# A minor Project Final Report on **EXAM SEAT ALLOCATION SYSTEM**

Submitted in Partial Fulfillment of the Requirements for

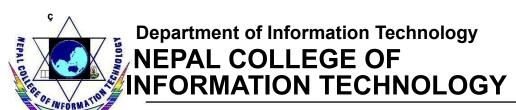
# The Degree of **BACHELOR OF ENGINEERING IN INFORMATION TECHNOLOGY**

**Under Pokhara University** 

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## ACKNOWLEDGEMENT

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## **ABSTRACT**

This project "EXAM SEAT ALLOCATION SYSTEM" is a web based application which generates seat plan for the examination in any college, university and other organizations where written exam is needed. This application takes the student information which processes and generates seat plan for different departments. In this system, two module is present, one is admin and another is user or student module. The admin module is accessed by the organization's exam department who are responsible for the seat allocation process. The existing pattern is so time consuming as well as tedious one. The committee should know all about the halls as well as room capacity. The excel sheet provide alternative way for such tedious work and also stores the data provided in database for future use also. This system is based on php and Mysql is used for the database purpose.

Keyword:php, Mysql, modules, seat allocation

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# LIST OF ABBREVIATIONS

**DFD** Data Flow Diagram

**ER** Entity Relationship

HTML Hypertext Markup Language

**SQL** Structured Query Language

UML Unified Modeling Language

MD5 Message Digest 5

## 1.INTRODUCTION

Exam seat allocation system is a web based application developed for those organization where written examination is taken. The main aim of developing this system is to provide easy access to the data of each and every people in that specific organization. This system helps to keep track of available halls to the admin and to measure current seat capacity. In each and every institution(schools,colleges,universities) there are hundreds of students and each students data is very important for that institute. Hundreds of students in different departments need to give written exam frequently. So,to simplify the seat allocation task,this system is very useful. Institute need to keep accurate records of each students and keeping records in paper is trustworthy now-a-days. This system solves that problem as well.

There is two module in this system, admin and user module. The admin module is used by the organization administration department and user modules are all for the students. In admin module, the admin first stores the details of all students in the database by providing the excel file that stores the data of all students. Storing the data of each students in database one at time so tedious one so this simplifies that task too. The existing system uses manual processes to store data of students. The main task of admin is that they should create the xml file in a predefined order as given in the system. Then the admin sees the available rooms and capacity of that available rooms. Then the admin allocates seats according to student's departments for the examination. Then the admin saves the seat allocation in database. The admin can also access to the students information and can update the data if necessary. The students can login to the system and can see the room allocation.

## 1.1..PROBLEM STATEMENT

The management task has always been difficult for most of the people. The existing pattern in seat allocation process is too time consuming as well. There is also lack of data security too. This system provides stable database and time and effort is less with comparison to the existing pattern. The data is secured and cannot be accessed without permission. The other problem might be unstable system, as this project is developed in php, there is no lack of system outdate.

## 1.2.PROJECT OBJECTIVE

The main focus and aim in developing this projects are:

- Upload students information in the form of excel sheet as suggested in system and with same pattern and generate seat allocation according to the different departments.
- Ensure data security in open-environment.
- Easy access to seat allocation for all students.
- Maintain the accuracy, integrity and consistency of data.

#### 1.3.SCOPE AND LIMITATION

#### SCOPE

- Information of students can be uploaded by excel sheet as prescribed pattern which saves most of time. While the inserting students data manually takes too much time which is so tedious too.
- Can be used in any colleges, schools as well as universities where allocating seat for different department is main.
- Can be used to stores data of student and can be changed later on.

## LIMITATION

- The administration department should choose those administrators who can prepare excel sheet.
- The prescribed pattern should be followed which sometimes confuses the administrator.
- The students data should be accurate as well as data of all students should be in excel sheet which sometimes may left those students whose data are unavailable during room allocation.

## 2.METHODOLOGY

We have planned to work following these methodologies for the application of knowledge, skills and technique to meet the requirement of our project.

## 2.1. SOFTWARE DEVELOPMENT LIFE CYCLE

The framework we will be using for developing this project is iterative model. In this model, a simple and primitive implementation of very small set of software requirement is done at first, which is followed by the iterative enhancement in the primitive model until all requirements are fulfilled by acknowledging the feedback from the previous model. The following sub section briefly describe various phase in iterative model of SDLC that was applied in the development of system.

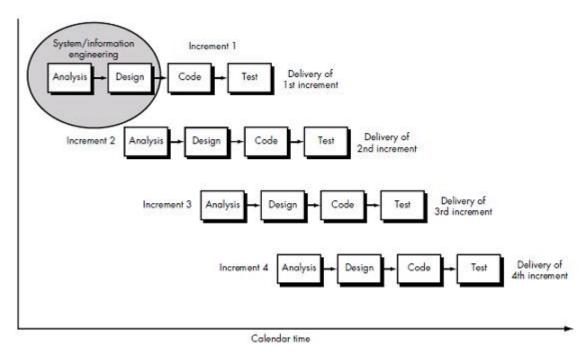


Figure 1:Iterative model in software development life cycle

## 2.1.1. REQUIREMENT ANALYSIS:

In this phase, analysis will be performed in order to find out the requirements of the system. The outcome of this phase would be a system requirement specifications.

### 2.1.2. DESIGN PHASE:

In this phase the system requirement specifications would be translated into the system design. Context diagram, data flow diagram, entity-relationship diagram, use case diagram, sequence diagram ,domain model and class diagram will be developed.

## 2.1.3. CODING PHASE:

In this phase coding will be done according to the design and a working system will be developed by the end of the process.

## 2.1.4. TESTING PHASE:

In this phase the system will be tested with each testing list of changes to the system developed, is suggested and the change will be applied to the software and the software would be delivered as a successive increment until a satisfying system is achieved.

## 2.2. SOFTWARE SPECIFICATION

#### HTML:

It is the standard markup language used to create web Pages. HTML is written in the form of HTML elements consisting of tags enclosed in angle brackets (e.g. <a href="https://example.com/html/">httml/</a>). HTMlL is skeleton of the system.

## **CASCADING STYLE SHEETS (CSS):**

It is a style sheet language used for describing the look and formatting of a document written in a markup language. While most often used to style web pages and interfaces written in HTML the language can be applied to any kind of XML document,. CSS is to make the User Interface more attractive as well as to add responsiveness to the system so that the system is much more comfortable to use.

MYSQL:

MySQL is developed, distributed, and supported by Oracle Corporation. MySQL is a database

system used on the web it runs on a server. MySQL is ideal for both small and large applications.

It is very fast, reliable, and easy to use. It supports standard SQL. MySQL can be compiled on a

number of platforms. The data in MySQL is stored in tables. A table is a collection of related

data, and it consists of columns and rows. Databases are useful when storing information

categorically. It is much more easier and faster to manipulate data in MySQL.

JAVASCRIPT:

JavaScript is the scripting language of the Web. All modern HTML pages are using JavaScript.

A scripting language is a lightweight programming language. JavaScript code can be inserted

into any HTML page, and it can be executed by all types of web browsers. JavaScript is easy to

learn as well easy to implement.

PHP:

PHP is an acronym for "PHP Hypertext Preprocessor". it is a widely-used, open source scripting

language. It scripts are executed on the server. It costs nothing, it is free to download and use.

SOFTWARE REQUIREMENTS:

OPERATING SYSTEM: Windows 7/ XP/8/10

FRONT END: HTML, CSS, JavaScript, BootStrap.

SERVER SIDE SCRIPT: Php

DATABASE: MySQL

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#### 3.LITERATURE REVIEW

This section consists of the literature study on the exam seat allocation system. Many colleges and universities are using these type of system for the seat allocation process. Despite of being behind in technical field like other developed countries, our local colleges are also using these type of system for the better accuracy within less time than before.

#### 3.1.REVIEW

With improving devices ,technology and knowledge of data ,we expect more easier way to handle our problem in lesser time . The traditional way of seat allocation process is so much tedious one and time consuming too . Hence our project is looking forward for simplification of seat allocation process.

#### 3.2. EXISTING SYSTEM

The Existing system is all manual and should be done with large human efforts and also time consuming too. Enhancement of Technology changes the manual pattern into computerized way to allocate seat. The Exam committee in NCIT is also using the exam management system which is only used by those who are part of exam department committee. And the main cons of this system is stand-alone system(offline). The seat allocation process is done but the availability of seat plan is not online. The data security is also not important because of offline system.

#### 3.3.COMPARISION WITH EXISTING SYSTEM

Our system provide data security in open environment and the seat availability online. Any student can see their room number as well as block after logging into the system and search for their roll numbers. This system saves student's time to search room number before the exam day. The existing manual process is going to be completely overtaken and the existing automatic seat plan system slightly falls behind when it comes to accessibility.

## 4.SYSTEM MODEL AND UML DIAGRAMS

Designing according to the requirement specification, we have made an attempt to make sure that the system design actually confirms the user requirements of the system.

## 4.1.CONTEXT DIAGRAM

A context diagram gives an overview and it is the highest level in a data flow diagram, containing only one process representing the entire system. It should be split into major processes which give greater detail and each major process may further split to give more detail.



Figure 2: Context Diagram

## 4.2. DATA FLOW DIAGRAM

A data flow diagram (DFD) is a graphical representation of the "flow" of data through an information system, modelling its process aspects. We used DFD as a preliminary step to create an overview of the system, which can later be elaborated also be used for the visualization of data processing (structured design).



Figure 3: Data Flow Diagram for admin

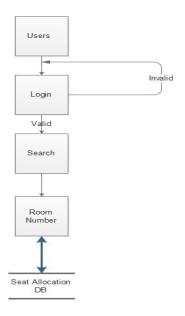


Figure 4: Data Flow Diagram for user

## 4.3.USE CASE DIAGRAM

A use case diagram at its simplest is a representation of a user's interaction with the system that shows the relationship between the user and the different use cases in which the user is involved. The actors for our system are: Admin and Students. The graphical representation of what our system must actually do is represented below:

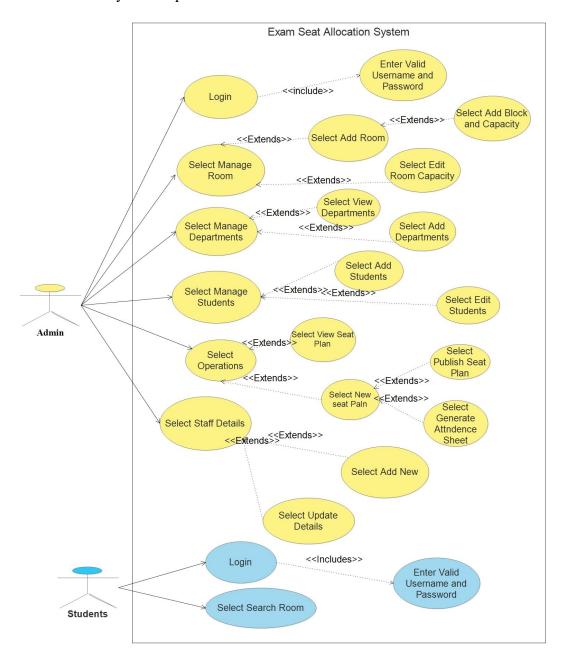


Figure 5: Use Case Diagram

## 4.4.ACTIVITY DIAGRAMS

An activity diagram shows the flows from activity to activity within a system. An activity shows a set of activities, the sequential or branching flow activity to activity, and object that act and acted upon. Activity diagram shows what activities can be done in parallel, and any alternate paths through the flow. Activity diagrams contain activities, transitions between the activities, decision points, and synchronization bars. Activities diagrams emphasize the flow of control among object.

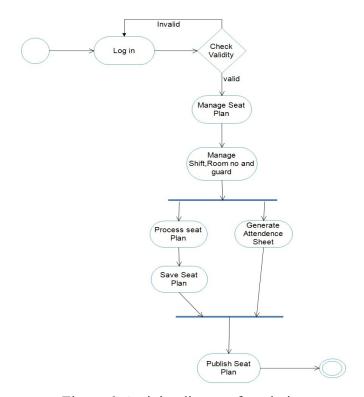


Figure 6: Activity diagram for admin

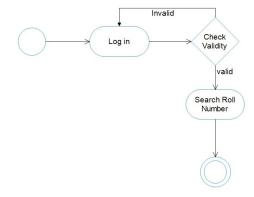


Figure 7: Activity diagram for user

# 4.5. SEQUENCE DIAGRAMS

Sequence Diagram is an interaction diagram. It show how the events occur and in what order. For our system we have designed sequence diagrams for most critical and influencial activities which are shown below.

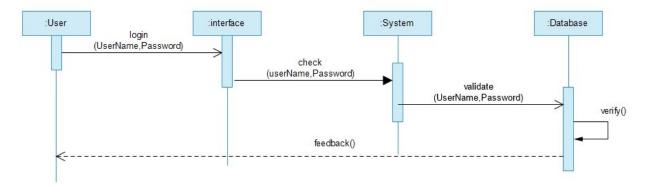


Figure 8: Sequence Diagram for Login

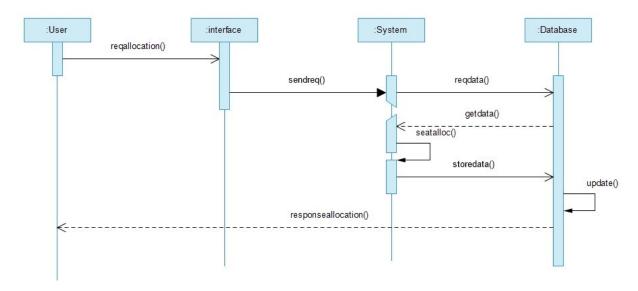


Figure 9: Sequence Diagram for seat allocation

# 4.6. ER DIAGRAM

Entity Relationship Diagram, also known as ERD, ER Diagram or ER model, is a type of structural diagram for use in database design. An ERD contains different symbols and connectors that visualize two important information's. The major entities within the system scope and the inter-relationships among these entities is shown in the figure below:

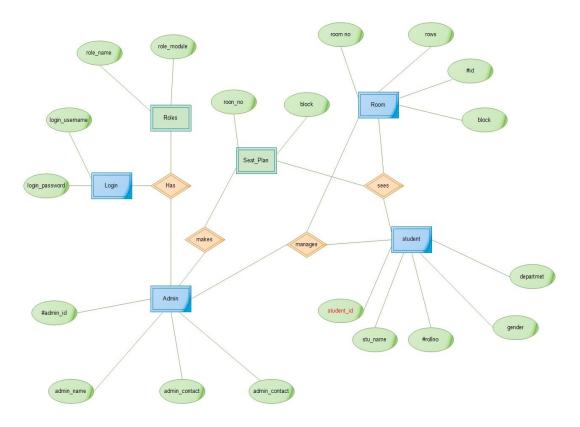


Figure 10: ER diagram

## 4.7. DOMAIN MODEL

A domain model is a system of abstractions that describes selected aspects of a sphere of knowledge, influence, or activity (a domain). First, we identified the major concepts (conceptual classes) in our project. The concepts include: User, Application, WebAPI, Google Maps API, EventScrapper and Events. Then we included the attributes of the conceptual classes and finally the associations between these concepts were identified.

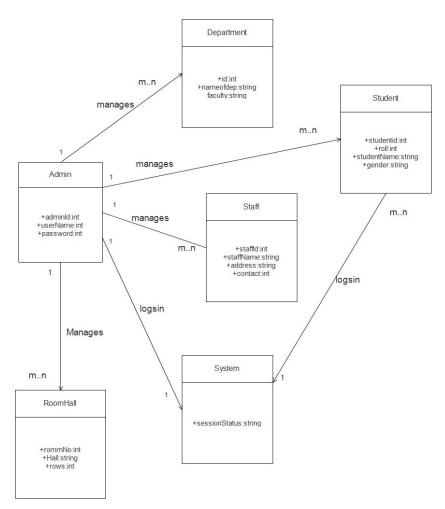


Figure 11: Domain Model

#### 5.SECURING DATA IN WEB

The main problem while developing a web based application is lack of security. All the data is accessed in the web through our device while running this application and the data must be secured. The first thing we consider while data security is physical security i.e. securing data from thieves, natural disasters and other physical harm which may damage the data and may be misused if stolen by someone. The physical protection can be provided by guards and administration's people. But these people cannot secure data in the web where we should give attention. The data in the web can be secured by following activities:

## 1. Securing data from sql injection

There have been many high visibility attacks against web applications that can be traced back to a SQL injection attack successfully stealing passwords. SQL injection is a code injection technique that might destroy our database. SQL injection is one of the most common web hacking techniques. SQL injection is the placement of malicious code in SQL statements, via web page input. This can be controlled by using prepared statements while coding.

- 2. The data in web need to be secure from unauthorized users and hackers too. The data can be secured by using firewall in our device so that the unwanted file doesn't get into our device which may cause damage or loss of data.
- 3 MD5 or any other standard hashing algorithms can be used to secure our login information more secure to avoid unauthorized access.

## 6.ALGORITHM USED

In this algorithm we manually give the starting room numbers and departments for the further process of the algorithm. Then the students list is retrieved from database—and the rows of each classroom too. Then system will generate the seat plan. The pseudo code is given here.

- 1. Input starting room number and departments as well as subjects
- 2. Calculates the total number of students in those departments having those subjects
- 3.while(room > 0)

```
3.1.if sub1 == sub2 then exit
3.2.create matrix of row (n) * col(2)
3.3. while( $j > 2)
    if( $j == 1)
        print eroll of subject 1 of dep 1
    else
        print eroll of subject 2 of dep2
3.4.room ++(i.e. id++)
3.5.if(total_student == total matrix element created)
    then
    exit.
```

## **7.BUDGET ESTIMATE**

#### **FUNCTION POINT**

Function points are the basic data from which productivity metrics could be computed. Function point metric is used to collect direct measure of software engineering not only according to the size but also according to functionality.

Information domain values	count	Weighted value	Total count (weight*count)
No of users input	23	4	92
No of users output	9	5	45
No of user inquiries	5	4	20
No of logical files	5	10	50
No external interface	1	7	7
Count total	214		

The value of complexity multiplier ranges from 0.65 to 1.35. Since, our project is average, the value of the complexity multiplier used is average, i.e we have assumed an average value as 1.17.

Function Point (FP) = Count Total \* Complexity Multiplier

= 
$$214* [0.65 + 0.01 *\Sigma fi]$$

= 250.38

 $\approx 250$ 

Average productivity = 10 FP / pm

Labor Rate = Rs. 10,000 per month

Effort = function point (FP)/average productivity

$$=256/10$$

=25.6

=26

Total project cost=FP\*(labor rate/average productivity)

=256\*5000/10

=Rs 1, 28,000

## Number of user inputs

Each user input that provides distinct application oriented data to the software is counted.

## **Number of user outputs**

Each user output that provides application oriented information to the user is counted. In this context "output" refers to reports, screens, error message, etc. individual data items within a report are not counted separately.

## Number of user inquiries

All inquiry is defined as an online input that results in the generation of some immediate software response in the form of an online output. Each distinct inquiry is counted.

#### Number of files

Each logical master file is counted.

#### Number of external interface

All machine readable interfaces that are used to transmit information to another system are counted.

#### LINE OF CODE

LOC (Lines of code) is a simple and straight forward way of counting the productivity of a programmer in a given time period. Using lines of code metric, the project size is estimated by counting the number of source instructions in the developed program.

Estimated LOC=3015

Average productivity=130LOC/pm

Labor Rate = Rs 10,000 per month

Now,

Estimated project cost=estimated LOC\*cost per LOC

=3015\*(labor rate/average productivity)

=3015\*10000/130

≈Rs 231,925

# 8.TESTING

Testing is important phase to ensure that the system meets the requirements that guided its design and development responds correctly to all kinds of inputs and achieves the general result its stakeholder's desire. We wanted to evaluate our system to make sure that all the developed elements worked properly. The system was tested for normal condition, primarily. Testing was performed on each unit.

S.N.	Unit	Test	Expected Result	Test Outcome	Evidence	Result
1	Login admin	Check login credentials for valid username and password	admin_name or password does not match	Invalid username or password	Test 1.1	
2	Login admin	Check login credentials for valid username and password	Show admin panel	Show admin panel	Test 2.1	
3	Upload Student data	Extract data from excel sheet and saves into the database	Successful	Successful	Test 3.1	
4.	Allocate Seat	Extract data from input and allocate seat	Displays room allocation and save option	Displays room allocation and save option	Test 4.1	
5	Login user	Check login credentials for valid username and password	Show user panel	Show user panel	Test 5.1	
6	Search Seat	Search for seat in database	Display Room number and block	Display Room number and block	Test 6.1	

## **TEST EVIDENCES**

## Test 1.1

Unit:Login admin

Purpose: Check Login credentials for valid username and password

Expected Output:admin\_name or password does not match!!

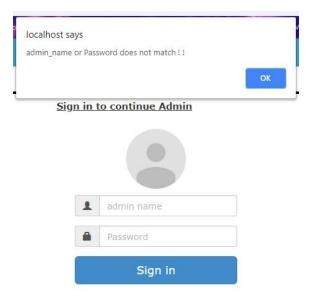


Figure 12:login Test Case 1.1

## Test 2.1

Unit:Login admin

Purpose:Check Login credentials for valid username and password Expected Output:show admin panel



Figure 13:Login Test Case 2.1

## Test 3.1

Unit: Upload Student data

Purpose: Check Extract data from excel sheet and saves into the database

Expected Output:Successful

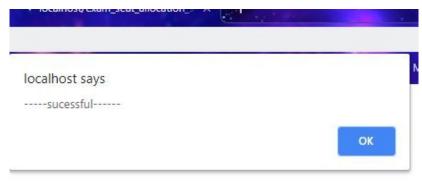


Figure 14:Upload Student Data Test Case 3.1

## Test 4.1

Unit: Allocate Seat

Purpose:Extract data from input and allocate seat

Expected Output:Displays room allocation and save option

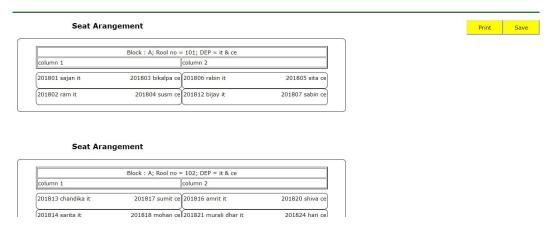


Figure 15 :Seat Allocation Result Test case 4.1

## **Test 5.1**

Unit: Login student

Purpose:Check Login credentials for valid username and password

Expected Output: Show user panel

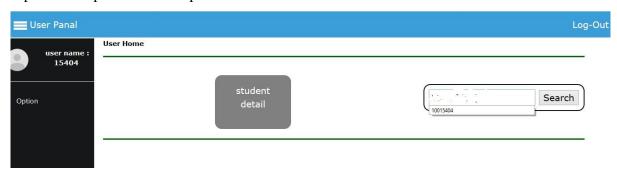


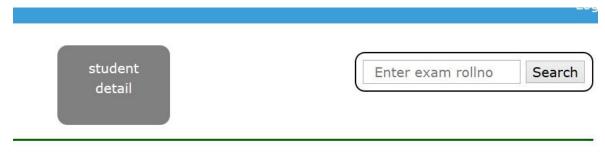
Figure 16:Login student Test Case 5.1

## Test 6.1

Unit: Search Seat

Purpose:Search for seat in database

Expected Output:Display Room number and block



Exam Roll: 10015404

Block : A Room no : 101

Figure 17 :search seat Test Case 6.1

# 9. PROJECT TASK AND TIME SHEDULE

The project schedule has been designed as per requirement and constraints involved. This project is schedule to be completed in about 3 months. Requirements analysis has been given more emphasis. Research and database management is to be done first and well document. Debugging and testing is to be done prior to the completion of project.

TASKS	APPROX DURATION	
	(in days)	
Requirement Analysis and Specification	12	
Undertake Analysis of the System	8	
Design System	30	
Procedure Requirement Specification	12	
Testing and Debugging	12	
Test System Modules	8	
Overall System Test	8	
Develop Documentation	15	

Table 1: Project task and time schedule

# TEAM MEMBERS AND DIVIDED ROLES

Names	Roles	Responsibilities		
		Develop the user friendly		
	UI/UX Designer	Interface and		
		work through design revision.		
		Testing the system Interface		
	System developer	Define and execute		
Santosh Thapa Magar		development requirement		
		Discuss and determine the		
		good workflow.		
	Project management	Manage risk and issues.		
		Responsibility to keep project		
		on track.		
		Manage risk and issues in		
		ongoing project tasks.		
	Project management	Review and repeatative testing		
Bikash Thapa Magar		Responsibility to keep project		
		on track.		
	End User Documentation	Develop the documentation		
		file.		
		Participate in testing.		
	Database administrator	Develop maintain and		
		implement policies, procedures		
		necessary to ensure the		
		security and integrity of the		
		database		

Table 2: Team members and divided roles

# 9.1. GANTT CHART

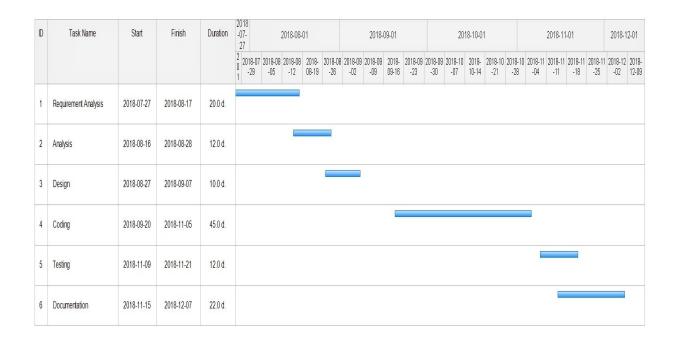


Table 3: Gantt Chart

## 10.CONCLUSION AND FUTURE EXTENSIONS

The "Exam Seat Allocation System" is now at the starting phase having most of the functionalities discussed before. All modules have been working properly ,the admin can allocate seat after the entry of student data according to their choices and the students can see their room number and hall from one query and can save time to search seat a-while-ahead of the exam. We can make many extension in this project in future to make this system more reliable and trusty.

- Students can request for the data change if any mistakes.
- Admin can make triplicates and also publish result if other functions are added.
- We can make this system live and provide Software as a service(SAS) in future.

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142b87ca518221b009ad8871b8aa652ffd9682aa?

fbclid=IwAR3UCfz4Sc5zpujKj83lJdy2KRlH9OUXtOozy2Xg7s05q39LOsfwlAm8ebk

[Accessed :12-Sept-2018]

[10] Document Reference Available at <a href="https://www.scribd.com/document/333082965/Exam-Seating-Arrangement-System?">https://www.scribd.com/document/333082965/Exam-Seating-Arrangement-System?</a>

fbclid=IwAR1wUYwnA\_hvDvEMaqh1FIXhTYwPcIx9HlHw1pT\_d-pzgkHbhnxb-GGfU\_g [Accessed at :5-Dec-2018]

# 12.APPENDIX

# SYSTEM SNAPSHOT



Figure 18: Admin panel

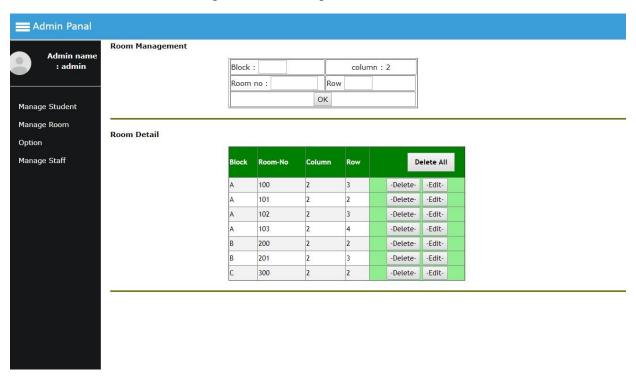


Figure 19: Room Management

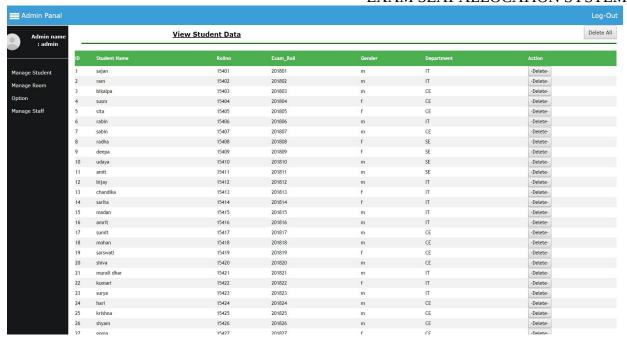


Figure 20:Student Data

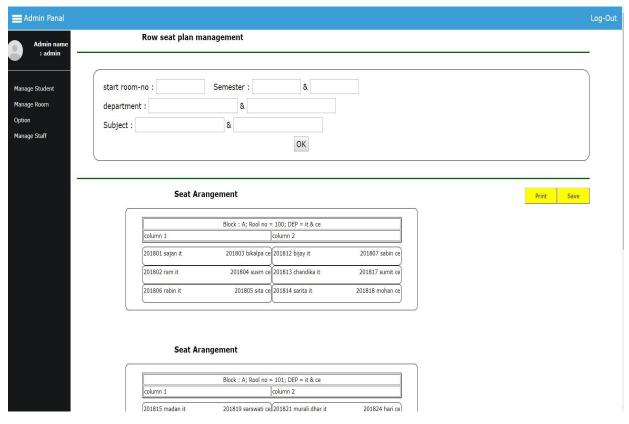


Figure 21: Seat Allocation page

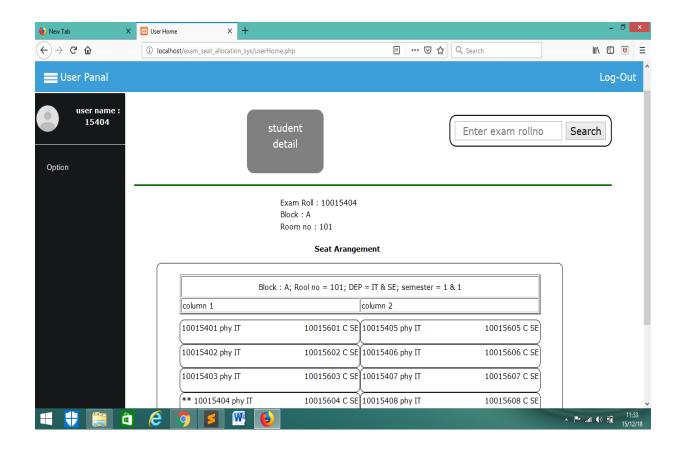


Figure 22: User search Request