Published by :
http://www.ijert.org

International Journal of Engineering Research & Technology (IJERT)
ISSN: 2278-0181
Vol. 10 Issue 06, June-2021

Automation of Exam Hall Allotment and Seating Arrangement

Shazia Anjum
Assistant Professor, Department of CSE,
Navodaya Institute of Technology,
Raichur.

Madhuri Devi Chodey
Assistant Professor, Department of ECE,
Navodaya Institute of Technology,
Raichur.

Muneeb Afzal C
Assistant Professor, Department of ECE,
Navodaya Institute of Technology,
Raichur.

***Abstract*— To simplify examination hall allotment and seating arrangement for the student, an application for automatic seating arrangement is developed. Using the above application, the examination information of a particular student in a particular class can be accessed. Main aim of the project is to assign the student, exam hall which is hassle free. Because most of the students feel Augean to search their allotted seat, the concept of automatic exam hall seat generation has come up, where even the hall for invigilators, for the invigilation duty is generated. Exam Hall Seating Arrangement System is an online process developed for colleges to make the seat allocation simpler. In this project traditional approach of conduction of exams is turned to computerized way. The software helps in generation of report of seat arrangement made. The project is developed as a windows-based application.**

Students attending the exams their details will be stored, which consists of name, registration number, branch & hall number. Details of the hall include, number of halls in the institute & name of the hall. Details of batch include the department to which student belong CS, ME, CE etc. Details in modules such as Students Details, Examination Timing Details, and Hall Details with the proper descriptions will be monitored.

I. INTRODUCTION

Examination hall allotment and seating arrangement is a web-based application. Main purpose of this application is to handle the operations in an educational institute during the time examinations. All the students and staff can make use of this application without facing any issues as they get the information of the allotted seat & room number. Because of the flexibility of the application, it can be used on desktop as well as on mobile devices. To simplify examination hall allotment to staff & students and seating arrangement for the student, Exam Hall seating arrangement System was developed. Allocation of rooms to staff & students was done manually which was a tedious task & would be time consuming. To overcome this disadvantage Exam Hall seating arrangement System was developed. Details in modules such as Students Details, Examination Timing Details, and Hall Details with the proper descriptions will be monitored.

Main aim for developing this application is to simplify, the manual work done for allotment of hall & seats. This allocation of seats to be done in such a way that each student getting a seat without any clash. Students feel difficulty in searching the seat allotted in the exam hall, as they'll be tensed during the exams, this application is helpful for both the staff & students which will automatically generate their seating arrangement& it will also allocate particular invigilator for particular hall.

Manual paper work is automated depending on the department numbers & registration numbers. In most of the institute's details of staff, non-teaching staff, student all are maintained manually, which is time consuming, prone to errors & it will add up as a stackof hardcopies.

Existing system where manually allocation of seating arrangement is done, making the system inefficient, ineffective and less accurate, report generation becomes complex task.

PROBLEM STATEMENT

- In existing system allocation of seating arrangement is done manually, making lot ofpaper work.
- Most of the students feel Augean to search their allotted seat during exam.

II. RELATED WORK

"Exam Hall Seating Arrangement System" [1] was proposed by S. PriyaDharshini, M. SelvaSudha. Main aim of this project to help the students so that they get hassle free information of seating arrangement. Student's information is provided by faculty or exam coordinator of department & this information is stored in alphabetical order. Any changes in student details or exam timings will be updated by admin.

Using cloud computing technology, Dayanand G Savakar, Ravi Hosur from Rani Chennamma University, Belagavi developed "Exam Hall Seating Arrangement System". Using the cloud computing technology, this system will automatically generate seat allotted to the students & hall allotment for faculties for the supervision. This system is computerized way of allocating students to a particular hall based on the number of students & the capacity of the hall. Using this system supervisors can also exchange their duties.

"Exam Hall Seating Arrangement System" was developed by Bondre Rutuja Avinash, Durgi Varsha Vijaykumar, Mohite Pradnesh Rajeev, Parkar Vishal

V. This application can generate hall ticket & result of each semester. Main aim of this project, once enrolled using their id & passwords students & faculty can access

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the information, such as hall ticket generation if they student has passed in all IA's & result is generated semester wise.

Seating arrangement Tools for examinations, Author- Ashti Fatima Alam, [2] project was developed using C/C++, main drawback was it was not efficient & was not user friendly.

Exam hall seating arrangement System using PHP, Author- Prof S.S.Aravinth, G.Pavithra, [3] ,is an online system, where student registration to be done first.

A survey was carried at public institution in southeast region of US, the result of the survey has shown the students who occupied seats at the end of rows with individual chairs scored high than the ones who occupied in the middle row[4].This study has found girls scoring more marks than boys.in this type of environment student were allowed to get their required things which included books, jackets, handbags etc. making students their comfortable zone which in turn helped in active learning. Seating arrangement has evolved over few decades. In 70's setting classroom was directed towards traditional row set up. There was influence on students having strong interest in seating arrangement[5,6].

In the 70"s the classroom setting was mostly focused on the traditional row set-up classroom. Weinstein found that there was a tremendous surge of interest in determining the influence of the school setting onstudents [5, 6].

III. SYSTEM ANALYSIS

EXISTING SYSTEM

In the existing system, exam seats are arranged for the individual students of same course by the course teachers. Since this seating arrangement is done manually it is difficult to maintain the quality of exam, as this system is less accurate & prone to errors.

Allocation of rooms to staff & students was done manually which was a tedious task, requiring more manpower, more paper work& would be time consuming. To overcome these disadvantages Exam Hall seating arrangement System was developed.

PROPOSED SYSTEM

Main purpose of developing the Exam Hall seating system is to generatehassle free seats for the students automatically. This application allots the staff & students the exam hall automatically & ensures that no two students are allotted on same seat.

Advantages of Proposed System

Advantages over current system: Easy to handle and operate.

Friendly interface. Fast and convenient.

Less human effort.Easy to update.

Easy message passing.

IV. IMPLEMENTATION ALGORITHM

A genetic algorithm reflects the tactic of survival where the fittest individuals are selected for copy so on supply offspring of subsequent generation.

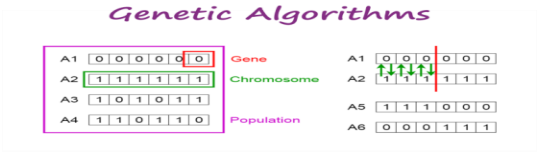

Fig1: Notion of Natural Selection

The process of survival starts with the selection of fittest individuals from a population. They produce offspring which inherit the characteristics of the parents and may be added to subsequent generation. If parents have better fitness, their offspring are getting to be better than parents and have a much better chance at surviving. This process keeps on iterating and at the top, a generation with the fittest individuals are going to be found. This notion is often applied for an enquiry problem. We consider a group of solutions for a drag and choose the set of best ones out of them.

Five phases are considered in a geneticalgorithm.

1. Initial population
2. Fitness function3.Selection
4. Crossover
5. Mutation 1.Initial Population:

Group of people are termed population. Each individual may be a solution to the matter you would like to unravel. An individual is characterized by a group of parameters (variables) referred to as Genes. Genes are joined into a string to make a Chromosome (solution). In a genetic algorithm, the set of genes of a private is represented employing a string(0's & 1's), in terms of an alphabet. We say that we encode the genes during a chromosome.

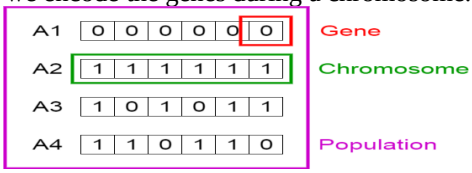

Fig2: Population, Chromosomes and Genes

2. Fitness Function:

The fitness function determines how fit a private is (the ability of a private to compete with other individuals). It gives a fitness score to each individual. The probability that a private are going to be selected for copy is predicated on its fitness score.

3. Selection:

The idea of selection phase is to select the fittest individuals and permit them to pass their genes to subsequent generation. Two pairs of people (parents) are selected supported their fitness scores. Individuals with high fitness have more chance to be selected for copy.

4. Crossover:

Crossover is that the most vital introduce a genetic algorithm. A crossover point is chosen randomly within the genes.

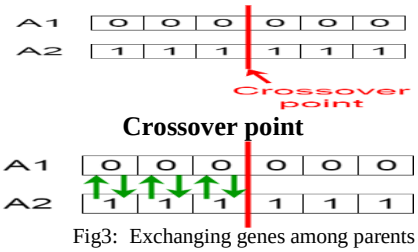

Fig3: Exchanging genes among parents

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The new offspring are added to the population.

A5	1	1	1	0	0	0
A6	0	0	0	1	1	1

Fig4: New offspring

5. Mutation:

In the new offspring formed, a number of their genes are often subjected to a mutation with a coffee random probability. This implies that a number of the bits within the bit string are often flipped.

Before Mutation

A5	1	1	1	0	0	0

After Mutation

A5	1	1	0	1	1	0

Fig 5: Mutation: Before and After

Mutation occurs to take care of diversity within the population and stop premature convergence.

6.Termination

Termination of algorithm occurs if the group of people called population don't produce offspring different from previous generation.

Then it's said that the genetic algorithm has provided a group of solutions to our problem.

MODULES:

- Login
- Room creation
- Staff creation
- Student creation
- Hall allocation

Login: Used by admin, faculty & student to login.

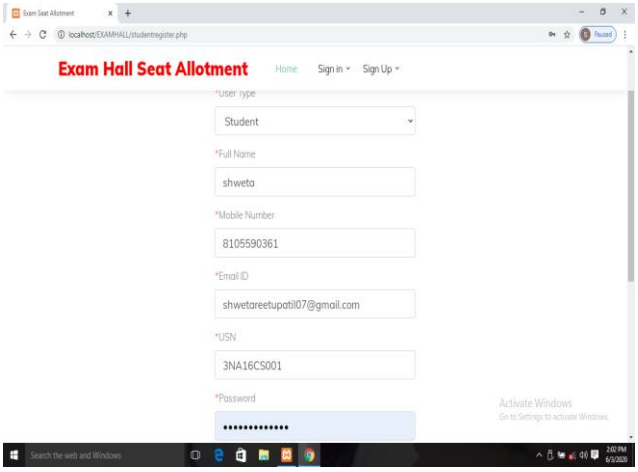
Room creation: Listing out the rooms in each block & separation of blocks done in this module.

Staff creation: To register details of staff.

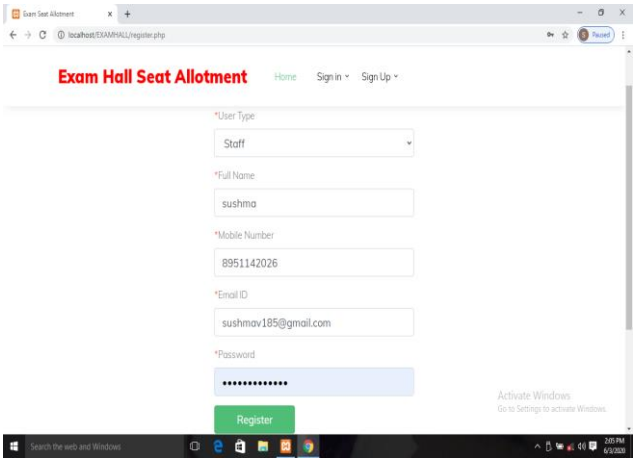
Student creation: To upload the students file and also to register the particular student.

Exam assign: Details of exam like date & type of exam conducted is assigned in this module.

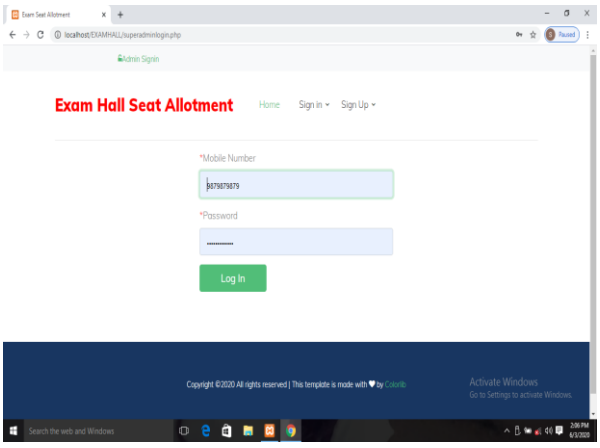
VI. SCREENSHOTS



(I).STUDENT REGISTRATION PAGE



(II). STAFF REGISTRATION PAGE



(III). ADMIN LOGIN PAGE.

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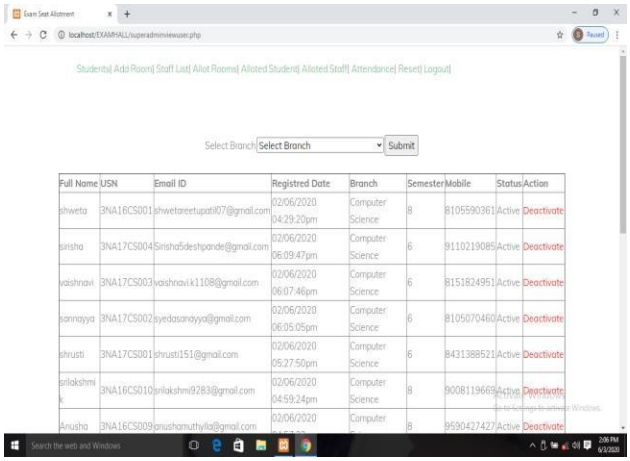
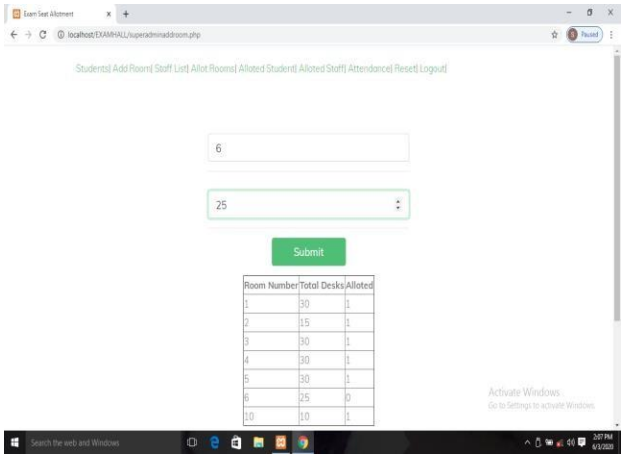
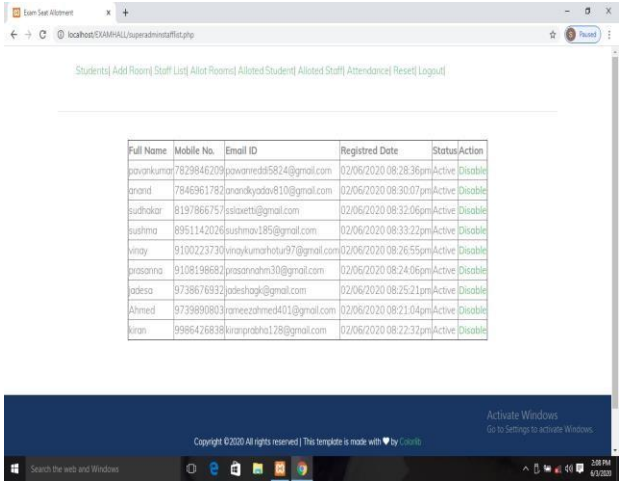


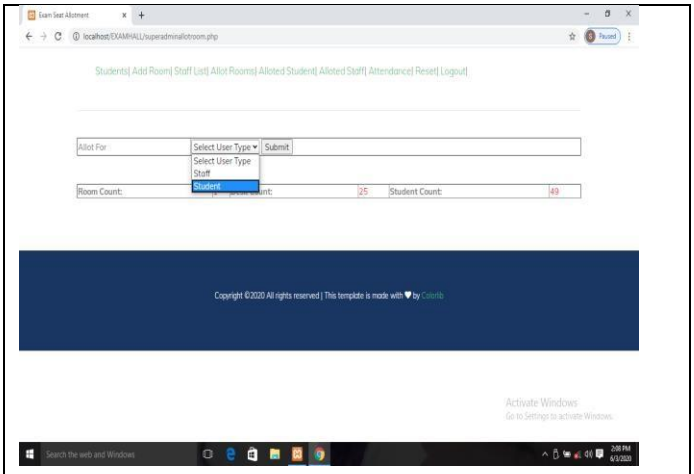
(IV). REGISTERED STUDENTS PAGE



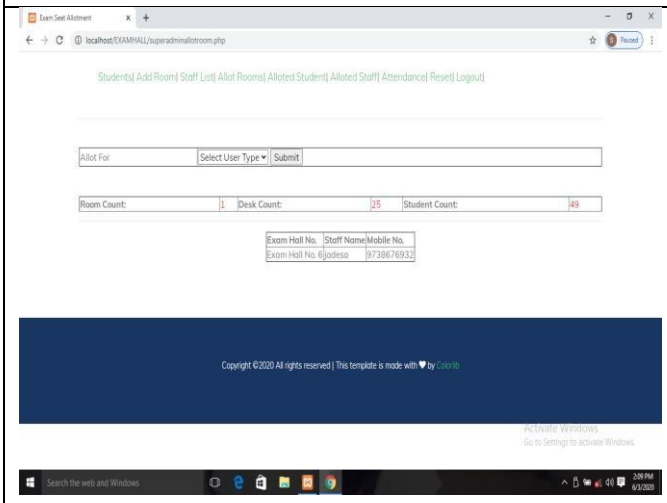
(V). ADDING ROOM FOR INVIGILATION



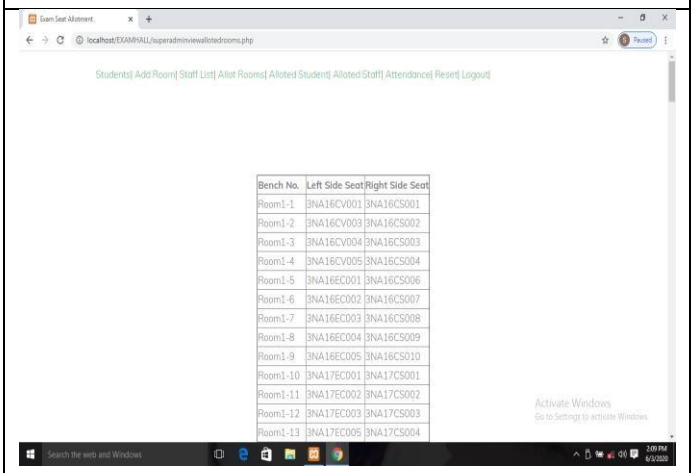
(VI). REGISTERED STAFF PAGE



(VII). ROOM ALLOCATION



(VIII). STAFF ALLOTMENT



(IX). STUDENT ALLOTMENT

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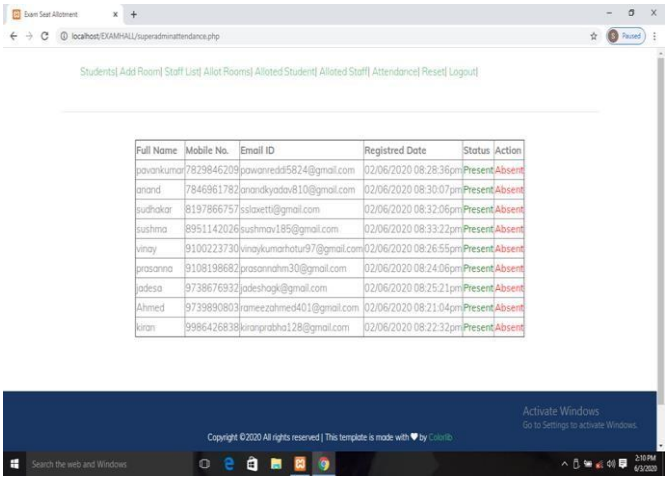
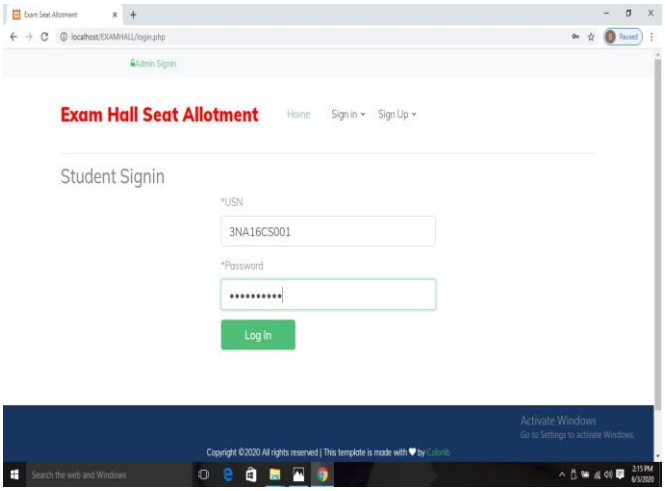
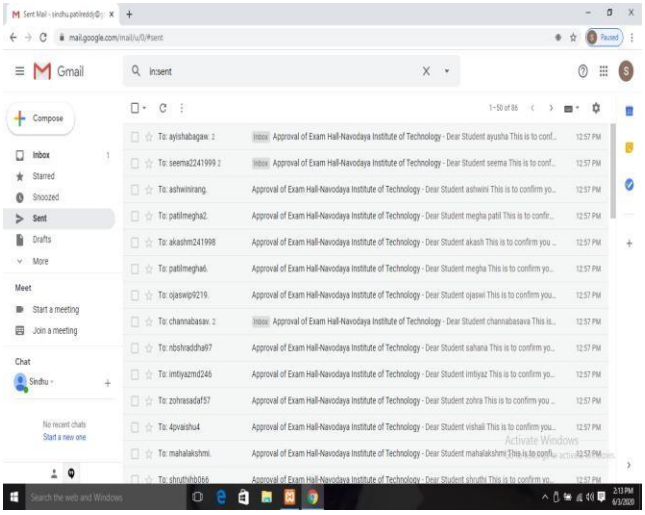


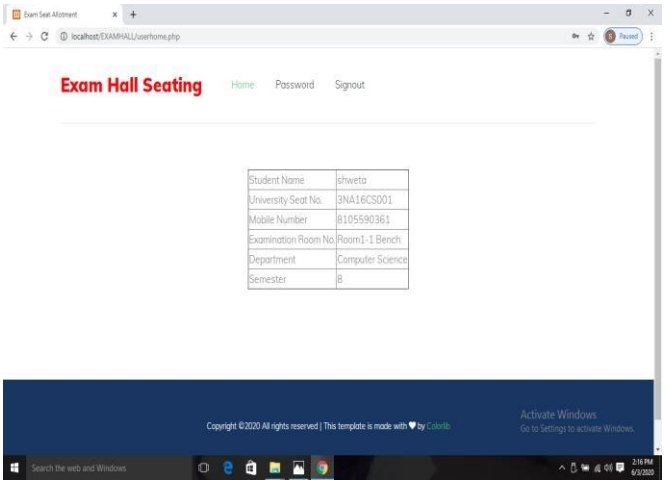
(X).STAFF ATTENDANCE



(XIII).STUDENT LOGIN

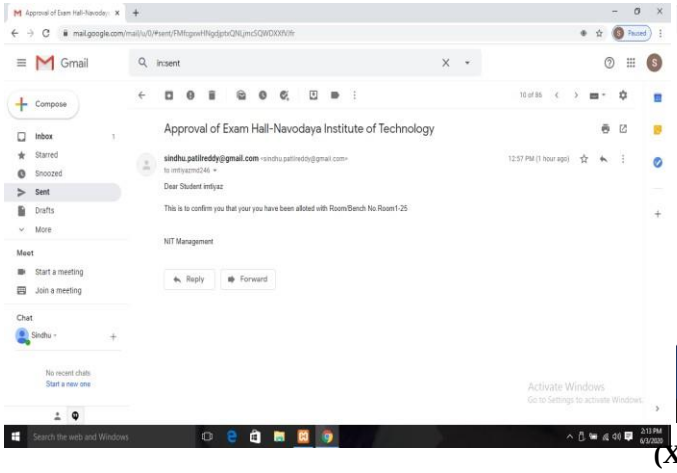


(XI)MAIL

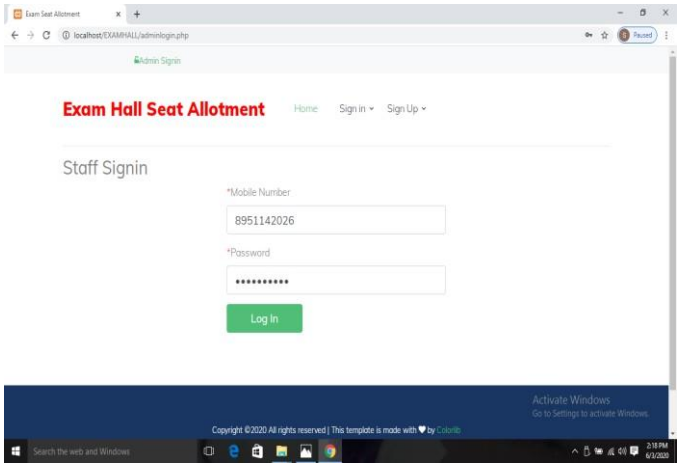


(XI).

(XIV). STUDENT ALLOTMENT VIEW



(XII). STUDENT MAIL



(XV).STAFF LOGIN

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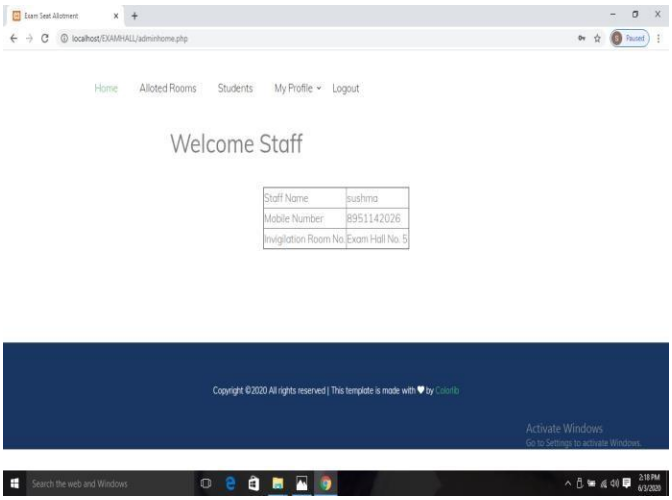

(XVI). STAFF ALLOTMENT VIEW

CONCLUSION

This application is great advantage to all the educational institutes as it is simplifying the seating arrangement by automatically generating the seats for the students, room allocation for the staff.

Project results in reduction of manpower & workload on students & staff. It benefits all the educational institutes by reducing the complexity involved while allocating the exam duty for the staff, examination rooms for the students. Data can be accessed anytime as it is stored in centralized database.

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