

REQUIREMENT ANALYSIS REPORT

CLASSROOM MANAGEMENT SYSTEM

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1 METHODOLOGY

The following methods were used to gather data about the given personas:

- Questionnaire *via* Google Form
- Interviews *via* Direct Messages and Phone Call

1.1 Questionnaire

By using questionnaire as a form of data gathering method, we were able to reach **54 people** in a short period of time. This method proved to be easier, quicker and more convenient. Keeping the pandemic in mind, we used Google Form as the medium to conduct our survey. Using online surveying methods like Google Form allowed us to avoid direct contact with people and also saved a lot of time.

We prepared **two separate Google Forms** to collect data from two categories of users – **the students** and **the class representatives** of **IUT**. The form for students was made short, simple and had more close-ended questions since most students won't invest more than 5 minutes on a single form. Open-ended questions were marked as optional so that redundant and effortless comments were avoided. The Google form for class representatives were more detailed with more mandatory open-ended questions. Both forms followed the pyramid structure.

1.2 Interview

For interviews, we used direct messages and phone calls as the medium since face-to-face interviews cannot be performed during the pandemic. We interviewed **15 people** from all the categories of our target users which includes **students, class representatives, teachers** and **staff** of **IUT**. By interviewing, we were able to reach users like teachers and staff whom we were not able to reach using questionnaire. The data gathered from interviews were more reliable, descriptive and detailed.

1.3 Representative Users

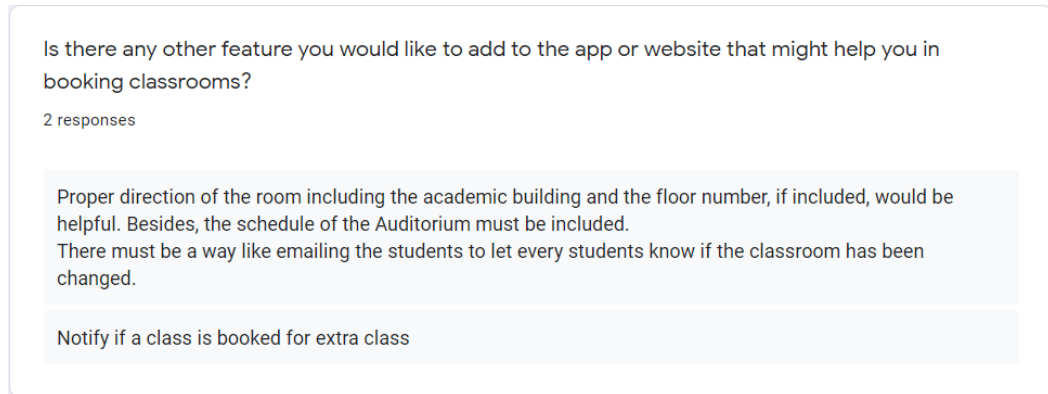
For our system, the representative users are the **students, teachers, class representatives** and **staff** of **IUT**. The primary purpose of our system is to find and book classrooms of IUT

and show them to the desired users. The class representatives are responsible for finding and booking classrooms for unscheduled classes. The information about the booked rooms has to be relayed to teachers and students. The staff should also be able to book classrooms according to the fixed schedule and play administrative roles in our system. So, all four categories of users have been included in our list of representative users.

2 RAW DATA

Before gathering data from our users, we had a rough idea of what the users wanted from our system. Most of the findings from the users matched our expectations but with a few exceptions. The following are some of the interesting finds from our survey:

- While collecting data from the class representatives using Google forms, we found a respond regarding the schedule of the auditorium. This is an interesting find because quizzes are often taken in the auditorium but we didn't consider that in our initial system. We shall now include the auditorium as a special room in our system.



Is there any other feature you would like to add to the app or website that might help you in booking classrooms?

2 responses

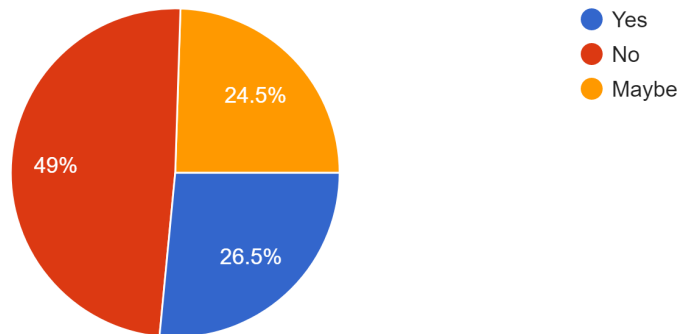
Proper direction of the room including the academic building and the floor number, if included, would be helpful. Besides, the schedule of the Auditorium must be included.
There must be a way like emailing the students to let every students know if the classroom has been changed.

Notify if a class is booked for extra class

- Before conducting the survey, we assumed that most classes had inadequate seat capacity. But studies showed mixed results regarding seat capacity. Because of the increasing number of students, many of us faced problems regarding the seat capacity of the classroom. But, this problem seems to occur lesser than expected.

Did the classrooms have adequate seating capacity?

49 responses



This one's also an interesting find as it didn't meet our expected result.

- We asked a lot of open ended question to our class representatives. We found some great suggestions from those questions and one of them was to include a digital board in the first floor of academic buildings to show the classroom booking schedule. Our team thinks that it is a great idea and with the help of IUT, we can integrate such a system with our web-based and application-based classroom management system.

If there's any way you would like the current system to be changed then what would it be? *

A board in the first floor of academic building preferably a digital one showing the bookings

3 PERSONAS AND SCENARIOS

3.1 Persona: James

Occupation: Student (Class Representative)

Age: 20

Goals:

1. Quick search and book classrooms
2. Arrange rooms for quizzes and extra classes
3. Easily relay information about booked classrooms to his fellow classmates and teachers

Frustrations:

1. Wasting time looking for classrooms and booking them
2. Unable to arrange classrooms for extra classes and quizzes
3. Doing tedious work of relaying information about booked classrooms

Scenario:

James started his life at IUT with a bang, making new friends, going to new places and overall enjoying himself. Due to his outgoing and easy nature, he was selected as the Class Representative, but that was the start of all of his woes.

James could handle most of his work but one problem always seemed to haunt him: the issue of managing classrooms for lectures. Faculty members kept assigning extra classes, discussion classes and quizzes, even though no classrooms could be found to take them. Moreover, the classrooms assigned for regular classes were sometimes even occupied by senior students or faculty members, making the problem even worse. Even after a successful booking, James has to do the work he hates the most: contact his classmates and teachers and tell them about the room number and time for the unscheduled classes. James reaches home everyday being tired and demotivated.

3.2 Persona: Albert

Occupation: Lecturer

Age: 27

Goals:

1. Deliver perfect lectures to his students
2. Complete the given syllabus
3. Use various methods to teach his students
4. Manage time for his family during special occasions

Frustrations:

1. Unavailability of classroom resources for delivering perfect lectures
2. Being unable to take extra classes to complete the syllabus
3. Being unable to take discussion classes to clarify confusions of the students

4. Failing to manage time for his family on special occasions

Scenario:

Right after Albert graduated from IUT, he joined the institution as a lecturer. Albert is a perfectionist and tries to deliver the best lectures to his students. As number of students in IUT increased, Albert realized that his allocated classes do not have proper seat capacity. The classes don't have the right number of whiteboards or has projector facilities. Without these resources, Albert can't deliver proper lectures. He also realized that it is difficult to cancel classes and take extra classes because of the inflexibility of the current system. He is often forced to take classes and miss important family occasions. Albert is always hoping for an improved system that will allow rescheduling and provide him classes with adequate resources.

3.3 Persona: Stacy

Occupation: Student

Age: 19

Goals:

1. Properly utilize class time
2. Have a clear concept on class lectures
3. Learn as much as possible

Frustrations:

1. Waiting in front of classes for the other class to end
2. Can't clarify confusions after classes
3. Unable to learn as much as expected

Scenario:

Stacy is who you would call a typical studious student. She has lots of big dreams and works hard to achieve those dreams. She gives full attention during class lectures and attends her classes on time. Unfortunately, she often has to wait in front of the classes when the same class gets booked by two different groups. Often these classes get cancelled and teachers have to compromise by shortening the syllabus. Stacy also gets confused after class lectures but

she can hardly find discussion classes to clarify her confusions. She hopes for a system that would be able to provide classrooms easily for more and better interaction among students and teachers.

3.4 Persona: Ethan

Occupation: University Staff

Age: 29

Goals:

1. Doing less monotonous work
2. Get a lot of leisure time

Frustrations:

1. Stressful job with monotonous work
2. Not getting as much leisure time as the other staff

Scenario:

Ethan has been a staff in IUT for three years. His duties as staff have changed throughout the years. Recently, he was appointed as the floor staff and was responsible for booking classrooms. At first he thought that it would be easy. But later on he realized that his work is monotonous and stressful. Every 10 minutes, a student comes to him to look for an empty classroom. And every single time he has to go through his book full of records and has to manually find the empty classroom. Doing this kind of work everyday makes him tired, stressed and demotivated. He wants to have a less stressful work and more leisure time. He hopes for a system that would make his work easier.

4 CURRENT SYSTEMS:

Skedda and **ClassroomBookings** are two popular current systems similar to our project.

4.1 Skedda

Overview:

- Book classrooms and labs online from any institution
- Targets a broader range of audience
- Can provide their own spaces as classrooms
- Can provide lots of extra features and flexibility
- Simple and modern user interface

Limitations:

- Skedda does not target a specific institution. So, the system is more generalized
- Most of the provided spaces are available in US only
- Most of the extra features are redundant for simple booking systems in IUT
- The added features and broader reach makes the software more expensive
- Can't be customized for IUT's specific purposes

4.2 Classroombookings

Overview:

- Schedule book classrooms and show it to users
- Simple, light-weight and easy to use
- Open-source and can be customized

Limitations:

- Can't find classrooms according to a set of requirements
- Does not give access to students and class representatives to find or book classrooms
- Can't relay information to students and show them class schedules
- The user interface is outdated
- Customizable but requires technical knowledge to do so
- Can't perform real-time booking

Both Skedda and Classroombookings are quite similar to our system but needs to be modified in certain ways to fit the user requirements.

5 REQUIREMENTS:

According to the data gathered from our users, we categorized our mandatory requirements, want list and wish list.

5.1 Mandatory Requirements:

☐ ***Booking classrooms without booking conflicts***

Booking conflicts occur when the same classroom gets book by two different groups. This feature arises from James' difficulty of successfully booking a classroom and Stacy's frustration of waiting in front of classes due to booking conflicts

☐ ***Multiple bookings based on a schedule***

We included this feature to relieve staff like Ethan from monotonous workload. This also makes it easier for James to book multiple classrooms at different times

☐ ***Finding and booking a classroom based on a set of requirements***

Albert couldn't give perfect features because the classroom didn't have enough resources. We included this feature so that teachers like Albert can now deliver perfect lectures and also take extra classes and discussion classes if required. Students like Stacy can now learn more and have clear concepts on topics.

☐ ***Relaying information about classroom schedule to users***

James frustration about relaying information to his fellow classmates and teachers has been relived by including this automatic information relaying system

☐ ***Allow certain users to access and modify records***

Any mistakes done while booking can be modified. Both James and Ethan will be benefited by this feature. Cancelled classes can be accessed and this results in efficient resource management.

☐ ***Access control for multiple categories of users including administrative control***

In our system, James, Albert, Stacy and Ethan will play different roles. Access control is required to let every role do their work properly without interfering with others. Albert or Ethan can play administrative role in the system to access a wide array of added privileges/

☐ ***Web-based access from any platform***

Our system is developed for a large institution like IUT. Teachers and students come here from their homes in Dhaka. Hence, our system must be accessible from anywhere and the feature of web-based access has been added.

☐ ***Simple, easy and intuitive user interface***

We plan to give our users the best user experience. None of our representative users would like to invest time in order to start using the system. Our system has been made intuitive so that users can easily use all its features without any prior knowledge.

5.2 Want List:

- ☐ Separate mobile app for convenience and notification-based features
- ☐ Adding specialized rooms like Lab Rooms and Auditoriums along with necessary features to handle them
- ☐ Relaying information about class schedules to teachers
- ☐ Categorize class types (e.g. regular class, extra class, quiz and so on) on schedules with color codes

5.3 Wish List:

- ☐ Integrating the attendance, grading and learning management system with this system for a universal system in IUT
- ☐ Allow direct communication between class representatives and teachers
- ☐ Notifications or emails to students about unscheduled classes and quizzes from class representatives
- ☐ Add a feature in mobile app to sync with Google Calendar or any other built-in calendar
- ☐ Develop a version for embedded computers so that room the classroom schedule can be shown on digital boards

5.4 Excluded Features:

We always decided to keep our program simple and easy to use for the best user experience. So, the program will always be restricted to a certain set of features. We have included a list of features we could have integrated in our system but decided not to do so.

- ☐ ***Generalized system to book classrooms and spaces outside IUT***

Adds extra layers of complexity. Classrooms and extra spaces aren't that available near IUT. A transaction-based system also needs to be developed to add this feature and this makes the scale of the project bigger and makes the system less feasible to develop.

- ☐ ***Customizable user interface***

Most users did not want a customizable user interface. We planned to keep the user interface simple. Adding options to customize can make the end user experience worse.

- ☐ ***Direct communication between students and other users***

Very few users wanted directed communication between every user. Larger and more reliable servers are required for direct communication between every user. This violates economical and operational feasibility.

- ☐ ***Allowing students to find and book classrooms***

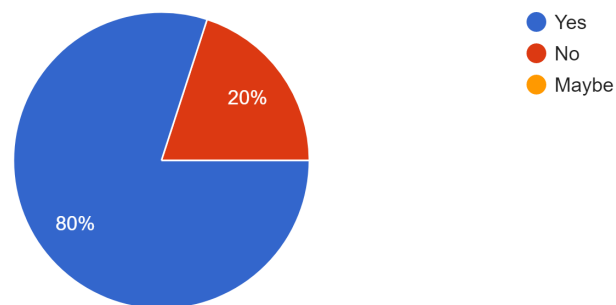
Adding this feature might cause unwanted records by students. This can result in system abuse and/or confusion between the class representatives, students and teachers.

6 Appendix

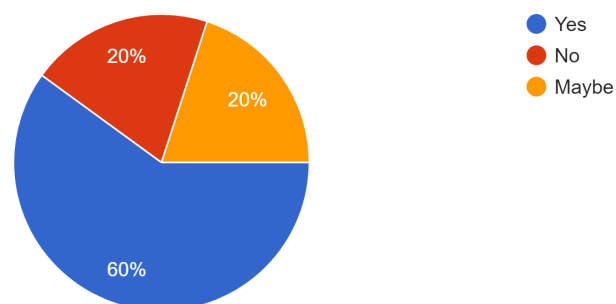
6.1 Class Representatives Form

Summary of the class representatives form (open ended questions are excluded in the appendix). 5 class representatives responded to this form.

Did you face any difficulty booking classrooms for unscheduled classes?
5 responses



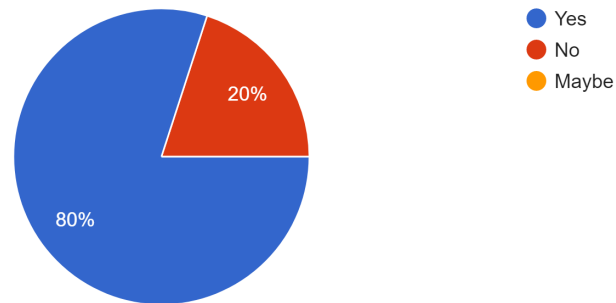
Did you face any difficulty meeting the requirements for an unscheduled class?
5 responses



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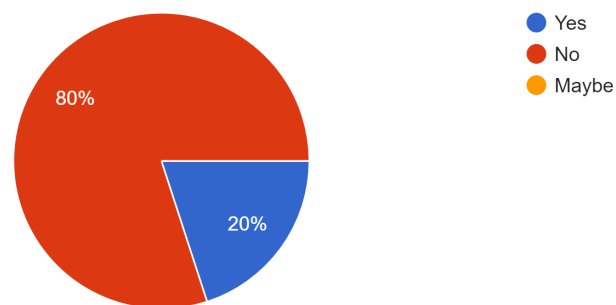
Did you face problems informing the students and teachers about classrooms for unscheduled classes?

5 responses



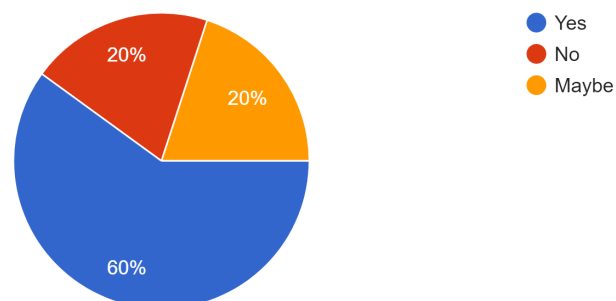
Were the staff informed when a class was cancelled?

5 responses



Would you like the app or website to view and book any classroom according to a schedule?

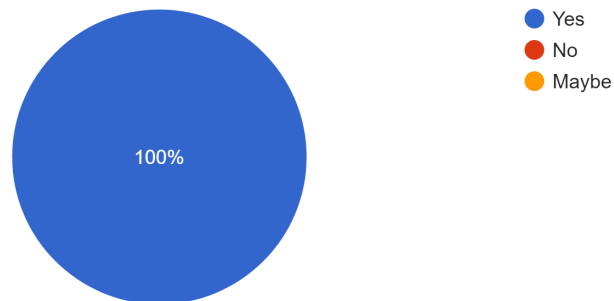
5 responses



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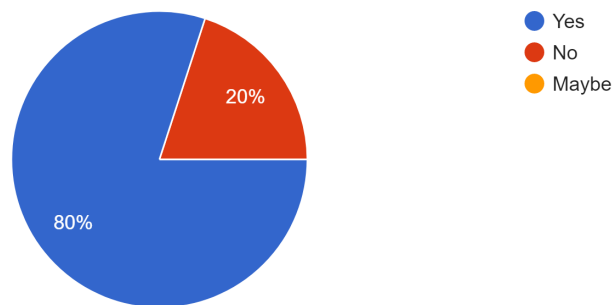
Would you like the app or website to automatically find a classroom based on the requirements?

5 responses



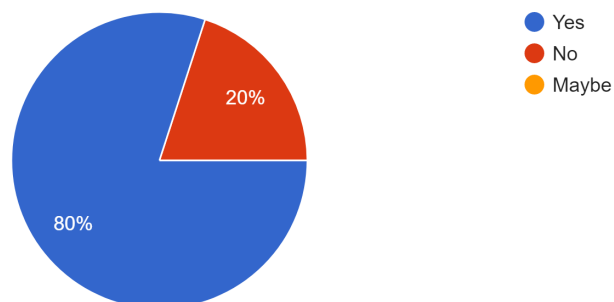
Would you like the app or website to show and modify your booking records?

5 responses



Would you like the app or website to relay the information about classes to students and teachers?

5 responses

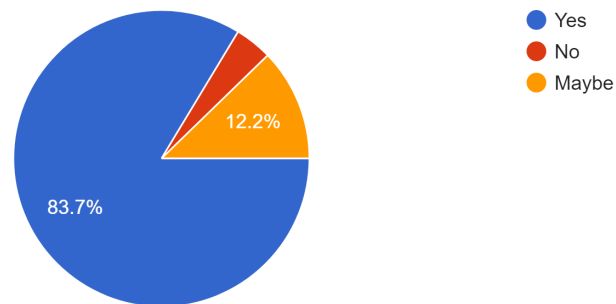


6.2 Students Form

Summary of the students form (open-ended questions are excluded in the appendix). 49 students responded to this form.

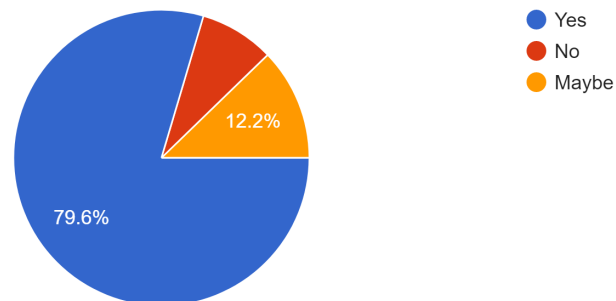
Did you face any difficulty finding the scheduled classrooms?

49 responses



Did you face any difficulty finding classrooms for extra class and quizzes?

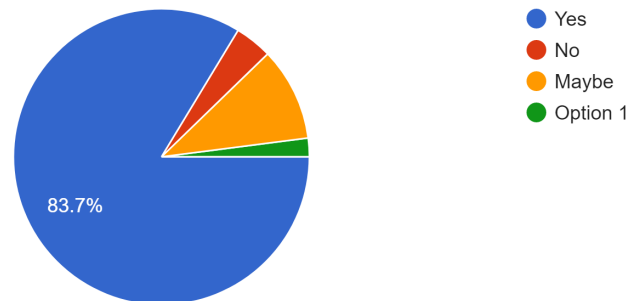
49 responses



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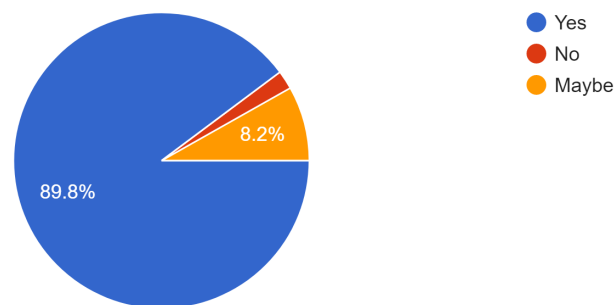
Did you wait for another class to end before being able to access the classroom?

49 responses



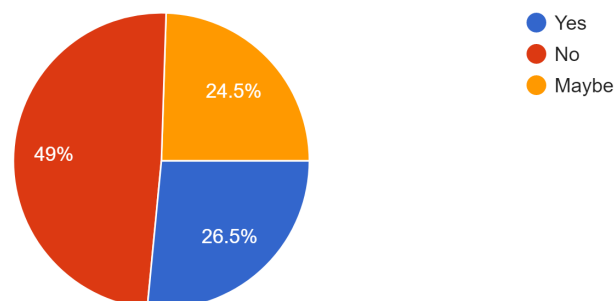
Did the faculty members cancel/reschedule classes due to not being able to find classrooms with proper equipment?

49 responses



Did the classrooms have adequate seating capacity?

49 responses



REQUIREMENT ANALYSIS REPORT

Would you like to use an app where you could view your scheduled/extra classes and quizzes with exact room numbers?

49 responses

