King Saud University
College of Computer and Information Sciences
Department of Information Technology

IT 320 Course Project
Term-2, 1445H

Sprint-0

# KSU StudyCabin

Prepared by

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# 1.Introduction

Every student at King Saud University tries their best to achieve the best results each semester. This desire won't be attested unless the students have the right resources and environment. Nowadays, students are surrounded by a lot of distractions no matter where they are and struggle to have a suitable environment to stay focused, especially during exams' season. Nonetheless, students struggle with choosing a suitable place for group projects, meetings and study groups. We decided to take advantage of the students' familiarity with reservation apps and design an app that allows King Saud University students to reserve their own study room at different university locations at any time rather than making a manual reservation. Which will help them to stay in a focused environment and achieve their academic goals. It will make the process of reserving a study room easy, reachable and fast. The main objective of this project is applying Scrum framework to develop the main function of a reservation app and gathering the requirements using proper techniques then implementing these requirements to the **KSU StudyCabin** with their interfaces and finally testing the final product to fix any errors. In this sprint, we are going to do a domain analysis which is going to give us a deep understanding of the app we are going to make. In addition, we achieve one of the objectives of this project by introducing the requirement that have been conduct using Questionaries and interviews.

# 2.Domain Analysis

In this section, we will introduce the information gathered by online resources, parts of existing software documentation and talking with domain expert in deanship of libraries affair. This information will guide us through the development of **KSU StudyCabin** to take the best decision possible to the reservation system of the study rooms. And our motivation to develop the app is to ease the difficulties that KSU students face when trying to find an empty place to study or work at.

## 2.1 Terminology

- API (Application Programming Interface): A set of protocols and tools used to define communication methods among various components to build a software application.
- Availability Calendar: A calendar view that shows the day when there are rooms available to reserve.
- Booking Confirmation: The process of checking the reservation summary and acknowledging that the student is Confidence of his/her reservation.
- Cabin capacity: How many people the cabin can seat.
- Cabin location: The Location of the library/ building where the cabin is along with the cabin number.
- Deanship of Library Affairs: The university administrator in charge of library's advanced systems to offer education, research production for community service and a service of reserving study cabins.
- Group Reservation: A type of reservation where more than one student wants to reserve the room together which one student can make a reservation and adding members to it to do that.
- Lag strategy: A capacity planning strategy where the system meets true demand through planning sufficient resources. The drawback of this strategy is that a lag may appear in the delivery of services to customers.

- Lead strategy: A capacity planning strategy where the system meets forecast demand through planning sufficient resources. It assumes more risk than Lag strategy but that resolves the drawback of Lag strategy.
- Match strategy: A capacity planning strategy which consider as a mid-point between Lag and Lead strategies involving frequent capacity planning and monitoring demand, providing high flexibility, less risk, and greater scalability compared to the lag strategy.
- Online reservations: reservations done remotely using the application.
- Registration (Check-In/Check-Out): The process of that the Vibranium was responsible to study cabin check for the reservation and connect the student to the cabin they reserved.
- Reservation: Arrangement where a study cabin is kept for a specific student by requesting it.
- Reservation duration [1]: The time the cabin reserved for a student, the student can choose between three options based in KSU cabin system, either one week, one month or three months.
- Reservation summary: Detailed information about the chosen study cabin including cabin capacity, location, cabin members-if any-, price, and starting, ending dates.
- Room price: The price the student should pay to get to use the study cabin, it varies depending on the reservation duration.
- SCRS (Study Cabin Reservation System): The general term for the platform or software used to organize and make reservations to study cabins at King Saud University.
- Study Cabin: A room used for studying and group projects prepared with tools that might help students study.
- User Profile: The customizable page where students can edit their information and customize their picture along with the application preference.

## 2.2 General Domain Knowledge

In general, all reservation systems have a common domain knowledge and constraint that should be kept in mind while taking decisions in this project, which is the following:

**Reservation and Booking Systems**:
King Saud University has three rent categories depending on the duration: one week, one month and three months. The prices for these categories are SAR50, SAR150 and SAR400 respectively. A refundable insurance fee of SAR150 will be applied for all reservations [2]. One of the essential things in reservation systems app is to determine the interface design. Most of the reservation system apps Designed a simple interface that includes availability calendar to increase the familiarity of the interface [3]. In addition, there is no Reservation system that design without a database and reservation system databases they start designing it by defining the main entities such as the users that are going to use the system, the spaces that are going to be reserved and the reservation itself [4]. After defining these entities, the next step is to set the user interaction with the interface which turned out in most reservation systems to be booking, modification, and cancellation of reservations.

**Mobile Application Development**:
Nearly all the Reservation system apps are developed using cross-platform mobile development where their app can run easily in different operating systems. For example, some uses Kotlin Especially when the user interface is the biggest concern, or Java When the focus is on the quality of the tools and

libraries and wanting a more standardized language, while others choose flutter as start-ups how want a quick development [5].

**Scheduling Algorithms**:

There are various ways to deal with scheduling a reservation based on the nature of the reservation and the business rule on that reservation system. Many reservations systems have been implemented in clusters or computational grids to represent real-life time. A widely known algorithm used on actual clusters is based on a First Come First Served policy (FCFS) and it followed the first in first out order (FIFO) which handles Room Assignment, Check-In Process [6]. Another scheduling algorithm is priority scheduling where they prioritize the reservation based on membership type. Never forgetting that the reservation system uses a database that supports real-time updates to maintain conflicts and ensure the system can handle real-time changes to room availability and bookings.

**Study Habits and Requirements:**

We should know what factor and study habit is better to identify the information that needs to be displayed about the study cabins. According to Arizona State University, designating a quite study area with a table can help to avoid distractions and boost your productivity [7]. Also, having a study mate can keep students motivated and expand their perspective [8]. For students, especially how work in group need to be focused and organized which a study room can help them in this point [9].

**Academic Scheduling**:

Any reservation system the awareness of the event calendar is important to manage the reservation properly. In case of KSU study cabin that is available throughout the year, the essential information to know peak study times such as the final period and different schedule time for opening and closing that may differ through the year such as Ramadan time. This will help us to specify the demand for study spaces reservation and increase the system performance when needed.

**Capacity Planning**:

Capacity planning is a set of techniques used with reservation systems for detecting future demand and planning accordingly to ensure the system can scale and accommodate growth. The Capacity planning considers resource availability such as room availability along with maintaining a high level of user satisfaction of the service. There are three main strategies which are Lag strategy, Lead strategy and Match strategy. Each of these strategies is chosen based on business demand and the risk they are up to [10].

**Continuous Feedback Loop**: Establishing mechanisms for collecting and acting on user feedback to continuously improve the system based on actual user needs and experiences [11].

## 2.3 Customers and Users in the Domain

The **KSU StudyCabin** system, specifically designed for King Saud University (main Customer), serves as a tailored solution within the educational sector, focusing on the unique needs of higher education institutions. Its core functionality enables students (system's primary users), to efficiently reserve study rooms, facilitating their academic pursuits by providing a dedicated space for individual and group studies. In addition to students, faculty and staff represent significant secondary users of the system, leveraging it to organize rooms for tutoring sessions, meetings, and small group lectures, thus further enhancing the educational environment.

While the educational sector, and specifically higher education institutions like King Saud University, are the primary focus of the **KSU StudyCabin**, the underlying principles and technologies of the reservation system hold broader applicability. These foundational elements can be effectively adapted to meet the needs of various other sectors requiring efficient space management solutions. Public libraries, for instance, can utilize the system to manage study and meeting room bookings, supporting community learning and engagement.

## 2.4 The Environment

The **KSU StudyCabin** is explicitly developed for the Android platform and is available for download from the Google Play Store. indicating that it must be compatible with a range of Android devices, including smartphones and tablets. This choice suggests a focus on accessibility and mobility, catering to the widespread use of Android devices among King Saud University students.

For optimal functionality of the **KSU StudyCabin** app, users are required to have an Android device that supports at least SDK version 19.0. This technical specification guarantees that the app will perform reliably on their devices. Moreover, to ensure real-time access to room availability and secure reservation functionalities, users should be connected to a stable Wi-Fi network. This connectivity is crucial for the app to deliver up-to-date information and a seamless booking experience, which is particularly important within the campus environment where study room demands can fluctuate rapidly.

## 2.5 Tasks and Procedures

The process of securing study spaces at King Saud University currently involves students manually searching for available rooms across campus, depending on second-hand information, engaging in time-consuming manual bookings at administrative offices, and resorting to the informal claiming of spaces with personal belongings. This approach is fraught with inconvenience, inefficiency, and a lack of real-time information on room availability, leading to potential conflicts and underutilization of resources. The **KSU StudyCabin** app seeks to alleviate these issues by automating the reservation process, offering an intuitive platform for real-time availability, and booking, thus promising a more efficient, user-friendly experience that maximizes the effective use of study spaces for students.

## 2.6 Competing Software

This table provides a comparative analysis of the **KSU StudyCabin** application against three market competitors known for their study room reservation systems: **the Main Library at Hamad Bin Khalifa University[1],the University of Arizona Libraries[2]**, and **the Penn Libraries [3]**. The table identifies key features that are critical for an efficient room reservation system. By evaluating these features across different systems, we aim to highlight the unique selling propositions of the **KSU StudyCabin** and how it stands against existing solutions.

[Table 1 : Comparison Table of KSU Study Cabin and the competitors]

| Feature | HBKU Library - Hamad Bin Khalifa University | The university of Arizona Library | PENN libraries- University of Pennsylvania | KSU Study Cabin |
|---|---|---|---|---|
| **Real-time Booking** | YES | YES | YES | YES |
| **Group Reservations** | NO | NO | NO | YES |
| **Edit Reservation** | YES | YES | YES | YES |
| **Search and Filter Reservations** | YES | YES | YES | YES |
| **Display pictures of the room** | NO | YES | YES | YES |
| **Display map of Rooms Locations** | YES | NO | NO | NO |
| **Information on Room Equipment** | NO | YES | YES | YES |

[1] https://hbku-qa.libcal.com/spaces
[2] https://libcal.library.arizona.edu/r/search
[3] https://libcal.library.upenn.edu/reserve/ecstudyrooms

## 2.7 Similarities Across Domains and Organizations

**1- What is generic and what is specific in the domain?**
Generic: The common practices and implementation of the reservation system including the general structure of database design. Also, the common feature of booking, modification, and cancellation of reservations. All reservation system apps have user-friendly interfaces and the tools to develop these interfaces are relatively similar.

Specific: **KSU StudyCabin** has different types of reservation that are closer to a rental structure what makes it different from common reservation systems. One unique feature in our app is adding members' feature for study groups which many reservations app don't have.

**2- What distinguishes this domain from others, as well as what they have in common.**
The domain of study room reservation systems within educational institutions like King Saud University shares commonalities with other reservation systems, such as the fundamental need for managing timeslots and user accounts, providing confirmation notifications, and allowing for the rescheduling or cancelation of bookings. These aspects are generally consistent across reservation systems regardless of the domain, as they constitute the basic functionality required to manage any form of reservation or booking.

However, the **KSU StudyCabin** app is distinguished by its specific focus on the academic environment, which brings unique requirements and challenges that are not typically present in other domain such as the ability to add members to a study group reservation, which is a functionality not commonly found in standard reservation systems that are not education oriented.

# 3.Requirements Engineering

To identify the requirements for a study space management app, a comprehensive approach involving both interviews and questionnaires was adopted. By conducting interviews, I was able to have in-depth conversations with potential users, diving into their individual needs, preferences, and challenges. This approach offered a deep, qualitative insight into what users expect from the app and the specific features they believe would benefit them the most. On the other hand, questionnaires were sent out to a wider audience to gather a broader range of opinions and statistically significant data on what features were most important to users at large. By analyzing the responses from both interviews and questionnaires, I was able to compile a detailed list of requirements for the study space management app, ensuring it would effectively meet the needs of its intended users.

By conducting interviews with students(see Figure 2 and Figure 3), we've uncovered what they desire in an app designed to assist them in finding study spaces at their university. They want an app that lets them search for places to study based on how close they are, how many people they can hold, how loud they are, and other things they care about. Students like the idea of saving their favorite study spots in the app so they can easily find them again later. They also want to be able to change their study spot bookings in case they find a better place. For students who study in groups, being able to share notes and keep track of each other's progress in the app is important. They also want to know right away if a study room is free, be able to book it ahead of time, and get updates from the app when

a spot opens up. Knowing details about the study spaces, like if there are enough power outlets or if there's a whiteboard, is also key. The student said they would use the app a lot if it kept its information up-to-date and helped them find good places to study. Some also suggested that getting rewards for using the app and being able to leave tips or reviews for study spots could make them more interested in using the app. As for the Questionnaire, Figure 4 reveals a significant preference for group study features, with 90.9% of respondents eager for tools that support group studies, such as space booking and joining study groups. Figure 5 highlights a strong inclination towards integration with existing university systems; a 72.7% desire some degree of synchronization with current digital resources like library and classroom schedules. User feedback on study spaces is also valued, as seen in Figure 6, where 54.5% support incorporating user reviews and ratings, suggesting a trust in communal insight. The importance of being able to access real-time space availability is underscored in Figure 7, with 81.8% of users noting it as a critical feature, guiding them in making immediate study location decisions. Finally, Figure 8 indicates that details such as power outlets and Wi-Fi strength are not just conveniences but necessities for 63.6% of the respondents, who strongly agree that such information should be readily available within the app.

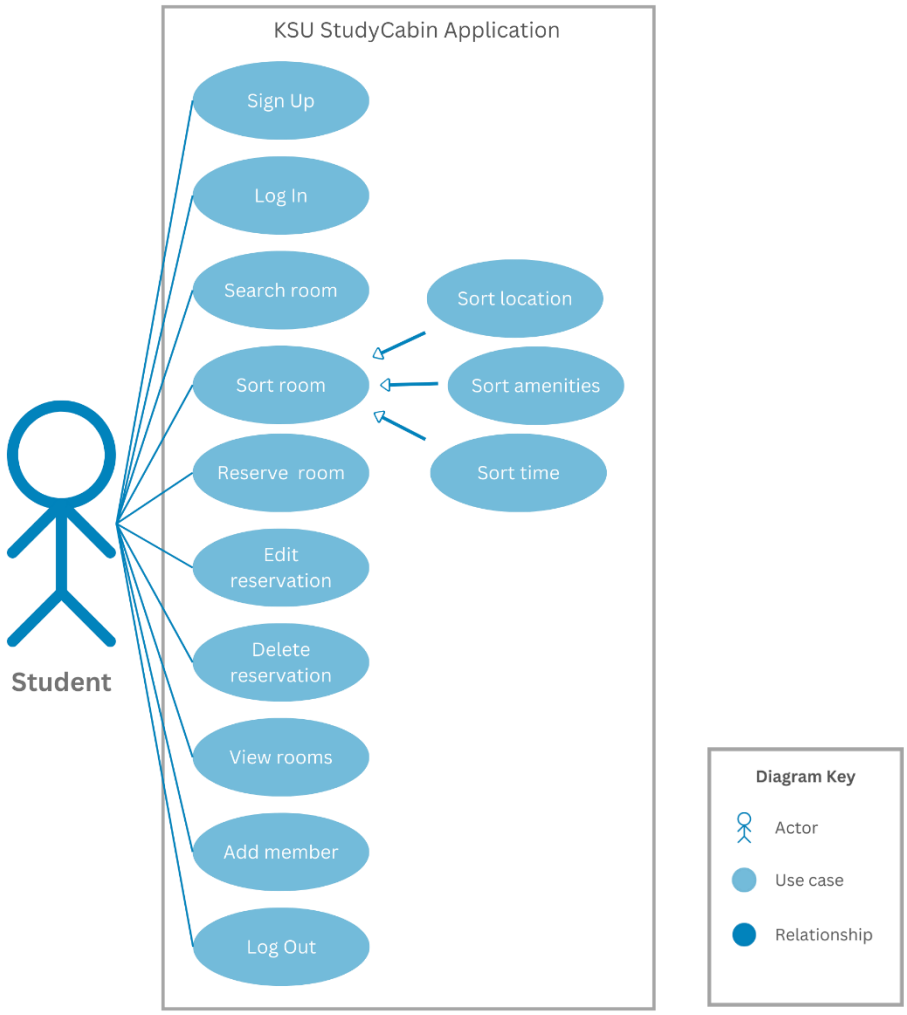
For our study space management app tailored to KSU students, we identified our system users primarily as KSU students of all educational levels. The product backlog(see Table 2)is carefully curated, featuring essential functionalities like user registration and login with university credentials, searching and sorting study spaces, managing study room reservations, and the ability to add group members to reservations. Each feature is prioritized based on its importance to the student experience, focusing on creating a system that's both efficient and user-friendly. To guide our development process and ensure we're covering all necessary interactions between the students and the app, we've relied heavily on use case diagrams(see Figure 1). These diagrams serve as a blueprint, offering a visual representation of the app's functional requirements. By laying out all the different actions students can do with the app, we've gotten a clear picture of what using the app feels like. This has been helpful in guiding how we build the app. We've been careful to make sure we're not just thinking about what students need right now, but also what they might need later.

## 3.1 System Users

**KSU StudyCabin** is tailored for the student community at King Saud University. The app is designed to be user-friendly and accessible to students of all educational levels, including undergraduates, graduates, and doctoral students. Users are expected to have a basic understanding of using mobile applications, as the platform operates on Android devices. While there is no specific age requirement, it can be assumed that users should be of legal age to be enrolled as university students. The goal is to ensure that students can conveniently book study spaces, regardless of their technical expertise or prior experience with similar applications.

## 3.2 Use Case Diagram

*[Figure 1: KSU Study Cabin Use Case Diagram]*



## 3.3 Product Backlog

This section contains our product backlog a prioritized list of desired product functionality (product release). It provides a centralized and shared understanding of what to build and the order in which to build it. The product backlog is composed of backlog items (PBIs) written as user stories and its size, type, and acceptance criteria.

*[Table 2 : KSU Study Cabin Product Backlog]*

| PBI (user story) | Size (Story points) | Type (Feature, defect, technical work, knowledge acquisition) | Acceptance Criteria The conditions of satisfaction that must be met for that item to be accepted. |
|---|---|---|---|
| As a student, I want to be able to register with my university credentials, so that I can access the study room reservation system securely and easily. | 2 | Feature | If a student enters valid university credentials and submits the registration form, Then the app should verify the credentials and create a new account for the student. |
| As a student I want to log in so that I can enter my account and use the services. | 2 | Feature | If a student enters their username and password and clicks the login button, Then the app should authenticate the credentials and grant access to the student's account. If the login is successful, the student should be redirected to the app's home screen, otherwise display an error message. |
| As a student I want to be able to Search based on my needs so that it saves my time rather than scrolling through the whole application. | 3 | Feature | If the student initiates a search Then the app should perform a search based on the preferences entered and filter the study rooms accordingly. If there are no study rooms that match the specified search preferences, the app should display a message indicating no matching study rooms were found. |

| | | | |
|---|---|---|---|
| As a student, I want to be able to sort available study spaces by location, so that I can easily find study rooms in specific areas of the campus. | 3 | Feature | If a student selects the location sorting option from the app's interface, Then the app should rearrange the study rooms' display order based on their respective locations.<br>If there are any errors or issues with the location sorting functionality, the app should display an appropriate error message. |
| As a student, I want to have the option to sort available study spaces by amenities, such as whiteboards or projectors, so that I can choose rooms that meet my specific requirements. | 3 | Feature | If a student selects the amenities sorting option from the app's interface, Then the app should rearrange the study rooms' display order based on the presence of specified amenities.<br>If there are any errors or issues with the amenities sorting functionality, the app should display an appropriate error message. |
| As a student, I want to be able to sort available study spaces by time availability, so that I can find rooms that align with my preferred study schedule. | 3 | Feature | If a student selects the time availability sorting option from the app's interface, Then the app should rearrange the study rooms' display order based on their availability during the specified time.<br>If there are any errors or issues with the time availability sorting functionality, the app should display an appropriate error message. |
| As a student I want to view Study room details so that I make sure, if its suitable for me before I reserve it. | 2 | Feature | If a student selects a specific study room from the interface, Then the app should display detailed information about the study room, including its location, amenities, availability, capacity, and any additional relevant details. |

| | | | |
|---|---|---|---|
| As a student, I want to be able to add study room reservations, so that I can schedule and secure a study space for my individual needs. | 3 | Feature | If a student selects a study room and initiates the reservation process, Then the app should present a reservation interface where the student can enter the desired date, time, and other relevant details for the reservation. Upon successful submission, the app should confirm the reservation and update the student's account accordingly.<br>If there are any errors or issues with the reservation process (e.g., missing fields, invalid inputs), the app should display appropriate error messages and prompt the student to correct the input. |
| As a student, I want to have the ability to edit my study room reservations, so that I can make changes to the reservation details if my plans change. | 3 | Feature | If a student selects a reserved study room and chooses the edit option, Then the app should allow the student to modify the reservation details, such as the date, time, or any other relevant information. Upon successful modification, the app should update the reservation details and reflect the changes in the student's account.<br>If there are any errors or issues with the reservation editing process (e.g., invalid input, conflicting reservations), the app should display appropriate error messages and prompt the student to correct the input. |
| As a student, I want to be able to delete my study room reservations, so that I can free up the room for other students | 3 | Feature | If a student selects a reserved study room and chooses the delete option, Then the app should prompt the student to confirm the deletion. |

| | | | |
|---|---|---|---|
| | | | Upon confirmation, the app should remove the reservation from the system and update the student's account accordingly. |
| As a student, I want to view my own study room reservations, so that I can keep track of my scheduled study spaces. | 2 | Feature | If a student navigates to the reservations section of the app,<br>Then the app should display the student's reserved study rooms, including the reservation details such as date, time. |
| As a student, I want to be able to add group members to my study room reservations, so that I can book study rooms for collaborative group study sessions with my peers. | 3 | Feature | If a student selects a study room and chooses to add group members,<br>Then the app should provide a way for the student to search and select the desired group members by entering their usernames.<br>Upon successful addition, the app should associate the selected group members with the reservation.<br>If there are any errors or issues with the reservation process (e.g., missing fields, invalid inputs), the app should display appropriate error messages and prompt the student to correct the input. |
| As a student I want to log out so that I can exit my account. | 2 | Feature | If a student chooses the log out option from the app's interface,<br>Then the app should redirect the student to the login page. |
| As a user, I want the app to have 99% of availability, ensuring that it is accessible and functional at all times, so that I can make study room reservations without any interruptions or downtime exceeding 1 hour per month. | 2 | Feature | If the app is available and functional for at least 99% of the time in a given month,<br>Then the users should be able to access and use the app without any significant interruptions or downtime. |
| As a user, I want the app to have efficient performance, with quick response time | 2 | Feature | If the app consistently provides quick response |

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|---|---|---|---|
| and minimal loading delays not exceeding 45 seconds, so that I can navigate through the app and complete tasks in a timely manner. | | | times in less than 45 seconds and ensures minimal loading delays, Then the users should experience efficient performance while navigating through the app. |

## 3.4 Definition of ready

*[Table 3: Definition of Ready for KSU Study Cabin]*

| Definition of Ready | |
|---|---|
| ✓ | Business value is clearly articulated |
| ✓ | Details are sufficiently understood |
| ✓ | Dependencies are identified; no blocking dependencies exist |
| ✓ | Team is appropriately staffed relative to the PBI |
| ✓ | Estimated and small enough to be completed during sprint |
| ✓ | Acceptance criteria are clear and testable |
| ✓ | Performance criteria, if any, are defined and testable |
| ✓ | Team understands how to demo the completed PBI |

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## 4.1 Appendix A: Interview

**• Interview Questions**

Q1: What features do you believe are essential in a study space management app for your university?

Q2: Can you describe a recent experience when finding a study space was challenging, and what factors contributed to this difficulty?

Q3: If you participate in group study sessions, what app features are essential to support your activities?

Q4: What kind of information about study spaces is most important to you? (e.g. Location, availability, capacity, amenities, noise levels)

Q5: What incentives would encourage you to regularly use a study space management app?

## • Interview Transcriptions

*[Figure 2: Interview 1 guide]*

| | |
|---|---|
| **Interviewee: Hailah Alshehri** | **Interviewer: Dana Alomar** |
| **Location/medium: KSU University** | **Approximate date: 3/3/2024**<br>**Start time: 9:00AM** |
| **Objectives:**<br>• **Collect information on the difficulties students face when looking for study spaces**<br>• **Gain an idea of what students desire in a study space management app.** | **Reminders:**<br>**Their ability to articulate thoughts and feedback clearly can greatly enhance the quality of insights you gather during the interview.** |
| **Agenda:**<br>**Introduction**<br>**Background in project**<br>**Overview of interview**<br>**Topics to be covered**<br>**Permission to record**<br>**Question 1**<br>**Question 2**<br>**Question 3**<br>**Question 4**<br>**Question 5**<br>**Summary of Major Points**<br>**Questions from Interviewee**<br>**Closing** | **Approximation time:**<br>**3 min**<br>**3 min**<br>**1 min**<br>**2 min**<br>**15 sec**<br>**5 min**<br>**6 min**<br>**3 min**<br>**3 min**<br>**4 min**<br>**3 min**<br>**4 min**<br>**2 min** |
| **General observation**<br>**The way the interviewee was talking about solving problems or challenges was very helpful** | |
| **Unresolved issues, topics not covered**<br>**i didn't ask about the importance of a feedback mechanism within the app, allowing users to report issues with study spaces or the app itself.** | |
| **Interviewee: Hailah Alshehri** | **Date: 3/3/2024** |
| **Questions:** | **Answers:** |
| Q1: What features do you believe are essential in a study space management app for your university? | **I would like to have a feature that would search based on the nearest space to study in , also it would show** |

| | |
|---|---|
| | **many results so i can have many options maybe also i could put these places into a favorite list so i can return to it at any time ,i would also like to edit my reservations incase i want to go for a different study space(that is bigger or less noisy for example).** |
| Q2: Can you describe a recent experience when finding a study space was challenging, and what factors contributed to this difficulty? | **I had a midterm recently and i was looking for a place to study in, but it took me half an hour to find one since all the places that i found either were crowded and uncomfortable or they weren't convenient for studying.** |
| Q3: If you participate in group study sessions, what app features are essential to support your activities? | **We could share our notes with each other, or we could find good places to study, and track our progress.** |
| Q4: What kind of information about study spaces is most important to you? (e.g. Location, availability, capacity, amenities, noise levels) | **capacity and noise levels** |
| Q5: What incentives would encourage you to regularly use a study space management app? | **if this app updates its places regularly and if i found a good place to study in through it then i will always use it to find another good place** |

*[Figure 3: Interview 2 guide]*

| | |
|---|---|
| **Interviewee: Joud Alnutafi** | **Interviewer: Dana Alomar** |
| **Location/medium: KSU University** | **Approximate date: 5/3/2024**<br>**Start time: 11:00AM** |
| **Objectives:**<br>• **Through conversations, i can pinpoint the core functionalities that the app must have to be effective.**<br>• **Interviews can reveal pain points in existing solutions or in the manual management of study spaces.** | **Reminders:**<br>**The student's adaptability to new tools and environments which might influence their openness to adopting a new app and adapting to its functionalities.** |
| **Agenda:**<br>**Introduction**<br>**Background in project**<br>**Overview of interview**<br>**Topics to be covered**<br>**Permission to record**<br>**Question 1**<br>**Question 2**<br>**Question 3**<br>**Question 4**<br>**Question 5**<br>**Summary of Major Points**<br>**Questions from Interviewee**<br>**Closing** | **Approximation time:**<br>**2 min**<br>**2 min**<br>**1 min**<br>**1 min**<br>**10 sec**<br>**6 min**<br>**5 min**<br>**5 min**<br>**6 min**<br>**4 min**<br>**3 min**<br>**4 min**<br>**1 min** |

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| **General observation**<br>**The interviewee sounded not really excited but started to pay attention right after the topic was explained.** | |
| **Unresolved issues, topics not covered**<br>**I could have explored whether integrating the app with academic calendars to automatically suggest study times based on the student's schedule would be valuable.** | |
| **Interviewee: Joud Alnutafi** | **Date: 5/3/2024** |
| **Questions:** | **Answers:** |
| Q1: What features do you believe are essential in a study space management app for your university? | **Essential features would include real-time availability of study rooms, the ability to reserve a room ahead of time, and notifications for when spaces become available. It would also be really useful if the app showed pictures of the room and a map of its location on the campus.** |
| Q2: Can you describe a recent experience when finding a study space was challenging, and what factors contributed to this difficulty? | **A recent experience occurred during midterms week. The main library at the college of science and most known study spots were overcrowded. The difficulty mainly is the lack of information on which areas still had available seating without having to physically check each location, and waste my time.** |
| Q3: If you participate in group study sessions, what app features are essential to support your activities? | **I think the ability to book larger tables or rooms that accommodate groups, options for sharing these reservations with group members within the app, and perhaps a feature to communicate or coordinate study topics. It would also be useful to have details on the study room, like whether it has a whiteboard or AV equipment for practicing presentations.** |
| Q4: What kind of information about study spaces is most important to you? (e.g. Location, availability, capacity, amenities, noise levels) | **For me I need to know the location, real-time availability of the rooms, and the capacity to ensure there's enough room for either individual or group study. Amenities like power outlets, Wi-Fi strength, presence of whiteboards, and coffee or snack availability are crucial.** |
| Q5: What incentives would encourage you to regularly use a study space management app? | **Maybe rewards for frequent use, and a community feature to leave tips or reviews for different study rooms might foster a sense of community and help students discover new study locations.** |

## Appendix B: Questionnaire

- **Questionnaire Questions**

1) Are you interested in features that facilitate group study sessions, such as the ability to book spaces for groups or to join existing study groups?
2) Would you prefer the study space management app to be integrated with your university's existing systems (e.g., library systems, classroom schedules)?

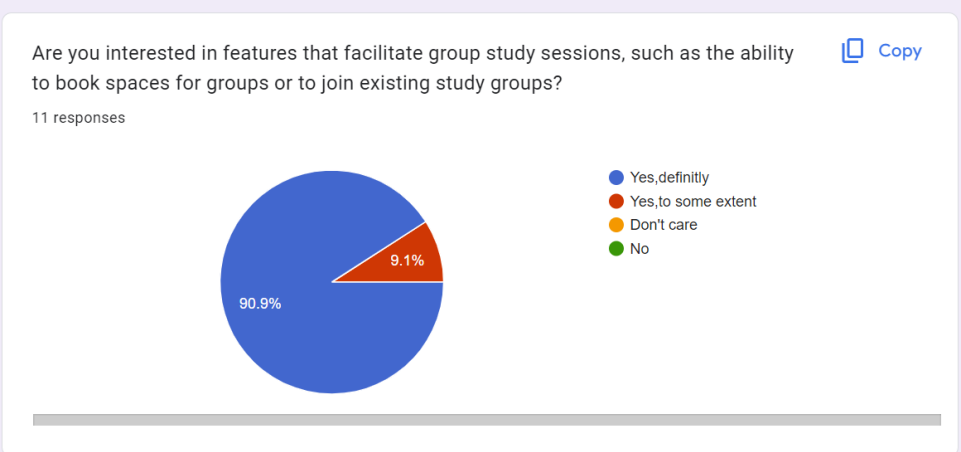
3) Should the app include user reviews and ratings for different study spaces?

4) Is real-time information about the occupancy of study spaces important to you?

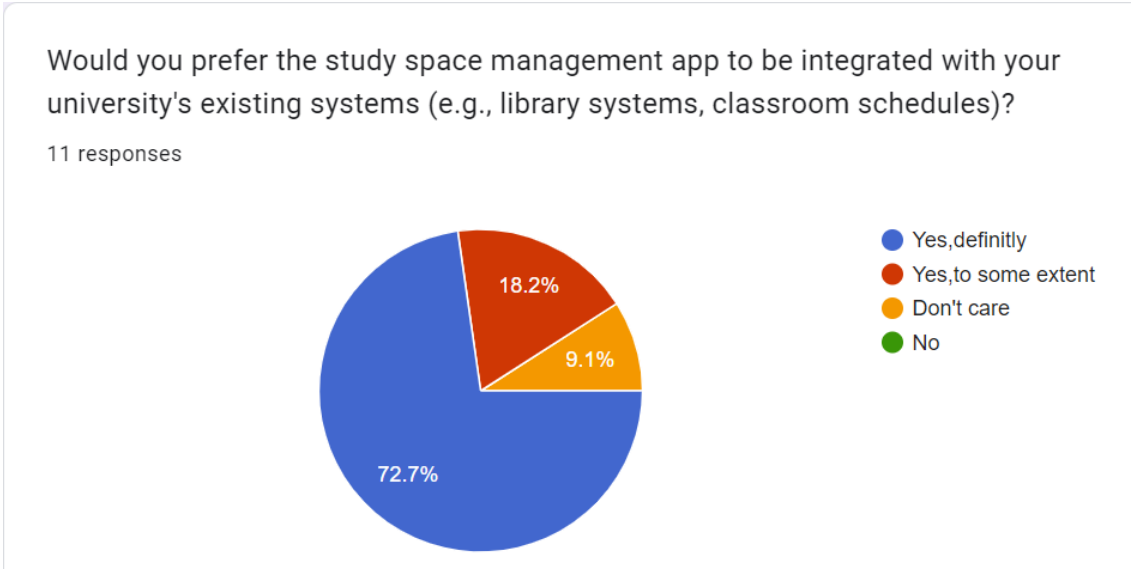
5) Should the app provide details such as power outlets and Wi-Fi strength for each study space?

- **Questionnaire Results**

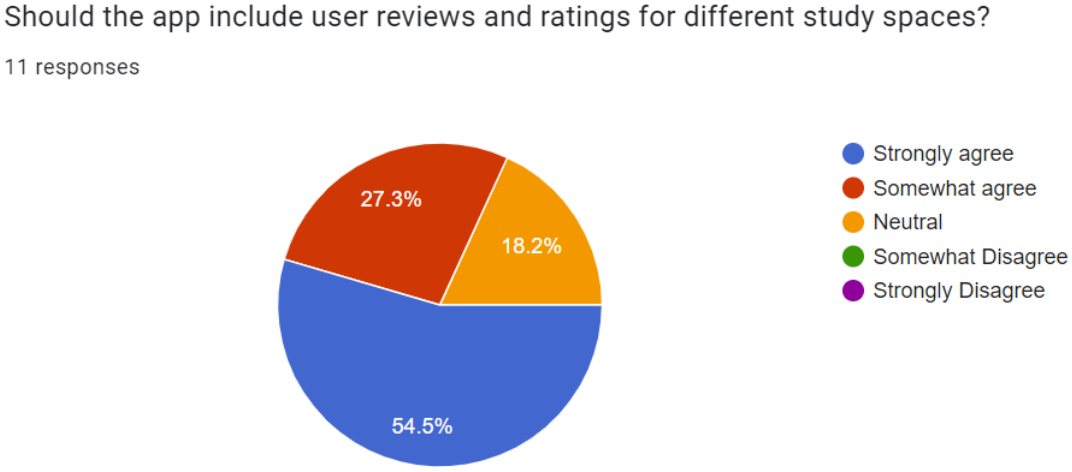
*[Figure 4: Questionnaire Results for question 1]*



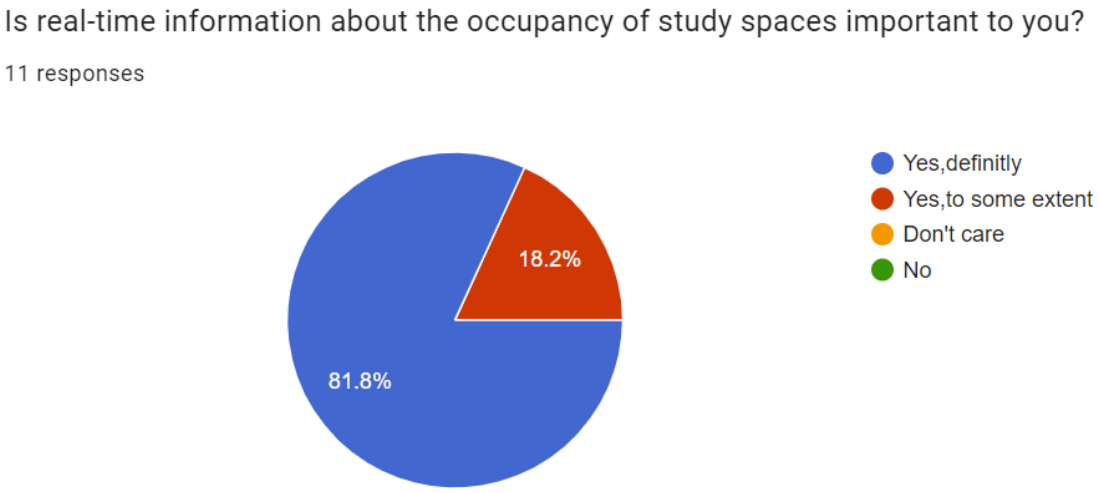

*[Figure 5: Questionnaire Results for question 2]*



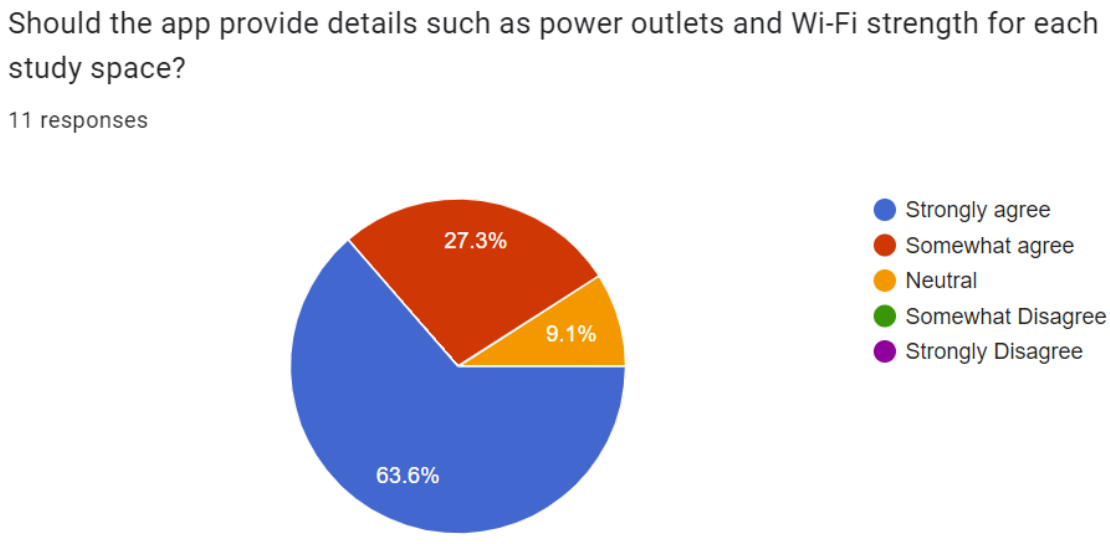

*[Figure 6 : Questionnaire Results for question 3]*



*[Figure 7: Questionnaire Results for question 4]*

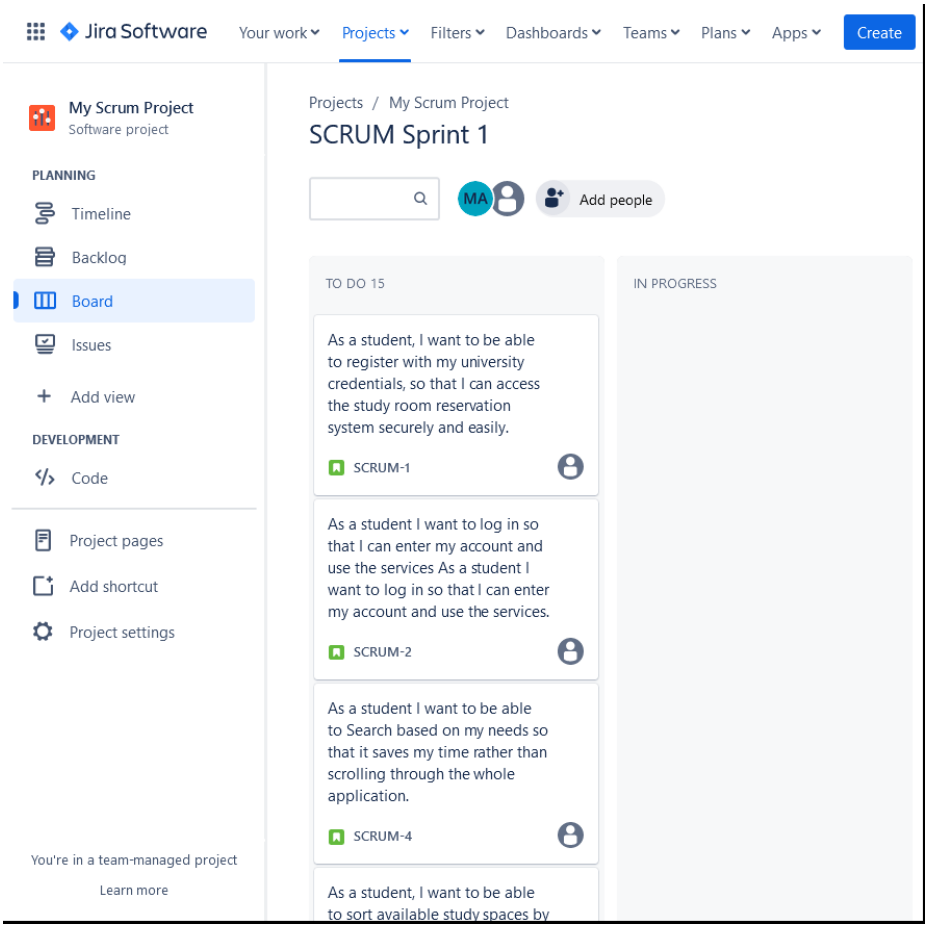



*[Figure 8: Questionnaire Results for question 5]*

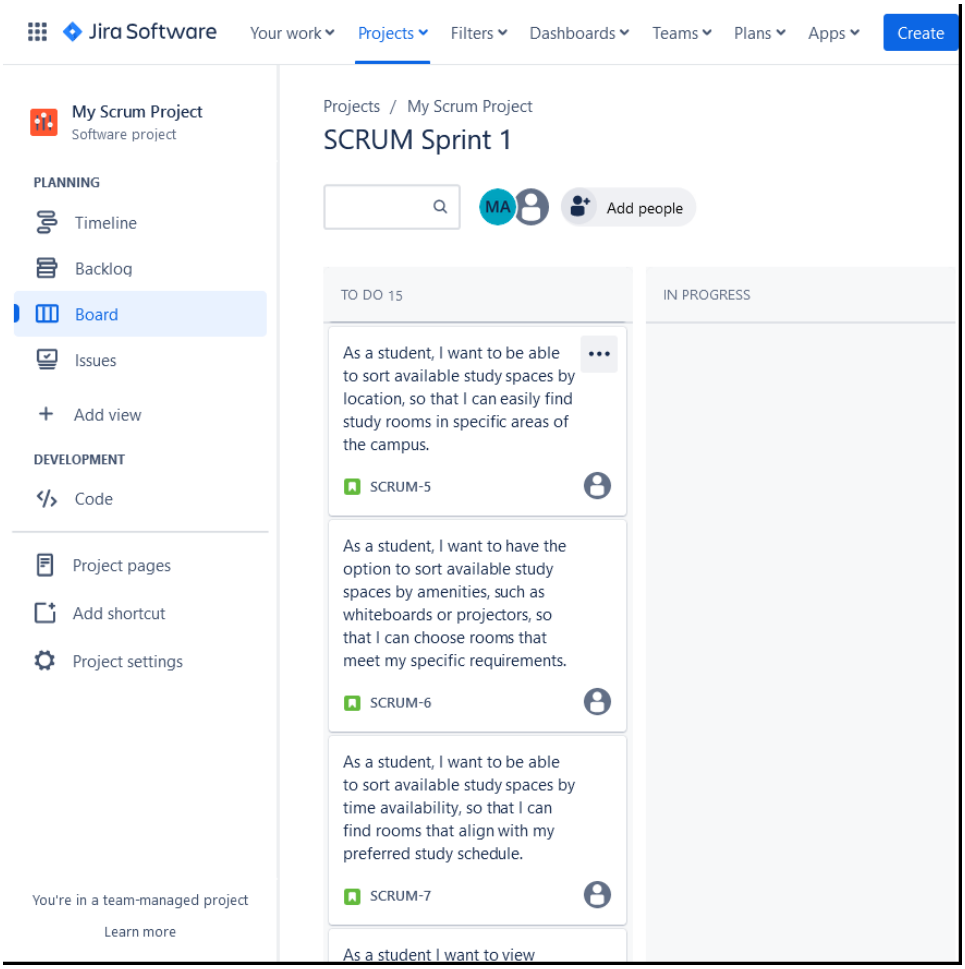


## 4.1 Appendix C: Jira

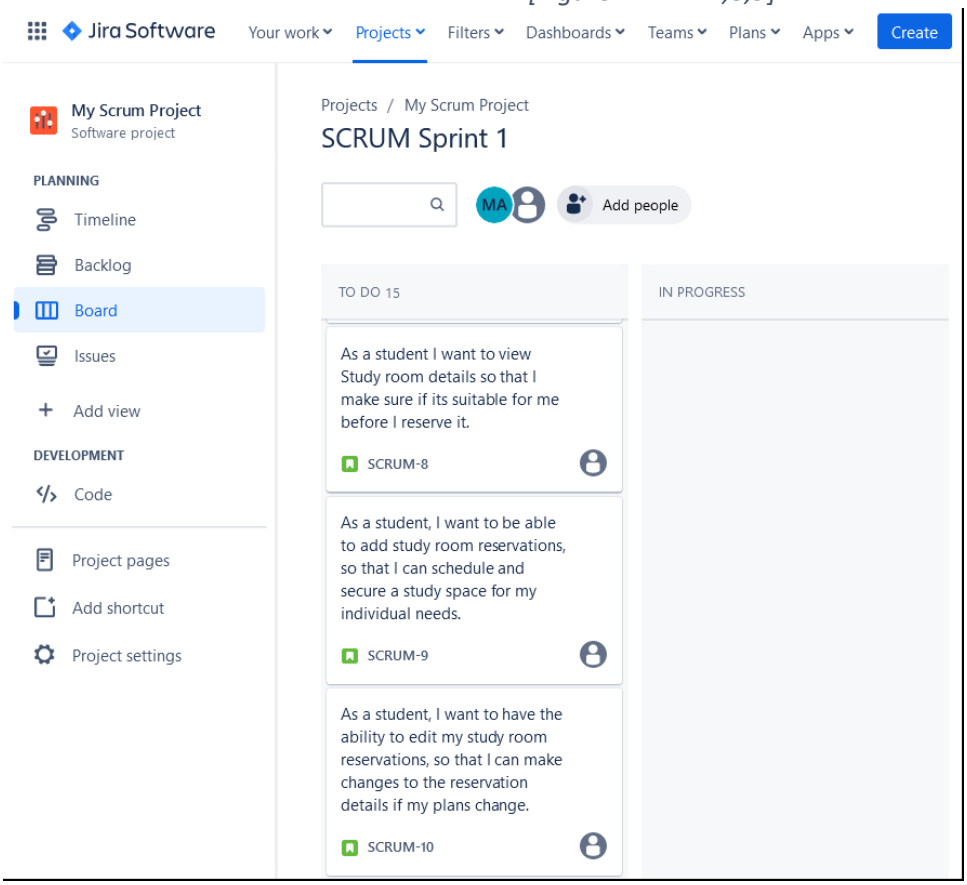
*[Figure 9: PBI 1,2,3]*



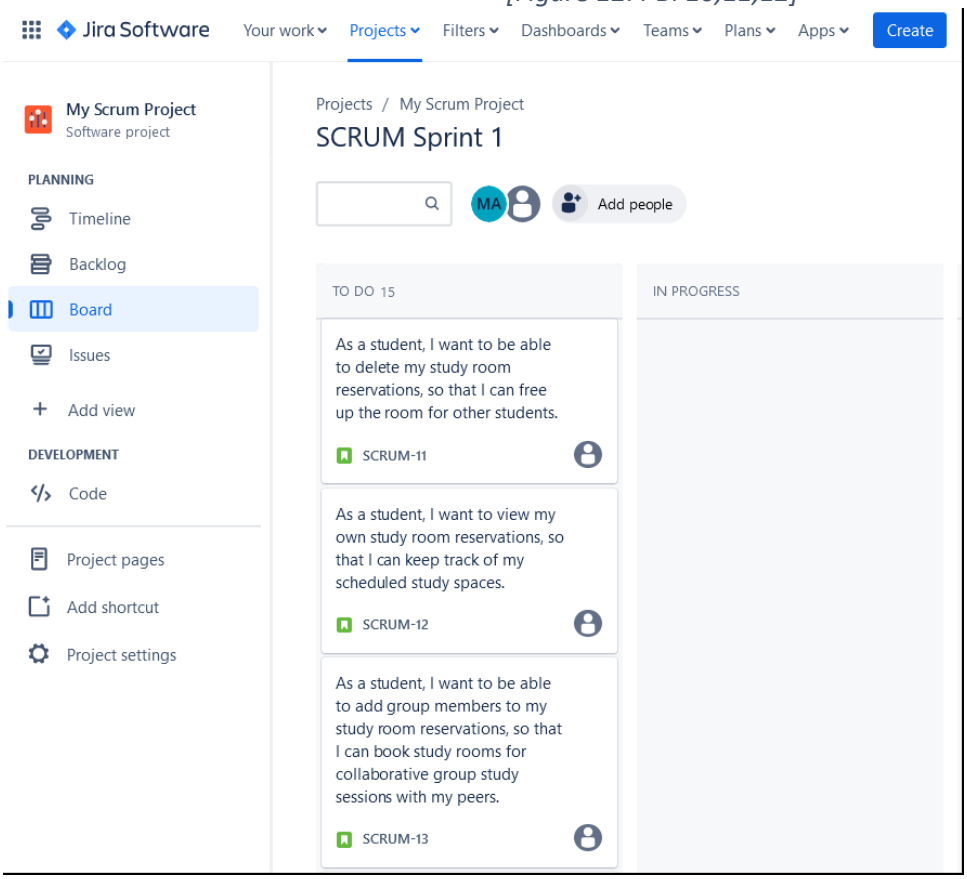

*[Figure 10: PBI 4,5,6]*


Jira Software
Your work
Projects
Filters
Dashboards
Teams
Plans
Apps
Create
My Scrum Project
Software project
PLANNING
Timeline
Backlog
Board
Issues
Add view
DEVELOPMENT
Code
Project pages
Add shortcut
Project settings
You're in a team-managed project
Learn more
Projects / My Scrum Project
SCRUM Sprint 1
MA
Add people
TO DO 15
IN PROGRESS
As a student, I want to be able to sort available study spaces by location, so that I can easily find study rooms in specific areas of the campus.
SCRUM-5
As a student, I want to have the option to sort available study spaces by amenities, such as whiteboards or projectors, so that I can choose rooms that meet my specific requirements.
SCRUM-6
As a student, I want to be able to sort available study spaces by time availability, so that I can find rooms that align with my preferred study schedule.
SCRUM-7
As a student I want to view

*[Figure 11: PBI 7,8,9]*



*[Figure 12: PBI 10,11,12]*



*[Figure 13: PBI 13,14,15]*