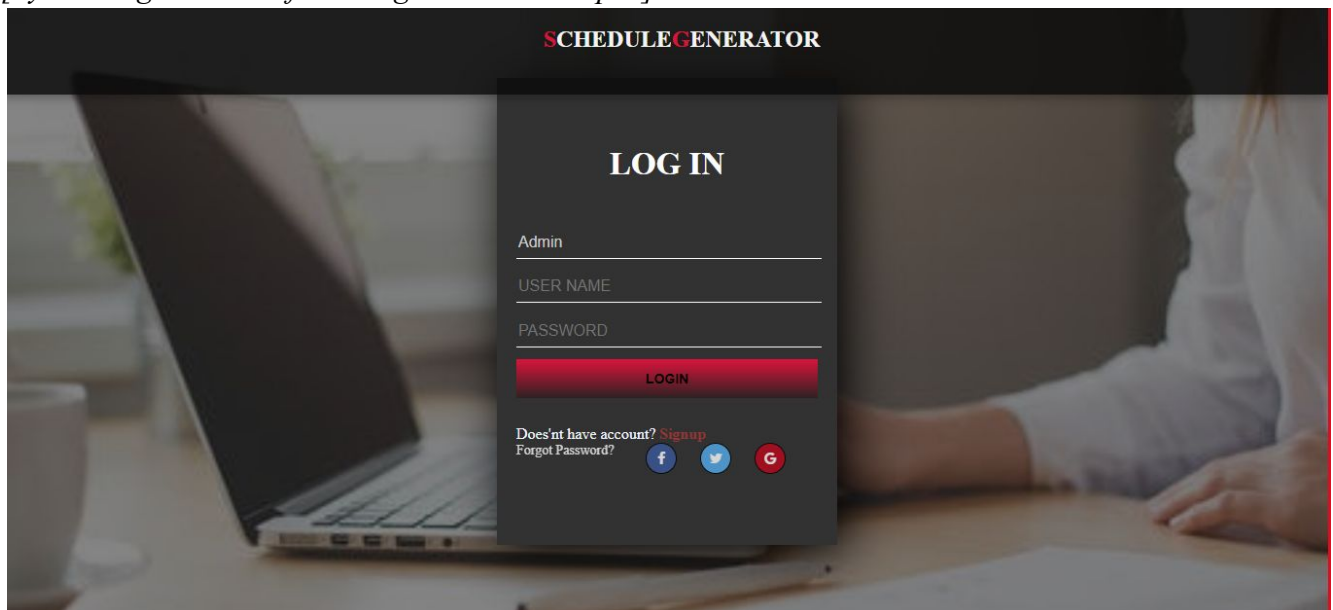
[by clicking on student in login window's dropdown menu following window will showup]
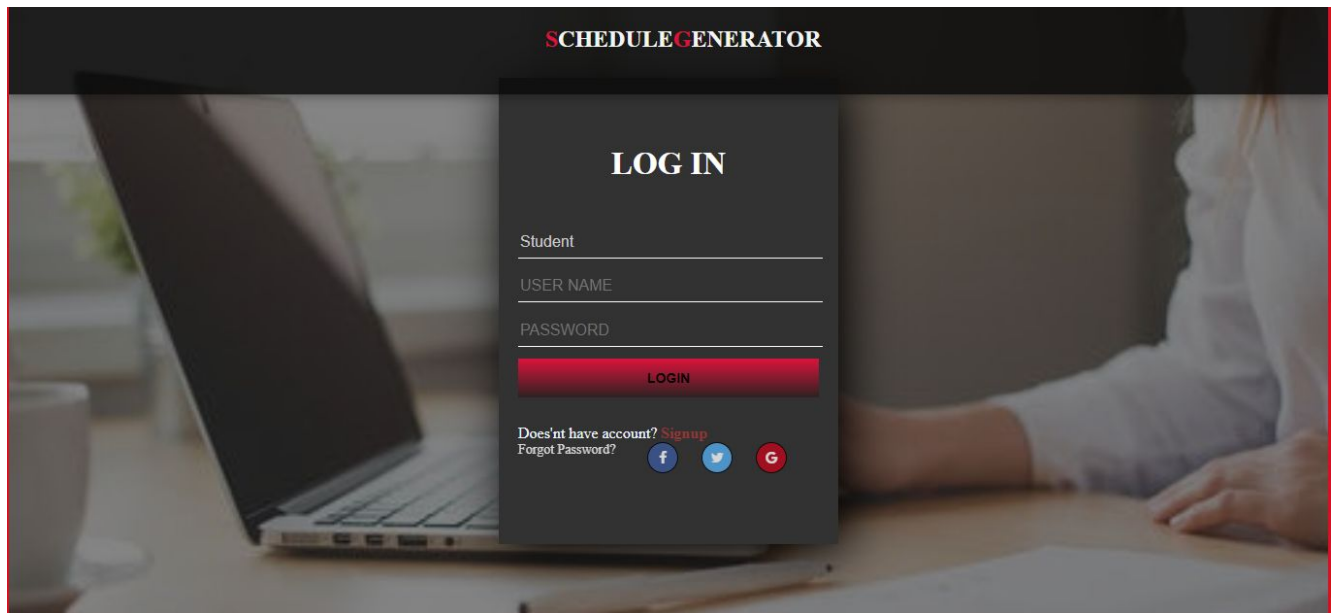
[after logging in as an admin it will show following window which contains home, Time table, couses, Resources, about us, logout buttons.]
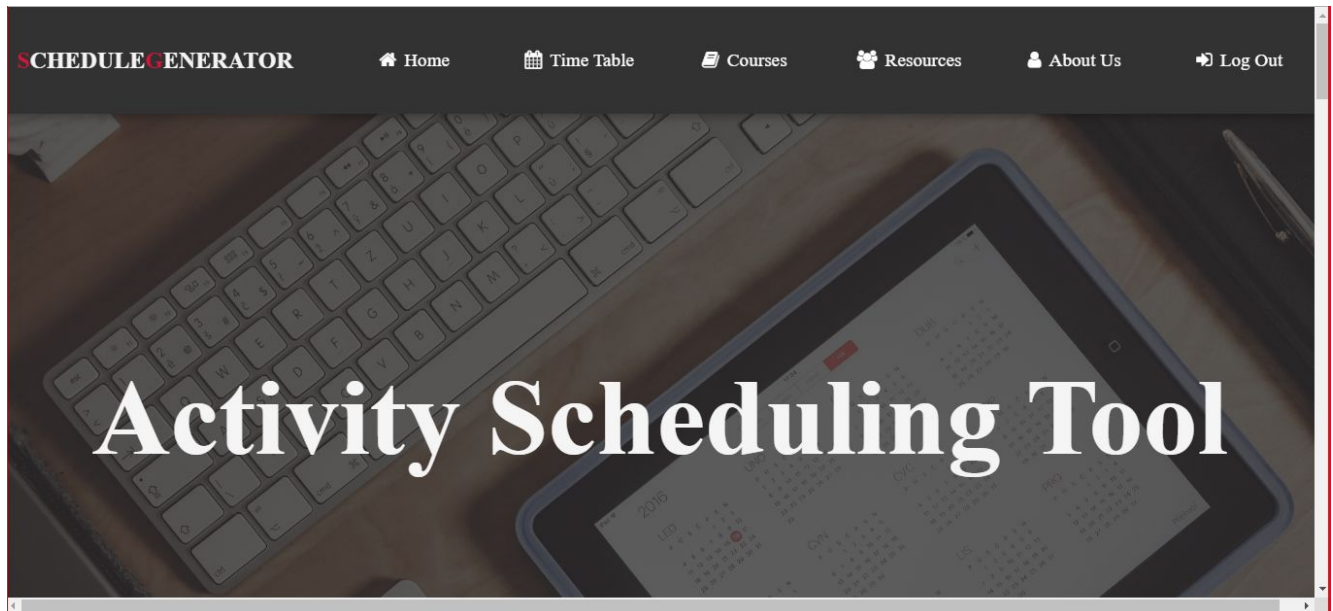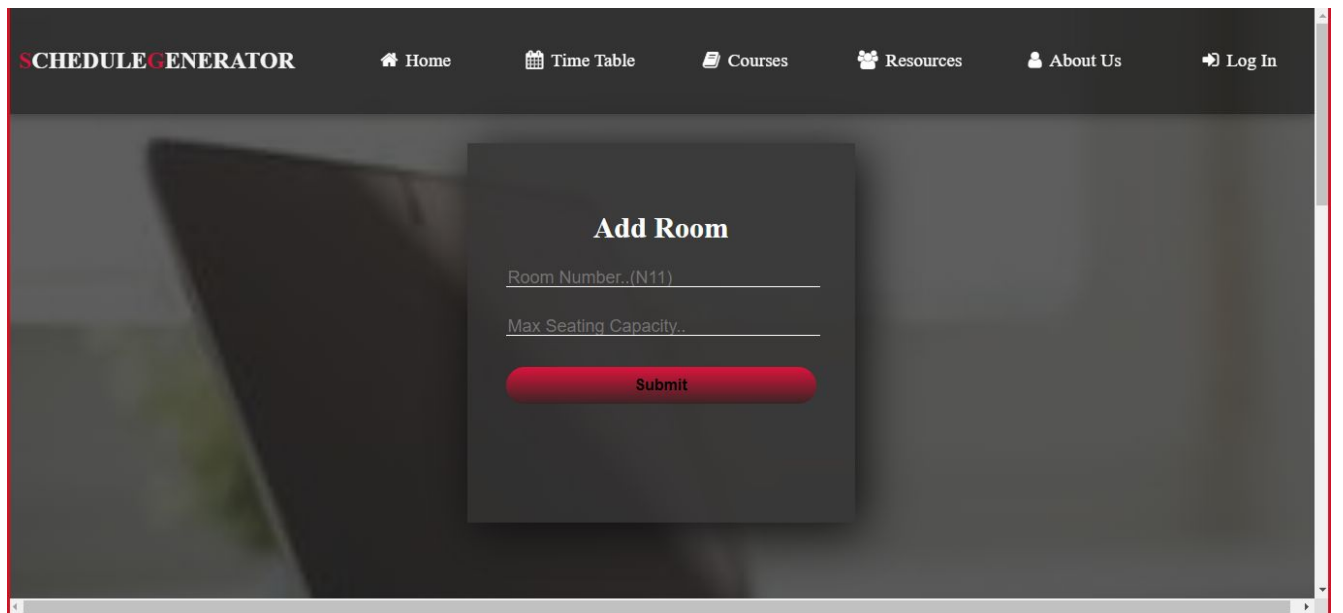
[after pointing at resources it will show following options of add faculty, add rooms,add department,add class time,faculty list,rooms list,department list]
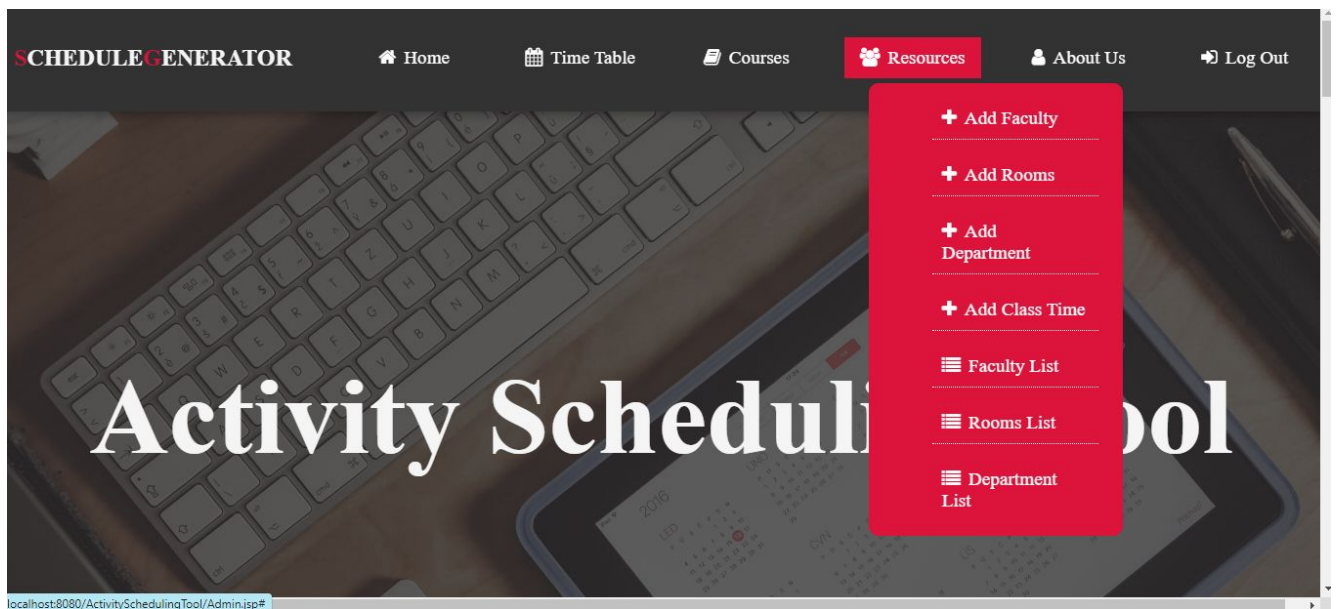
[after clicking on add faculty following window will show up]
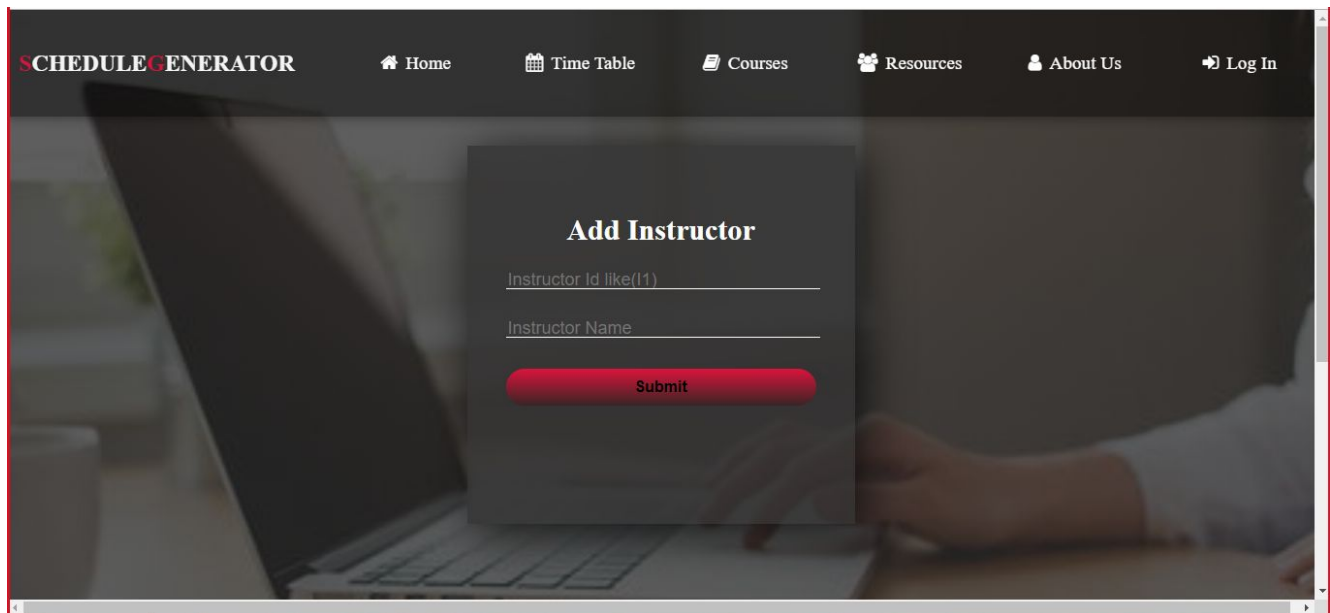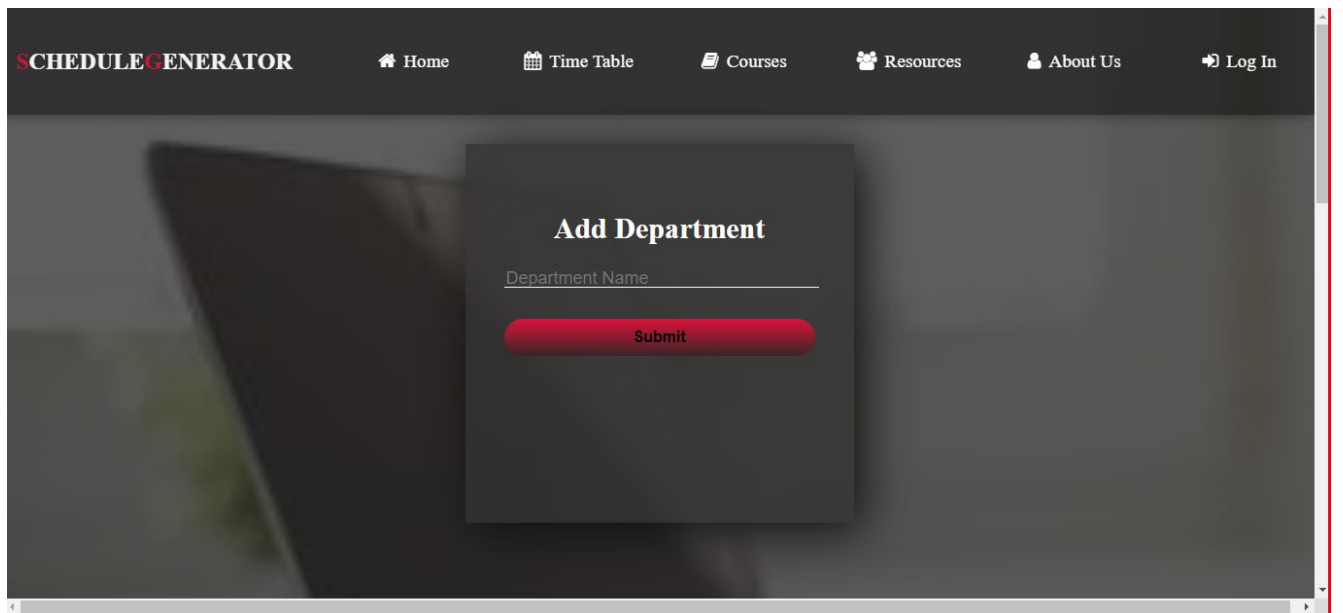
[after clicking on add rooms following window will show up]

[after clicking on Add department following will show up]

[after clicking on add time following window will show up]
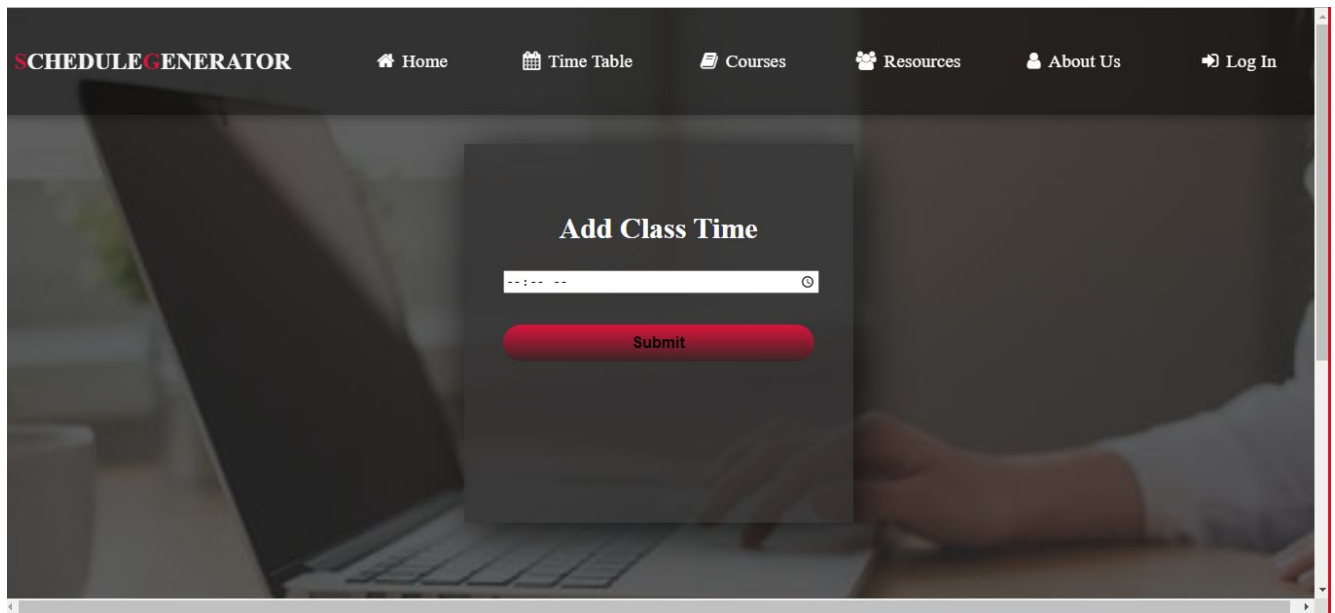
[after clicking on faculty list following window be opened]
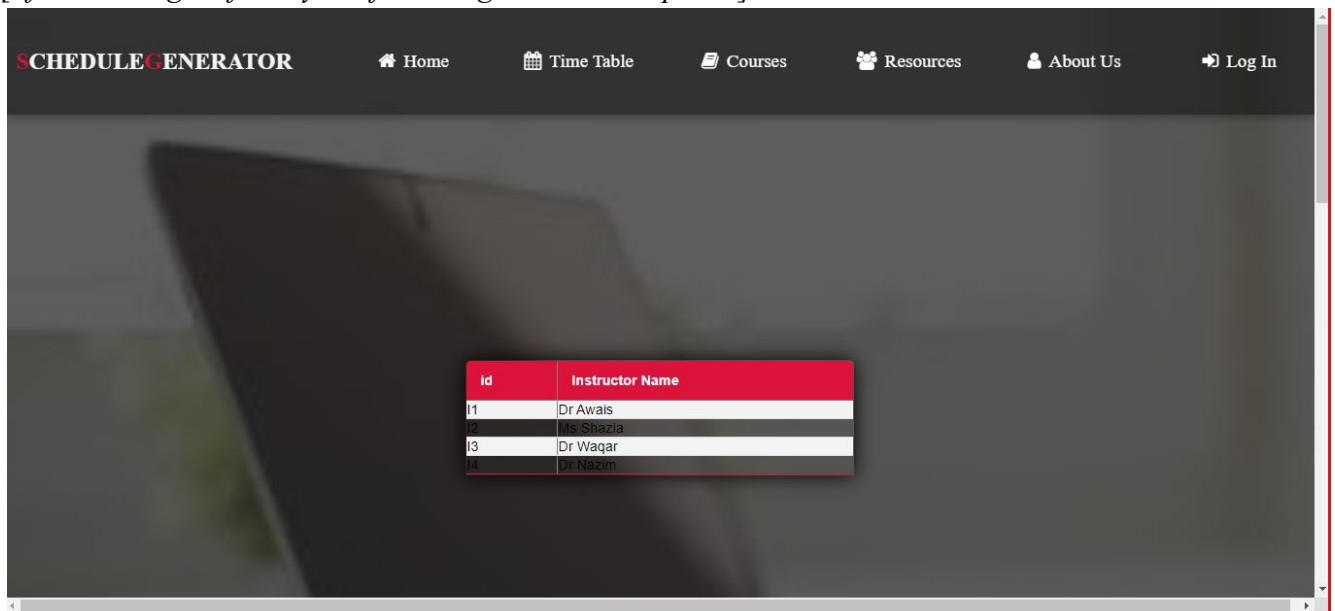
[after clicking on rooms list from the resources button following window will be shown]

Room No	Seating Capacity
N10	25
N11	25
N9	50

Department Name
Computer Engineering
Computer Science
Math
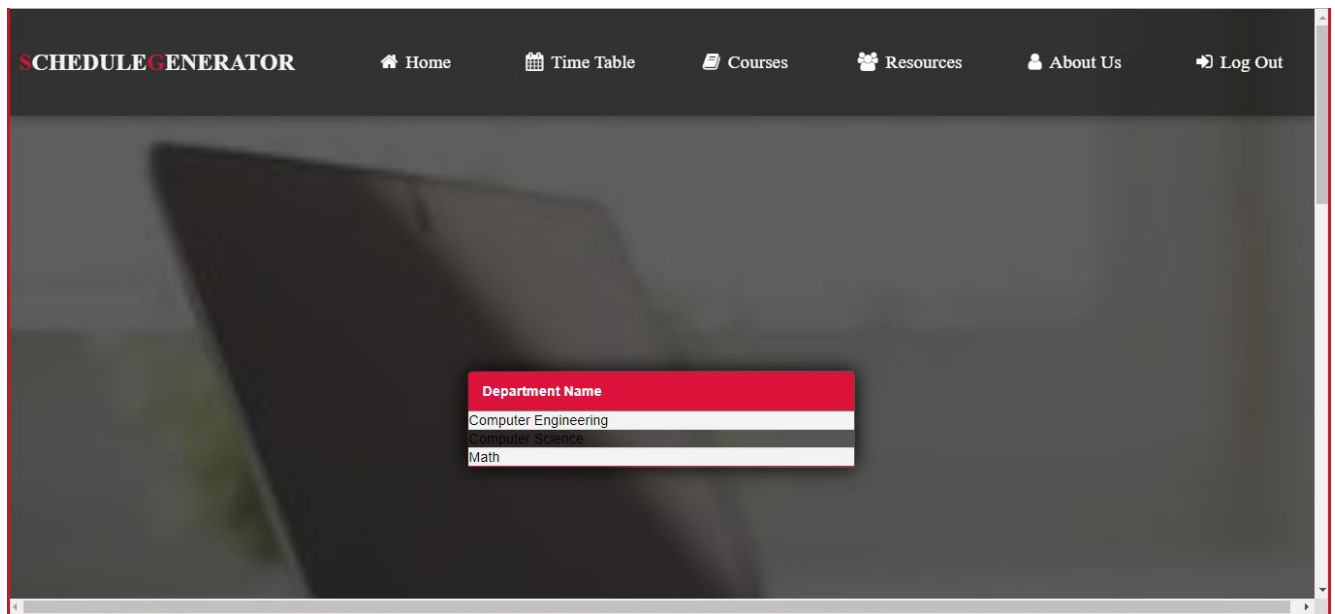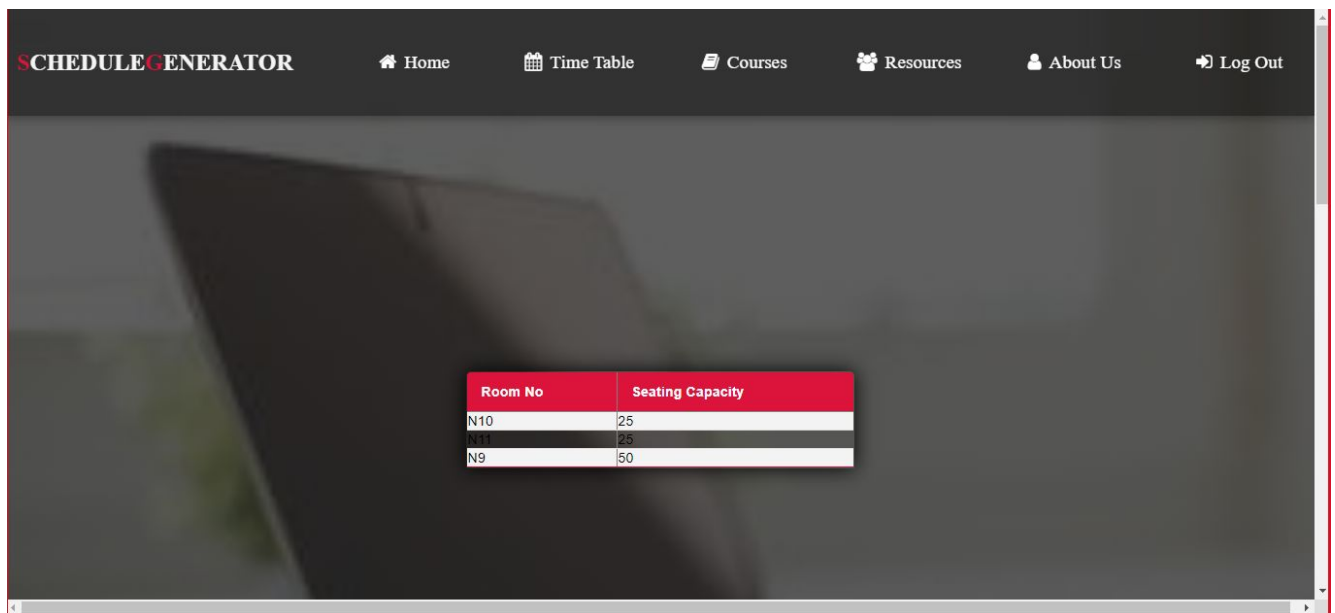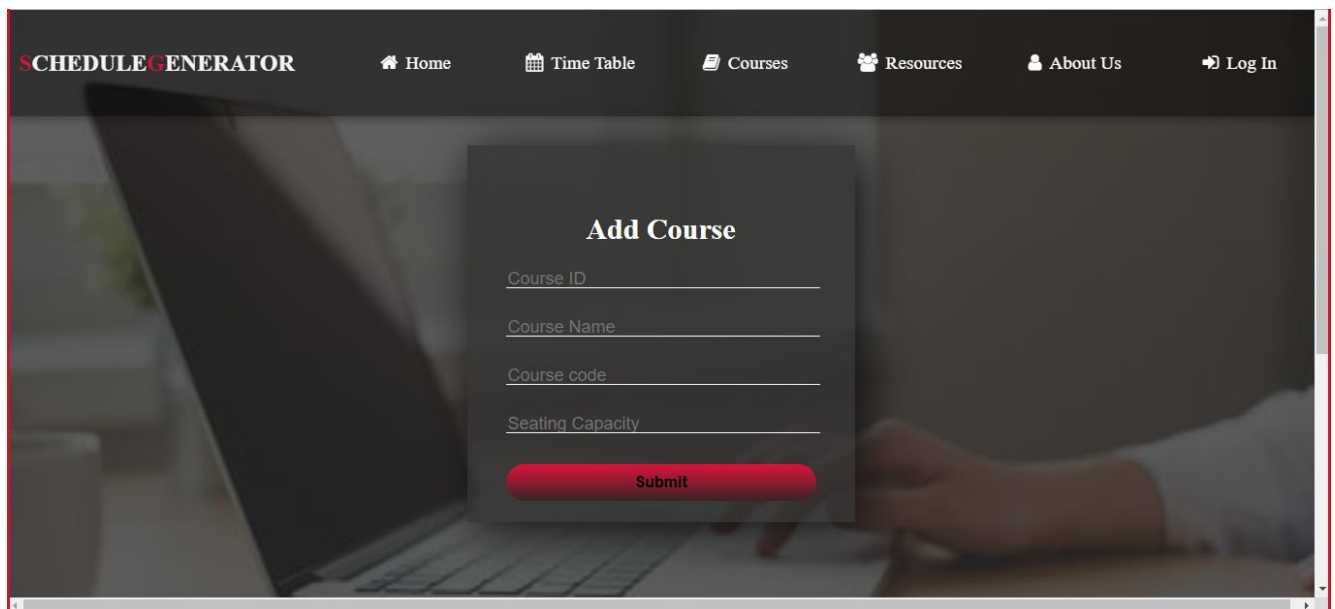
[after clicking on meeting time from the resources button following button will be opened]
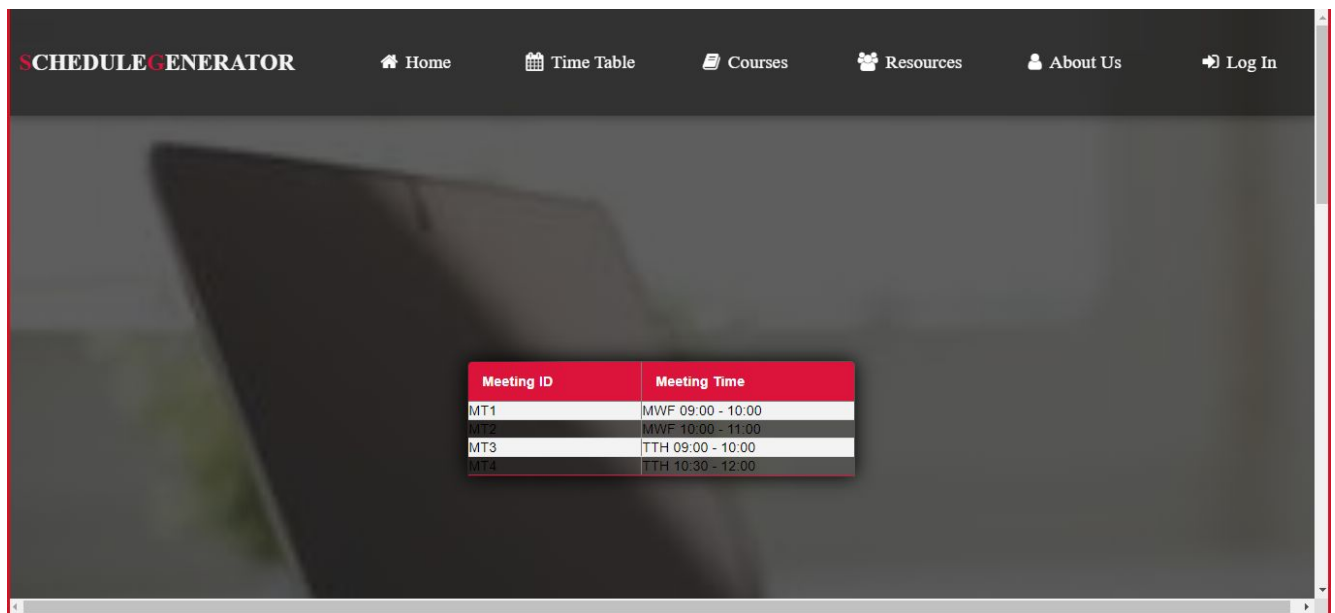
[when we point at courses button it will show a dropdown menu of add course, add course instructor, add department course, course list, department course list, course instructor list]
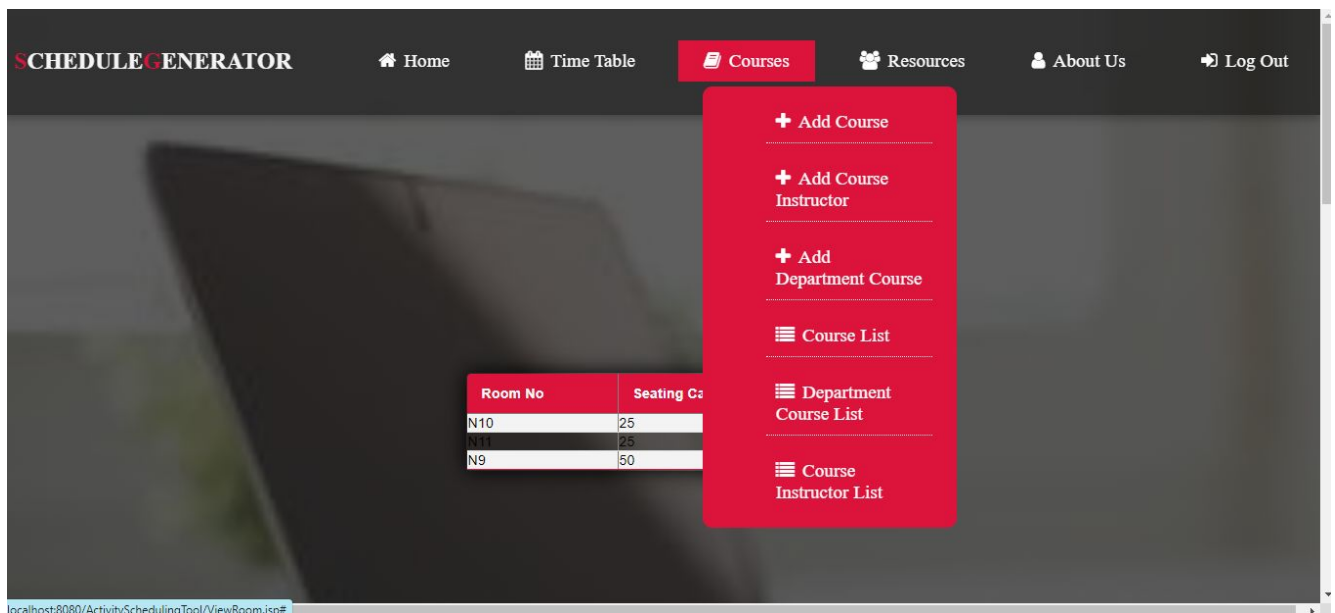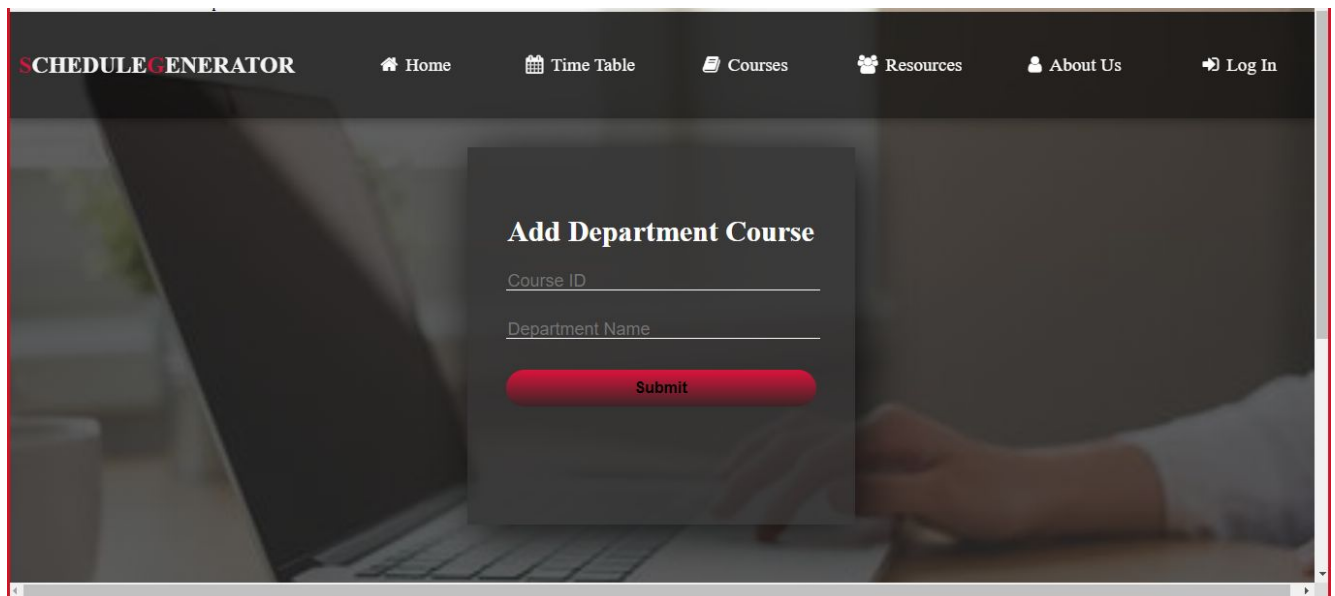
[when we click on add course option it will show the following window]

[after clicking on Add department course following window will be opened]

[after clicking on Add course instructor following window will show up]

[when we click on the course list it will show the following window]

[when we click on department course list from the course button it will show the following window]

[when we click on course instructor option it will show the following option]
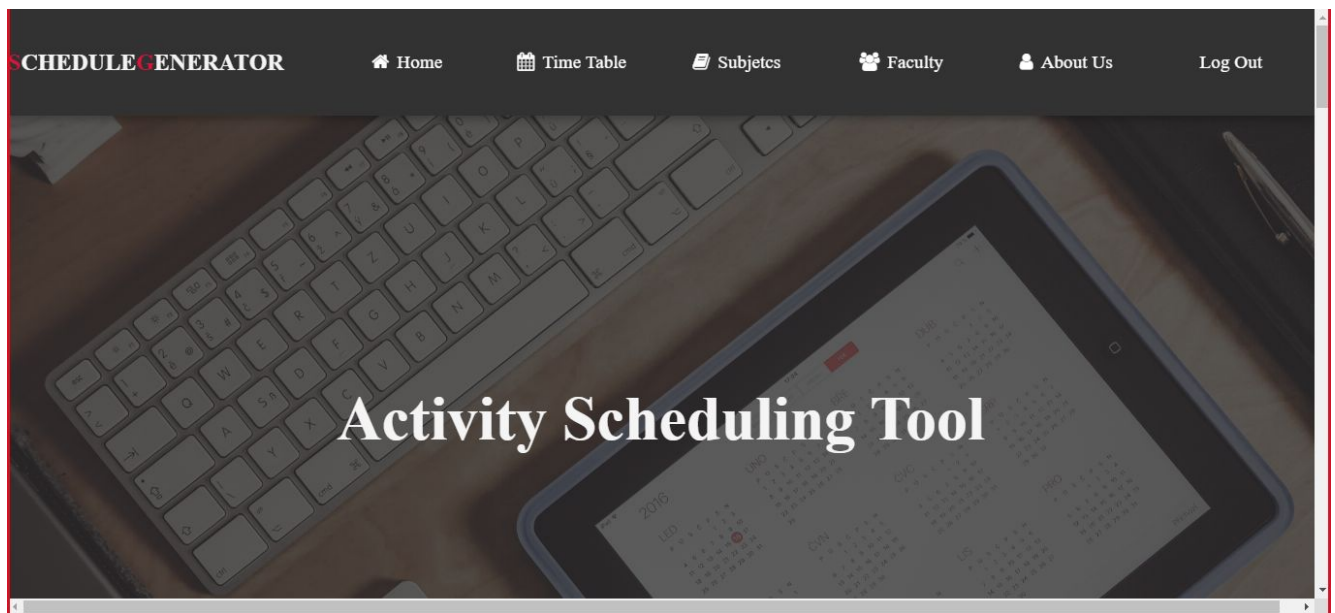

[when we click on time table button it will show the dropdown menu]
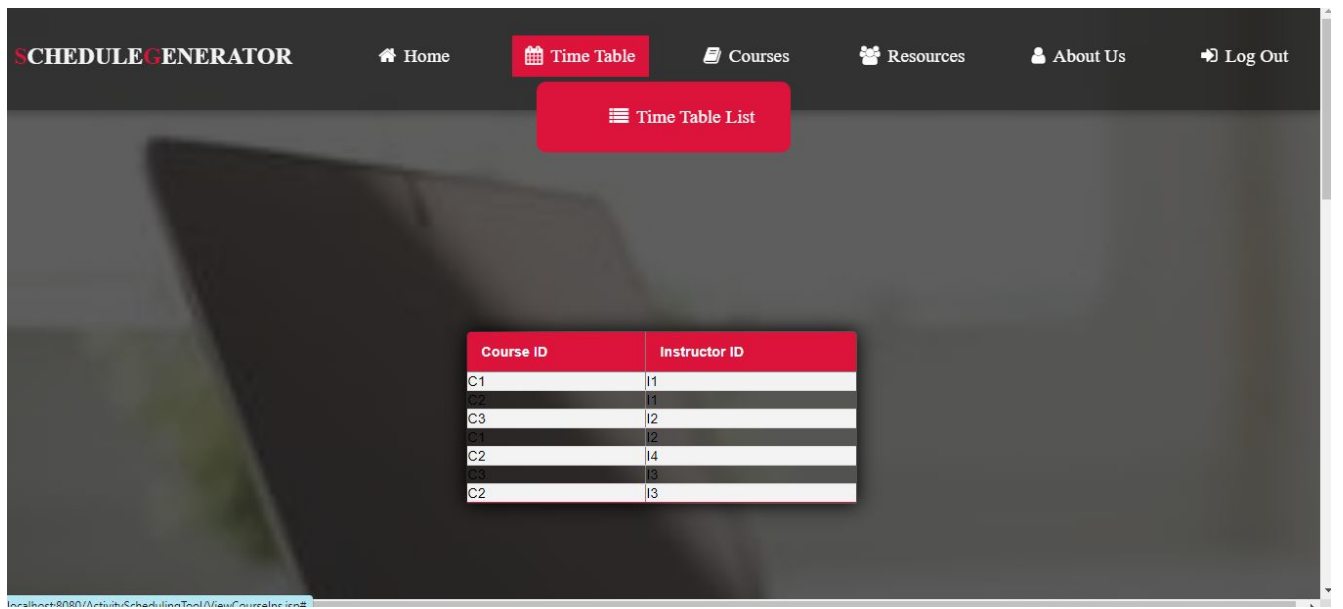
[after clicking on time table list it will show the time table in the following window]
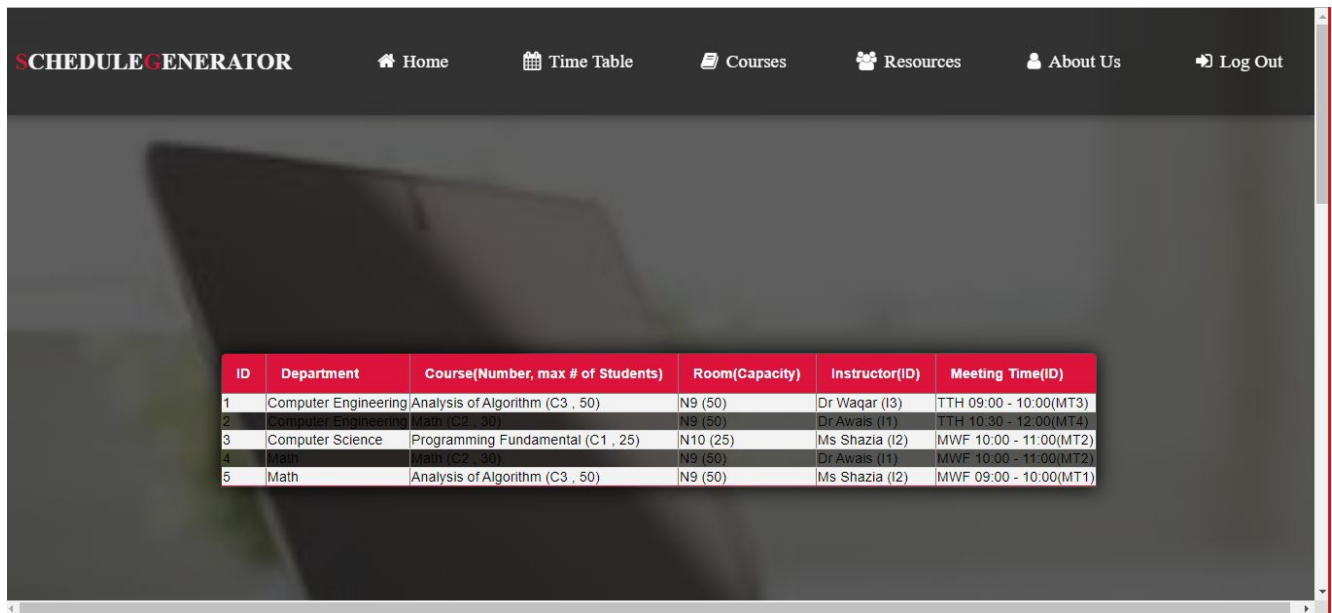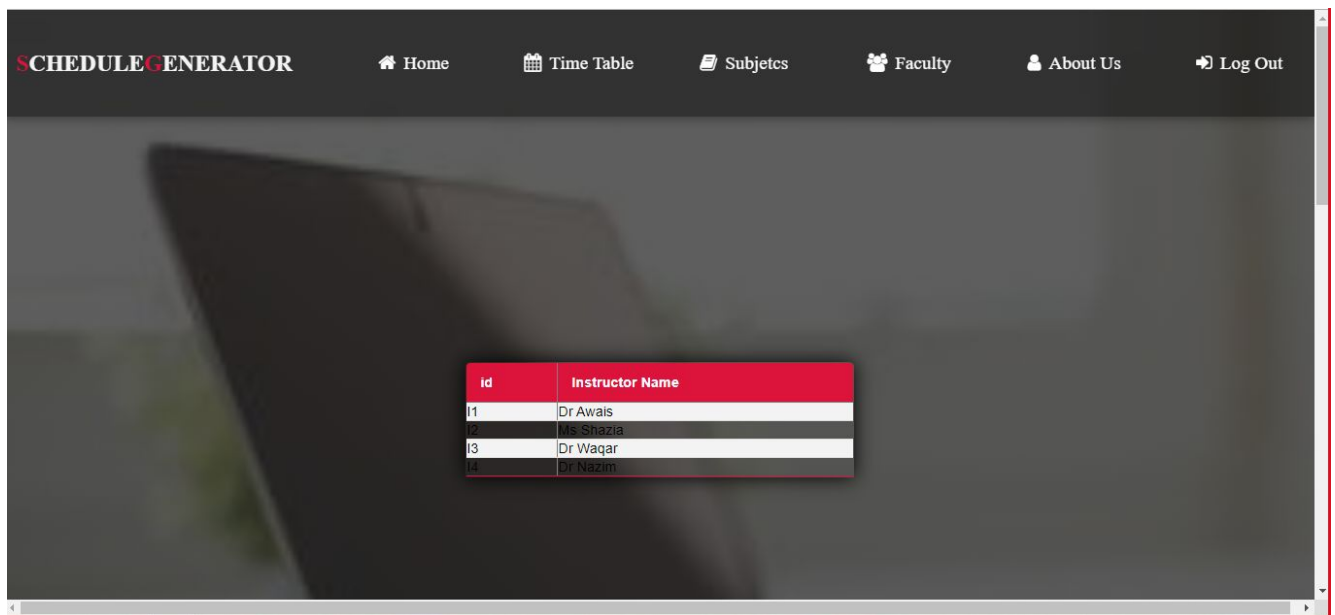

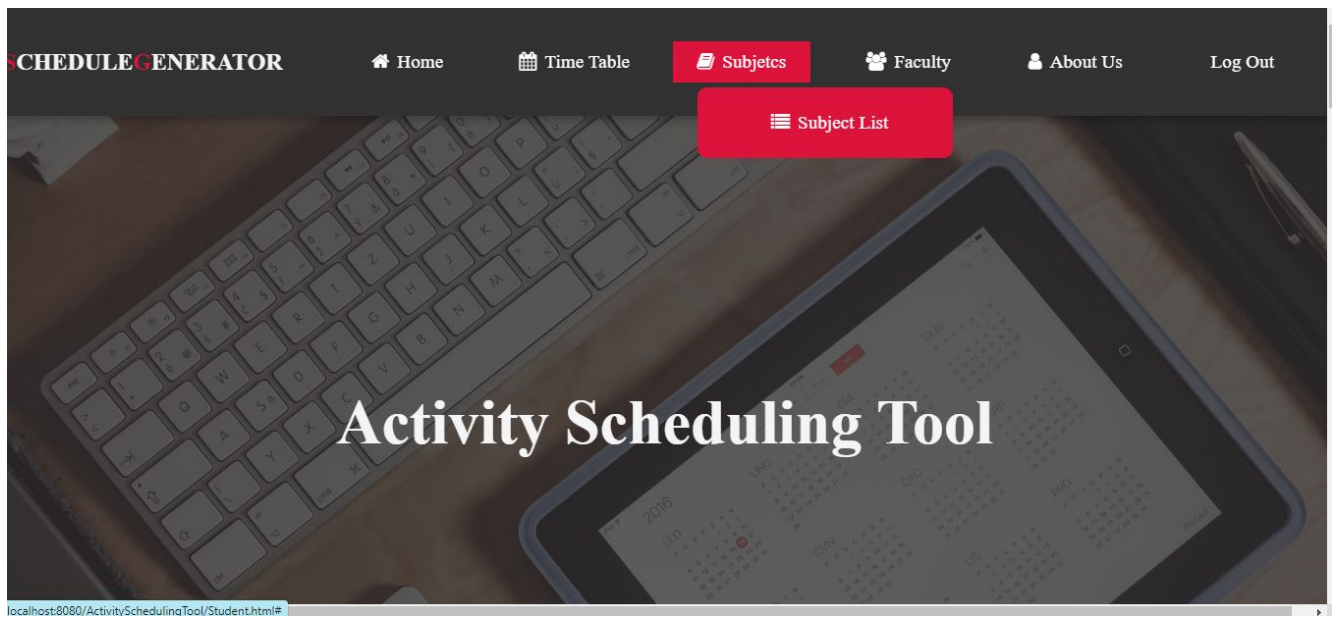*[by clicking on student in login window's dropdown menu following window will show up]*

[after clicking on faculty dropdown menu will be shown in the following window]
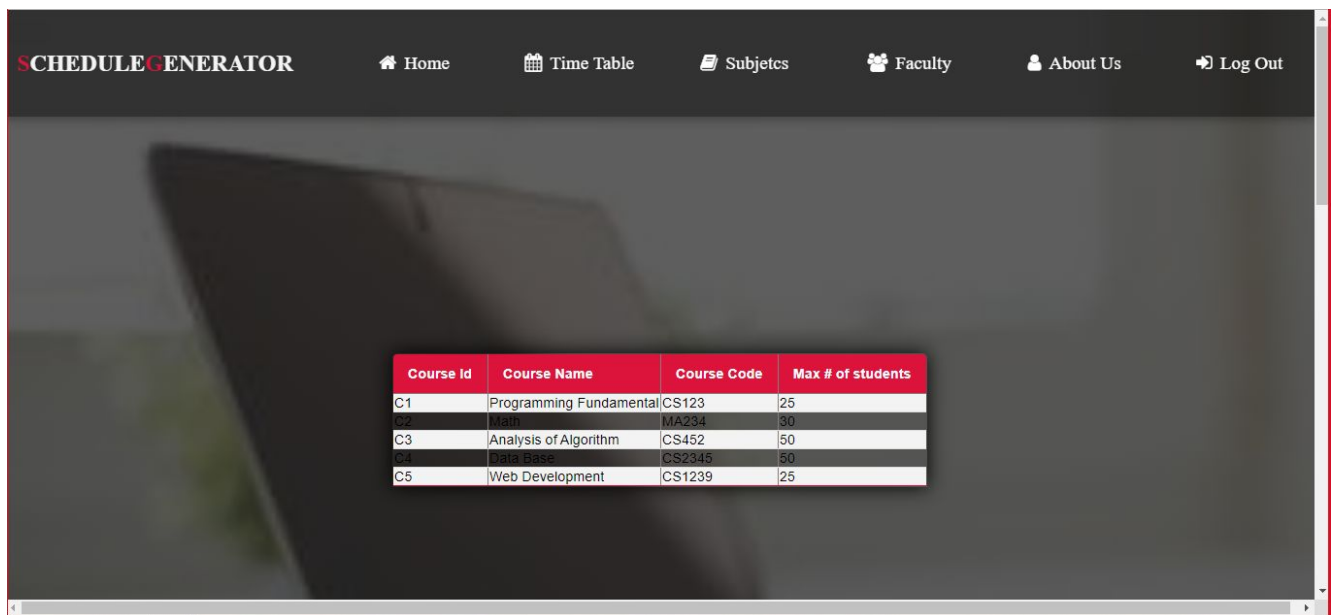

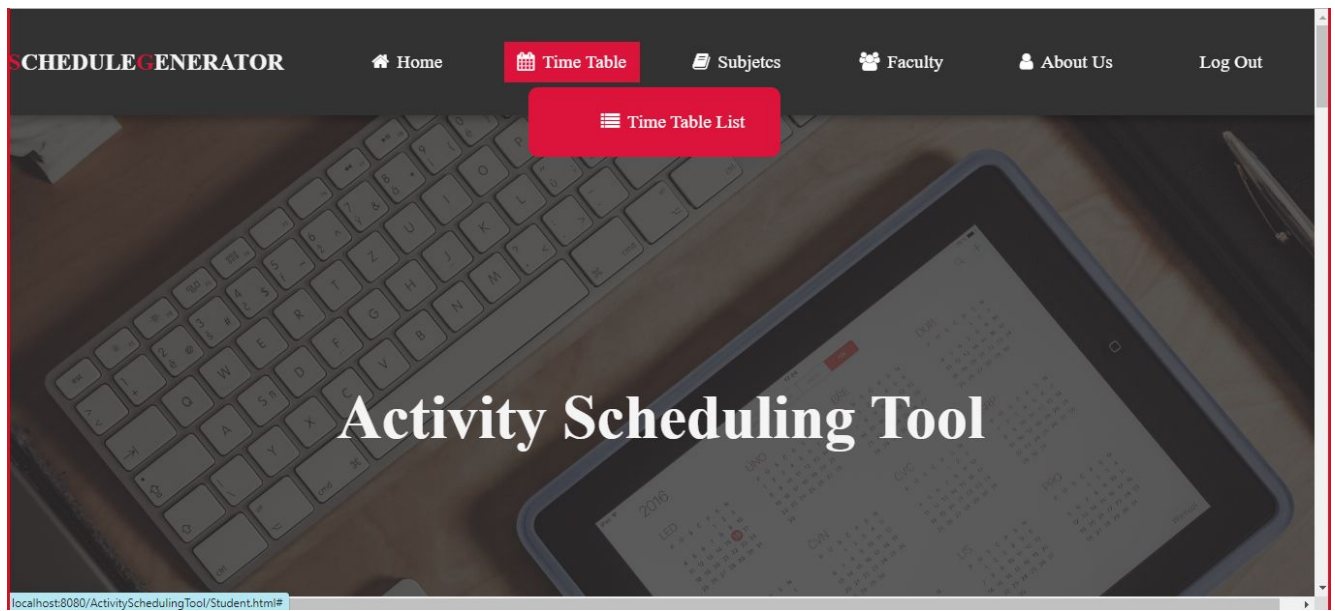*[after clicking on in faculty list following window will be opened]*

[after pointing at subjects button a drop down menu will be shown as in the following picture]
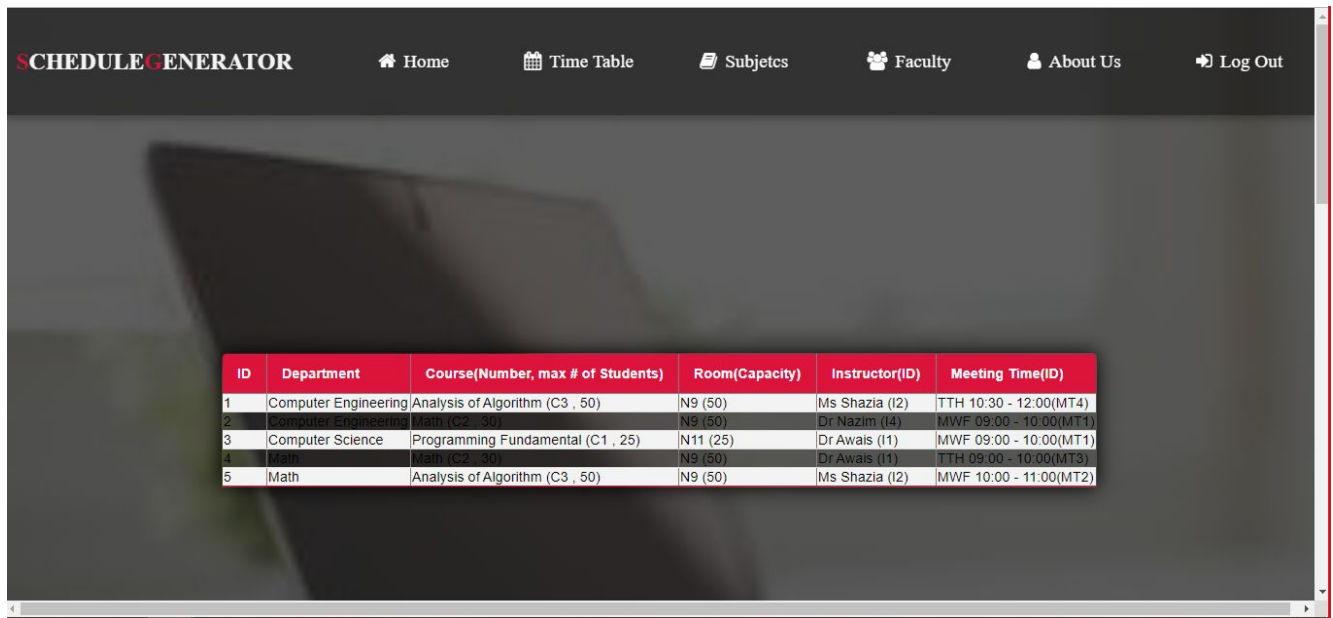
[after pointing the pointer at time table button it will show the drop down menu]

[after clicking on time table list it will show the following window]

Integration
What type of difficulties were faced by you while integration of UI and algorithms. What was your strategy in this regard?

Change Requests
Do you have any changes in proposed algorithms (in the previous deadlines) or changes in interface. Mention all the changes here.

Testing
In this section, you are required to mention the issues report and solution proposed.

Technology	
Programming Language	*Java, Html, Css, Javascript*
Platform	*Web Application*