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Haskayne Community Engagement Project Report

COURSE: BTMA 635

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PLANNING PHASE

Introduction

Haskayne is interested in developing a system of some type that would create opportunities in our online Covid environment for development of a sense of community among Haskayne students, and possibly even peer-to-peer mentoring among Haskayne students. The University of Calgary (U of C) is known as a commuter campus, and the sense of community among students is perceived as being quite low. This lack of community is one of many factors that probably contribute to student mental health concerns. The system that you design should build true relationships between our students and encourage healthy help-seeking behavior.

Client

Susan Basudde is an Academic Development Specialist in the Haskayne Undergraduate Office. One of her roles in Haskayne is to assist undergraduate students who are encountering mental health issues. She is this semester's client for the BTMA 333/635 case project. Frances Donohue and Tina Johnson-Adams are also involved in a related project to develop a Haskayne student volunteer coordination system.

Purpose

The purpose of the project is to improve community engagement at Haskayne and help the students with mental health issues. The issues are becoming increasingly more challenging with the ongoing COVID 19 pandemic.

Root Cause Analysis

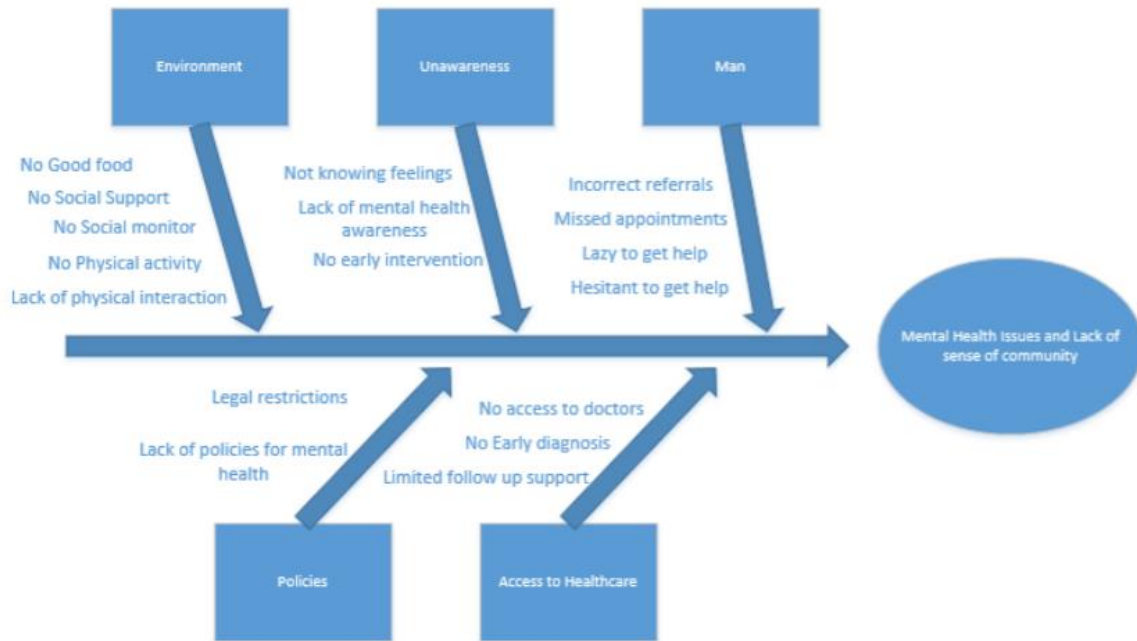


Figure 0-1 Root Cause Analysis

Pareto Analysis

From the root cause analysis, it can be inferred that the problem is that students do not have adequate resources during too pandemic to deal with mental health issues.

Category	Percent	Frequency	Cumulative Percent
Lack of Policies	32%	100	32%
Bad Environment	28%	88	60%
Logistic Issues	23%	73	84%
Lack of Awareness	10%	30	94%
Access to healthcare	6%	20	100%

Table 0-1 Pareto Table

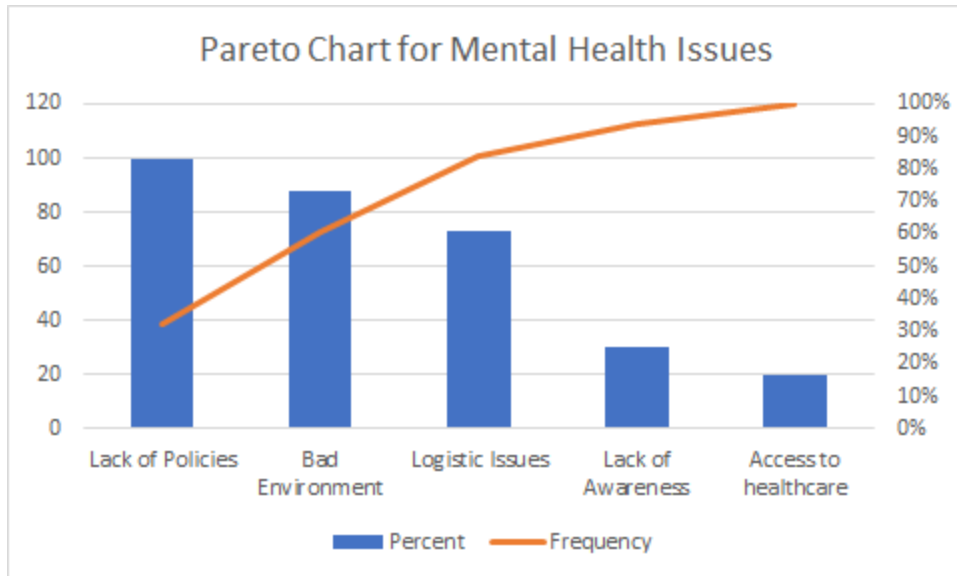


Figure 0-2 Pareto Chart

Estimated Business Value

There is no tangible business value to this proposition. In fact, the University will have to add money to tackle this issue. However, addressing this issue will help the university attract new students who value such programs to the school. Additionally, it will help existing students to lead healthier lives.

Identify Stakeholders

The key stakeholders for this project are as follow.

- University of Calgary Staff
- All U of C students
- IT resources that will be hired.
- Mental Wellness services (Administrative staff & Trained Volunteers)
- U of C Bookstore

Initial Stakeholders meeting

Initial Stakeholders meeting was conducted on March 16th. All stakeholders agreed on the issues and process for solving the issues. The main thing communicated was to follow a process.

Problem Statement

The problem of	Increase in lack of sense of belonging and community among Haskayne students due to the ongoing pandemic. The prolong isolation as well as online classes can have a negative effect on student's mental health and stress levels.
Affects	The mental health & wellness of the students, the ability for students to reach out for help, mental wellness co-ordinators, faculty & the Haskayne administration.
The impact of which is	Low overall academic performance, stress, mental health concerns, poor social life for the students, and extra pressure on the resources of the University.
A successful solution would	Build relationships between the students, encourage help seeking behaviors and improve the overall sense of community by promoting virtual interaction and delivering the student engagement initiatives in a seamless way. The solution is expected to achieve this through an online platform that allows a student body to create and conduct social events like treasure hunts, subscribe to coffee chats with peers, and have one to one session with trained volunteers.

	As a reward for participating in the events, the students can get credits that can be redeemed with third party partners.
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Table 0-2 Problem Statement

Validate the problem statement with stakeholders

The stakeholders agree to having this issue and its causes.

Submit a System Request

The system request to solve the problem of community engagement and mental wellness was submitted to the University of Calgary's administration on 4th January, 2021. The system request was submitted with a Project request form, which laid out the core purpose of the project and the problem being solved.

Sources of Funding

Since the project is being sponsored by the University of Calgary, the University will be the main source of funding for the project. However, given the recent budget cuts, the other sources of funding that can be explored are as follows.

- Government of Alberta
- Campus Improvement Fund
- Haskayne Student Fund
- Line of Credit from Banks
- Entrepreneurs

Given that the budget of the project is moderate, there shouldn't be any major issues to get the approval for funding. However, in case the University doesn't consent to approve the given amount, the additional sources listed above can be explored.

Staffing Requirements

Based on the multiple moving parts of the project, there will be a need to allocate human resources or people to carry out the tasks. We have identified the following staffing requirements to execute and operate the project.

Role	Number of positions
Business System Analyst	2
Project Manager	1
Relationship Manager	1
Marketing specialist	1
Implementation Specialist	2

Table 0-3 Role Requirements

Project Governance Process

This process will contain a framework for making decisions about the project, define roles, responsibilities, and liabilities for the accomplishment of the project, and govern the effectiveness of the project manager. The ownership of the various aspects of the system will be as following.

Module	Owner
One to one counselling sessions	Mental wellness services
Conducting events	Student coordinating body
Credits redemption	Relationship Manager
Integration with University's system	Implementation Specialist
Monitoring & tracking the requirements	Business System Analyst
Monitoring & Controlling the resources and timelines	Project Manager

Table 0-4 Modules and Owners

Communication Process for progress and Issue reporting

One of the most important as well as complex requirement of a project is setting up a communication process as it involves point of contacts at various levels of the project. There will also be a process set for reporting issues that occur while working on the project. Such as using project management platforms such as ClickUp, Slack or some other feasible platform for reporting of issues and communicating the progress.

Critical Factors of Success

For the project to be a success, it must solve the underlying problem of student's lack of belonging within the Haskayne Community. Some of the KPIs for success can be measured by the following.

- Frequency of student interaction within the community and each other (Number of events attended per month).
- How many students engage with the system/app (Number of active users)
- Student involvement in community events (attendance and participation) (Number of attendees per event)
- The number of students seeking help for issues relating to mental health (Number of requests for one-to-one counselling sessions).

ANALYSIS PHASE

Existing System & Resources

The Haskayne School of Business at the University of Calgary has identified that there are many reasons that may lead to mental stress among students enrolled with them. It is actively seeking ways to provide resources to help students deal with and overcome the mental stress that the students may have. They already have many options available for students to partake in. Following are some of these resources/options.

Student Workshops - These wellness workshops help students focus on informing them about skills and plans they can acquire by training themselves to tackle issues around self-acceptance, stress and anxiety, improving behaviors and mood, and emotional well-being.

The students must register for these workshops and can choose to attend whichever workshop they choose to. There is also an option for students to request a workshop of their interest, but they must inform the community training coordinator 3 weeks in advance. The waiting time to seek resources and help is weeks rather than an option to share and talk with peers impromptu.

Group Programs – These are facilitated by psychologists and social workers from the U of C mental health team, and they help students develop skills to deal with the concerns they're having revolved around stress, anxiety, mood and emotional wellness. However, these are exclusively for graduate students at Haskayne School of Business, not for faculties and involves an aspect called 'graduate concerns. There is no option for undergrads who are in their 2nd or 3rd year to share their thoughts and techniques that they have used to better adjust with fresh undergrads.

Student Clubs – Using ClubHub, students sign up for membership to those clubs and do not have an opportunity to attend events by those clubs unless they are signed up with them. The students in order to better engage themselves in the U of C community sign up but then lose track of what their club is doing because they do not go and check the event calendar of the respective club.

Currently students receive emails about such workshops and events from GSA, Student services, FGS and ISS. A lot of times most students do not even pay attention to such emails or are not even aware of such resources at their disposal. But they never skip notifications from D2L. There are also no incentives for students to participate in activities that lead to community building. There is a major award called mental health award but to achieve that student must put in a lot of effort and that too is just for 4 students in a term. So, there is a need to introduce micro-incentives for students to get more involved in

maintaining community environment that promotes better mental health. These gaps have in-part led to lack of community within students.

Among students enrolled in undergraduate and graduate courses exists a sense of mental uneasiness due to Covid-19 restrictions. Our proposed system will help overcome these shortcomings and promote a sense of community in a better way among Haskayne students, undergrad and grad, alike.

Use Case Diagram for existing system

As far as the existing solution to the problem is concerned, there isn't one single integrated solution which solves the problem of lack of community engagement. However, there are two different sub systems which act as alternatives and work towards improving mental wellness and community engagement. In context of mental wellness, the University has a dedicated Mental Wellness services department, which lets the students avail services like single session counselling and peer listening. With respect of the lack of community engagement, the Students Clubs provide the opportunity to the students to engage and create groups with similar interests. However, the events of the student clubs have also been moved online as a result of COVID-19.

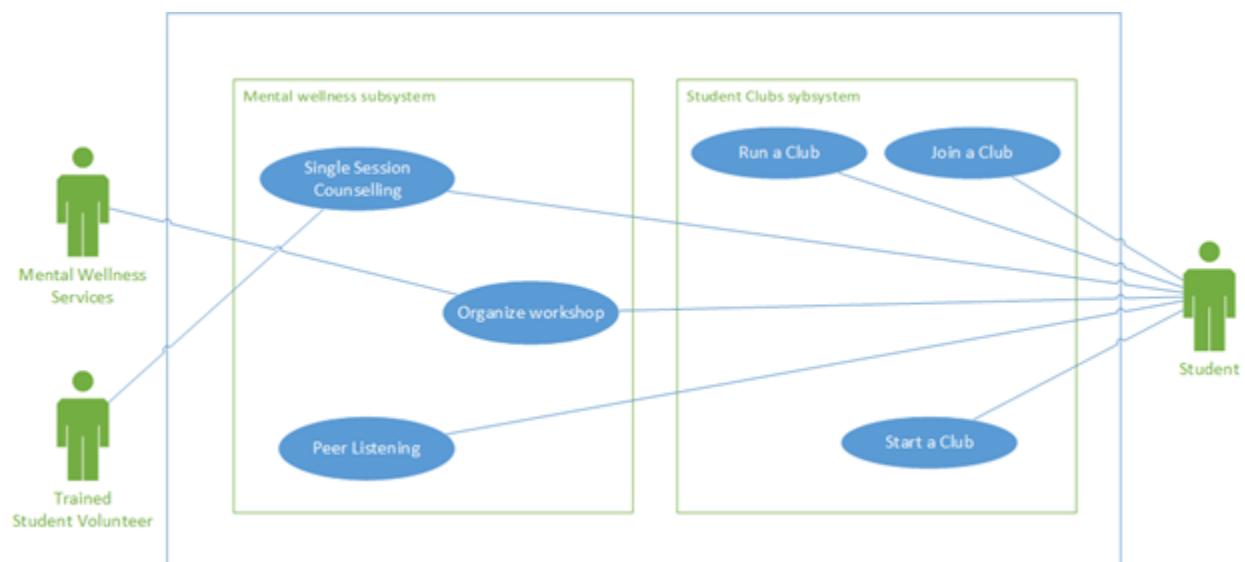


Figure 1-1 Use Case Diagram for existing system

Use Case Descriptions

Single session counselling use case
Name: Attends single session counselling
Actor: Student
Description: Describes the process of the student attending a single session counselling with a trained student volunteer.
Successful completion: The issue raised by the student has been resolved by creating a mutually agreed upon action plan.
Alternative: The student and the volunteer communicate over e-mails.
Precondition: The student has booked an appointment for session
Postcondition: The student attends the counselling session.
Assumptions: The trained student volunteer is available.

Organize workshop use case
Name: Organize workshop
Actor: Student wellness services
Description: Describes the process of organizing a workshop that covers various mental health topics.
Successful completion: The students are able to attend the workshop and it starts and ends on time.
Alternative: Group sessions by mental health educational group or Single session counselling
Precondition: The request for organizing a workshop has been made at least 3 weeks before the date of workshop.
Postcondition: The student attends the workshop and are actively engaged.
Assumptions: The volunteers to conduct the workshops are trained to conduct them online.

Peer listening use case
Name: Peer listening
Actor: Student
Description: Describes the process of engaging in peer listening where a student can interact with other students.
Successful completion: The students are able to join the call for peer listening.
Alternative: Single session counselling with trained volunteer
Precondition: The day of the week is a weekday, and the time is between 2 p.m. and 4 p.m.
Postcondition: The student gains value by speaking to peers.
Assumptions: The call is started by someone at the designated time on weekdays.

Start a club use case
Name: Register a new student club
Actor: Student
Description: Describes the process of starting a new Student club at the University.
Successful completion: The club is successfully registered with the ClubHub.
Alternative: NA
Precondition: <ol style="list-style-type: none"> 1. The club with the same name doesn't exist at the University. 2. The club has at least 20 members. 3. The club is open to membership for all the students at the University of Calgary.
Postcondition: The student receives feedback regarding and application and communication about the decision and the next steps.

Assumptions: The student who is registering the club is a student at University of Calgary.

Run a club

Name: Run a club

Actor: Student

Description: Describes the process of running a club at University of Calgary.

Successful completion: The club is able to organize enough number of events to justify its existence on campus.

Alternative: NA

Precondition:

1. The club already exists and is registered with the Student Union.
2. The club is able to communicate important deadlines
3. The club organizes events of regular basis to promote its agenda and increase engagement on campus.

Postcondition: The students are able to join and attend events organized by the club.

Assumptions: The club meets all the policies and regulations to continue operating on Campus.

Join a club

Name: Join a club

Actor: Student

Description: Describes the process of joining a club at University of Calgary.

Successful completion: The student is able to join a club at the university

Alternative: Submit an in-person application at Club week.
Precondition: <ol style="list-style-type: none"> 1. The student is a current student at the University of Calgary. 2. The student meets the eligibility criteria that may be set by a specific club for new members.
Postcondition: The student receives official communication about the decision regarding approval/denial of his/her application to join a club.
Assumptions: The club that a student is joining exists and is registered with Student Union.

Client Specifications

The client has stated that delivering student engagement programs or activities is an issue amidst online COVID environment. Consequently, Haskayne is interested in developing a system that would create opportunities in the online Covid environment for the development of a sense of community among Haskayne students, and perhaps even peer-to-peer mentoring for the students. The sense of community among students in the University is perceived to be low. This lack of community is one of several factors that likely contribute to student mental health concerns.

People with social anxiety want to stay connected to the community but will often stay away from events and hesitate to use the resources, hence the solution must address this concern as well. There are several other issues that some of Haskayne students face like feeling stressed about missed deadlines, difficulties in declaring concentration, missing out on co-op or internship opportunities, jobs insecurity during COVID-19, managing relationships, falling in love for the first time, domestic and substance abuse etc. Hence there is a sense of need to address all such issues and other unaddressed issues. That being said, the key elements would be to address helping students with social problems participate and engage in the community, students are able to access peer-to-peer support and seek

support. The system that we design must build true relationships between our students and encourage healthy help-seeking behaviors.

Survey

We will be preparing survey questions for our analysis with Likert Scale and Verbal Frequency Scale, where we will ask questions such as the following.

- On a scale of 1 to 10, how often do you encounter mental health issues?
- On a scale of 1 to 10, how often do you feel the need to speak to someone about the things stressing you?
- On a scale of 1(unaware) to 10(aware), how familiar are you with the mental health support options available at the university?
- On a scale of 1 to 10, how often do you use the resources available at the university?
- Do you feel a sense of community at the university? Yes or No.
- What are the reasons for not using the available resources?

This survey will be passed on to all the Haskayne Students with the intention to identify the root causes of the problem.

Interview

An interview will be conducted with the client and other responsible stakeholders to gain deeper understanding of the problem. Some of the questions are as follows.

- What are the key elements to be addressed in the proposed system?
- How are student issues addressed currently?
- Who will be the consumers of the system?
- What kind of a platform do you expect to address these issues?

- How will you like different programs to be implemented in the system?
- How will the governance of the system look like?
- What does the budget look like for the system?

Brainstorming the above questions will give a clear sense on what the client needs and how the new system should look like.

Following are the solution requirements post analysis of the problem:

Category	Requirement
Functions	Co-Ordinator should be able to organize social events like treasure hunt etc.
Functions	Students should be able to join the social events.
Functions	Students should be able to subscribe/unsubscribe the regular coffee chats with other students.
Functions	The students should be able to play games with each other
Functions	The students & coordinator should be able to create the groups with common interests and posts related to those.
Functions	The student should be able to fill out a form to reach out to someone from mental wellness department on an urgent basis. (Call within 24 hours).
Usability	All students must be signed up automatically into the system.
Usability	The system must be accessible in mobile apps/website.
Interface	The system must be built in consideration of all the UX design principles.
Reliability	The system must be running 24/7.
Performance	All the atomic operations must revert within 0.1 seconds.
Security	The system including data must be secure and prevent cyber-attacks.

Design Constraints	The app will be stored on cloud for ease of deployment.
Implementation	The app will be developed using open-source programming languages.
Physical	The app and data should be hosted on cloud to utilize automatic scaling and pay per use features of cloud.
Support	There must be a dedicated team to monitor and update the app in case of crashes, serious issues, bugs.

Table 1-1 Solution Requirements

The functional requirements cover the functionality that needs to be developed in the platform which can be accessed by the users. Some of the core features include event organization and management, creating and managing discussing groups of similar interests, participation in events, ability to participate in peer-to-peer mentoring, one-on-one sessions. Not all the features will be part of the MVP and they will be developed as per the release plan in a phase-by-phase basis.

The non-functional requirements revolve around the usability, interface, reliability, performance, security, design, implementation, physical and support elements of the platform. Some of the requirements can be deemed essential like usability, reliability, security, design, support while others may be built as and when budget is available.

Proposed Solution

Due to Covid-19, students are more isolated than ever which can decrease their sense of belonging within the Haskayne Community. This increase of isolation can also affect the student's mental health, which brings additional stress on their day-to-day life and academic career. To tackle this problem, we propose to develop an application that will enable students to interact with one another. This platform will provide opportunities for students to make groups with common interests, have a forum where students can communicate, have coffee chats, as well as online games such as Among Us or jeopardy in

groups/teams. We acknowledge that not all students are extroverted or eager to join these types of activities. To encourage the students that are less willing to join, we will implement a reward system for their inclusion and participation. Students who participate and engages with these services will be awarded points that can be redeemed with external partners. To begin with, the points will be redeemable at University of Calgary's bookstore but can later be expanded to local restaurants and even online food ordering platforms. We believe that this reward point program will provide an incentive for all students to participate and connect with one another.

Feasibility Analysis

Economic Feasibility

To assess the economic feasibility of the project, the team performed a cost-benefit analysis and inferred that the net benefits from the project outweighed the costs and the project is therefore economically feasible. The intangible benefits such as improvement in the rankings and reputation as a result of the sense of community and belongingness in the campus made a strong case to pursue this project. Moreover, the fixed costs involved in developing the system are estimated to be well within reach of the University. Hence, the project is economically feasible.

Technical Feasibility

Research suggests that most of the students on campus have the access to the internet and laptop. Hence, an online solution which can be used by the solution is technically feasible. The problem statement suggests that it can be solved with developing a system which can connect the students with peers and conduct online events. These functions are easy to implement with the current frameworks and capabilities in the software systems. The system does not have any out of the world requirement which has never been implemented before. Therefore, the system is technically feasible to implement.

Organizational Feasibility

The university students are mostly in the age group of 18-30 years. This is a demographic which spends a lot of time on mobile phones or laptops and does not have any problem learning new system. Hence, the organizational resistance for the system is expected to be low. As far as the staff in the Mental Wellness department is concerned, an initial training to use the system will be provided to ensure a smooth transition to the new system. Overall, the system is organizationally feasible.

Legal/Ethical Feasibility

The system will comply with all the University of Calgary's regulations as well as privacy and anti-spam legislation laws in order to be launched successfully.

Operational Feasibility

The system will be available for use through smartphones, tablets, and computers. Since it is an online solution, we do not expect to face any issues in the context of operational feasibility. The students do not need to be physically present on the campus to use the system. They can use it from anywhere as long as they have the internet connection. This ensures that the operations are not affected by the regulations and constraints caused by COVID-19.

Alternatives



Provide students an option to attend one club that they are interested in. For example, movie club, golfing club, workout club etc. This should be done each semester. This would allow students to interact with and partner with clubs.

From an IT perspective this is simple as it just requires signing up by student. U of C can leverage the same infrastructure as they do for getting students to sign up for classes. However, this would require significant background work by U of C staff to partner with clubs.

Feasibility Analysis

Technical Feasibility

This is not an application. The student can sign up through my U of C website as they do for courses. Signing up would provide the student with access to their preferred club. It is good to ensure that in background the U of C system sends the students information to the club for sign up.

Economic Feasibility

This is economically feasible as it does not require much technical capability. Partnering with clubs maybe costly, but cost can be passed down to students. It is also beneficial that existing infrastructure can be utilized.

Legal/Ethical Feasibility

Ethically this solution would be a little difficult to implement. This is because the club would know that the students attending their events have some sort of mental stress. The clubs may treat students differently due to this reason. However, that is okay as the community would gain more awareness to the issues that students face and potentially become more accepting of them.

Operational Feasibility

This does not require much maintenance once the system is functional. U of C would need the capacity to add and remove clubs to update their sign-up list. Additionally, U of C must stay informed about club fees and any changes to them.

Schedule

This project would take roughly 3 months to implement. Approximately 2 months to partner with clubs would be required. Another month would be required to update my U of C for signing up for clubs.

Risk Matrix

Risks	Risk Probability	Mitigation	Contingency
Students not being interested in new interface	20%	Come up with a new platform that meets expectations	Give time to student to adopt
Students feeling ashamed of using such help	30%	Hide identity of the student	Increase mental health awareness among U of C
Platform not meeting technical expectations of students	5%	Fix technical glitches	None
System crashing	5%	Fix technical glitches	Perform incremental maintenance
Not enough coordinators available once system is functional	30%	Hire more coordinators	Offer peer to peer help and encourage that over coordinators
Students find the platform challenging to use and sign up for	5%	Offer online help for registration	Offer online help for registration
Community is too small	20%	Offer more rewards for using the platform	None

Figure 1-2 Risk Matrix

Decision

One of the main issues with pursuing the alternative is that it isn't expected to bring about a lot of impact in the community engagement. Moreover, integrating with about 300 clubs on the university could lead to potential issues when it comes to organizational feasibility. Hence, the proposed solution seems to be a better option to pursue than the other alternatives.

Cost-Benefit Analysis

As per the initial budget plan, we will seek funding of CAD 225,000 for the project. The development cost required to implement the system makes up most of the budget for the project. The University can consider the option of outsourcing the development to a local Software company in Calgary and optimize the process of vendor selection to save some budget. However, CAD 225,000 seems to be a reasonable cost to implement the system needed to solve our business problem.

Type	Sub-type	Amount (CAD)
Tangible Costs	Hiring a Business Analyst	0 (Volunteer)
	Hours spent in the planning phase (=100)	5,000
	Design phase	25,000
	Infrastructure costs	35,000
	Integration with University's system	10,000
	Miscellaneous	30,000
	Development costs	80,000
	Maintenance Costs	20,000
	Marketing & Promotion	15,000

	Launch phase	5,000
	Total	225,000
Tangible Benefits	Ad Revenue (per anum)	7000
Intangible Costs	Time for scoping (30 – 50 hours)	1000
	Time for feedback and follow-up (30 – 35 hours)	700
Intangible Benefits	Improved mental health (~1000 hours of sessions with therapist)	125,000
	Improved attachment to school	100,000
	Donations because of positive results	50,000
	Improved reputation (More Funds & Support)	75,000

Figure 1-3 Risk Benefit Analysis

The cost benefit analysis indicates that the benefits outweigh the costs of the project. The project should therefore be pursued.

DESIGN PHASE

Use Case Diagrams

The use case diagram which models all the functional requirements for the proposed system is as shown below. The use cases have been categorized into three different subsystems. Personalized help subsystem, social events subsystem and rewards subsystem. The personalized help subsystem deals with the use cases related to providing one to one sessions and coffee chats to the students. The social events subsystem comprises the use cases which involve group events like an online treasure hunt or a

group game. The third subsystem exclusively deals with the credits. For each event that a student attends, the student coordinator awards the credits to the participants, who can then use these credits at University of Calgary’s bookstore. The use case diagram doesn’t mention Login/Sign Up as the explicit use case as it is implied that the student/coordinating body will have to login before performing most of the operations on the system. Also, the login/signup is an added layer of security and not a part of core functional requirements.

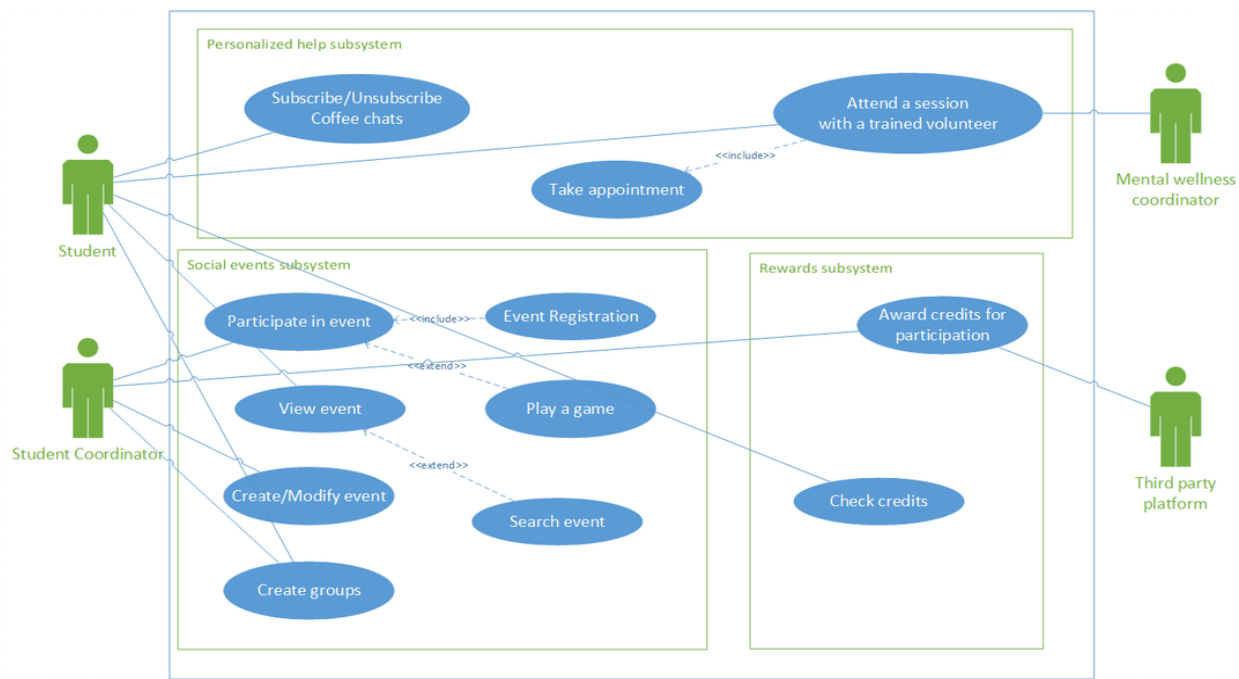


Figure 2-1 Use Case Diagram - Proposed

Use case descriptions.

The use case descriptions for the use cases described above are as follows.

Attend a session with trained volunteer
Name: Attend a session with a trained volunteer
Actor: Student

Description: Describes the process of the student attending a single session counselling with a trained student volunteer.
Successful completion: The issue raised by the student has been resolved by creating a mutually agreed upon action plan.
Alternative: The student and the volunteer communicate over e-mails.
Precondition: The student has booked an appointment for session
Postcondition: The student attends the counselling session.
Assumptions: The trained student volunteer is available.

Subscribe/Unsubscribe for coffee chats
Name: Subscribe or Unsubscribe for coffee chats
Actor: Student
Description: Describes the process of the student subscribing or unsubscribing for coffee chats with other students.
Successful completion: The student is paired up with another student for chats on a weekly basis if he /she has subscribed and both the students receive a link for meeting.
Alternative: The student sends an e-mail to the student coordinator to manage subscription.
Precondition: The student is enrolled at University of Calgary.
Postcondition: The student receives an email confirming his action for subscription.
Assumptions: The students actively participate and show interest in coffee chats.

Participate in event
Name: Subscribe or Unsubscribe for coffee chats
Actor: Student
Description: Describes the process of the student participating in a social event organized and created by the student coordinator.
Successful completion: The student is able to join the event through a meeting link.
Alternative: NA
Precondition: The student has registered for the event.
Postcondition: The student's participation in an event is recorded by the system.
Assumptions: The student is enrolled at the University of Calgary.

View social events
Name: View social events
Actor: Student
Description: Describes the process of the student viewing the social events in the upcoming weeks.
Successful completion: The student is able to view all the events in the upcoming weeks.
Alternative: The students sends an e-mail to get a list of events.
Precondition: The student is logged into the system.
Postcondition: The student sees a list of all the upcoming events.
Assumptions: The student is enrolled at the University of Calgary.

Create/Modify event
Name: Create/modify event
Actor: Student coordinator
Description: Describes the process of the student coordinator creating or modifying the social events.
Successful completion: The event is successfully created, and the students are able to register for the event.
Alternative: NA
Precondition: The student coordinator is logged into the system.
Postcondition: The student coordinator receives a message about creation/updating of the event
Assumptions: The student is enrolled at the University of Calgary.

Create groups with common interests
Name: Create groups with common interests
Actor: Student
Description: Describes the process of the student creating a group.
Successful completion: The group is created, and the students are able to start discussions and reply to other students.
Alternative: NA
Precondition: The group with same name doesn't already exists.
Postcondition: The group name with its description is visible to the students in the system.
Assumptions: The student is enrolled at the University of Calgary.

Event registration
Name: Event registration
Actor: Student
Description: Describes the process of the student registering for a social event.
Successful completion: The student receives an e-mail confirming the registration for the event.
Alternative: The student sends an e-mail to student coordinator for manually registering for the event.
Precondition: The student is eligible to participate in the event.
Postcondition: The student's registration for an event is recorded by the system.
Assumptions: The student is enrolled at the University of Calgary.

Play a game
Name: Play a game
Actor: Student
Description: Describes the process of the student playing a game with other students during an event.
Successful completion: The student is able to perform all the actions in the game.
Alternative: NA
Precondition: The student has joined the social event and had already registered for the event.
Postcondition: The student's score during the game was recorded.
Assumptions: The student is enrolled at the University of Calgary.

Search event
Name: Search event
Actor: Student
Description: Describes the process of the student searching an event.
Successful completion: The student is able to find the event that he/she was looking for.
Alternative: The student sends a manual inquiry about event to the student coordinator.
Precondition: The student is logged into the system.
Postcondition: The search results display the events matching student's search criteria.
Assumptions: The student is enrolled at the University of Calgary.

Award credits for participation
Name: Award credits for participation
Actor: Student coordinator
Description: Describes the process of the student coordinator awarding credits to the students for the participation in events.
Successful completion: The student is successfully awarded credits and is able to see those credits in balance.
Alternative: The student coordinator sends a redeemable coupon instead of credits.
Precondition: The student had registered and participated in the event.
Postcondition: The student is able to view and use those credits with University of Calgary's bookstore.
Assumptions: The student is enrolled at the University of Calgary.

Check credits
Name: Check credits
Actor: Student
Description: Describes the process of the student checking the credits available for redemption.
Successful completion: The student is successfully able to know the balance of credits.
Alternative: The student sends an e-mail to the student coordinator to know about credits.
Precondition: The student is logged into the system.
Postcondition: The student is able to view the credits.
Assumptions: The student is enrolled at the University of Calgary.

Activity diagrams

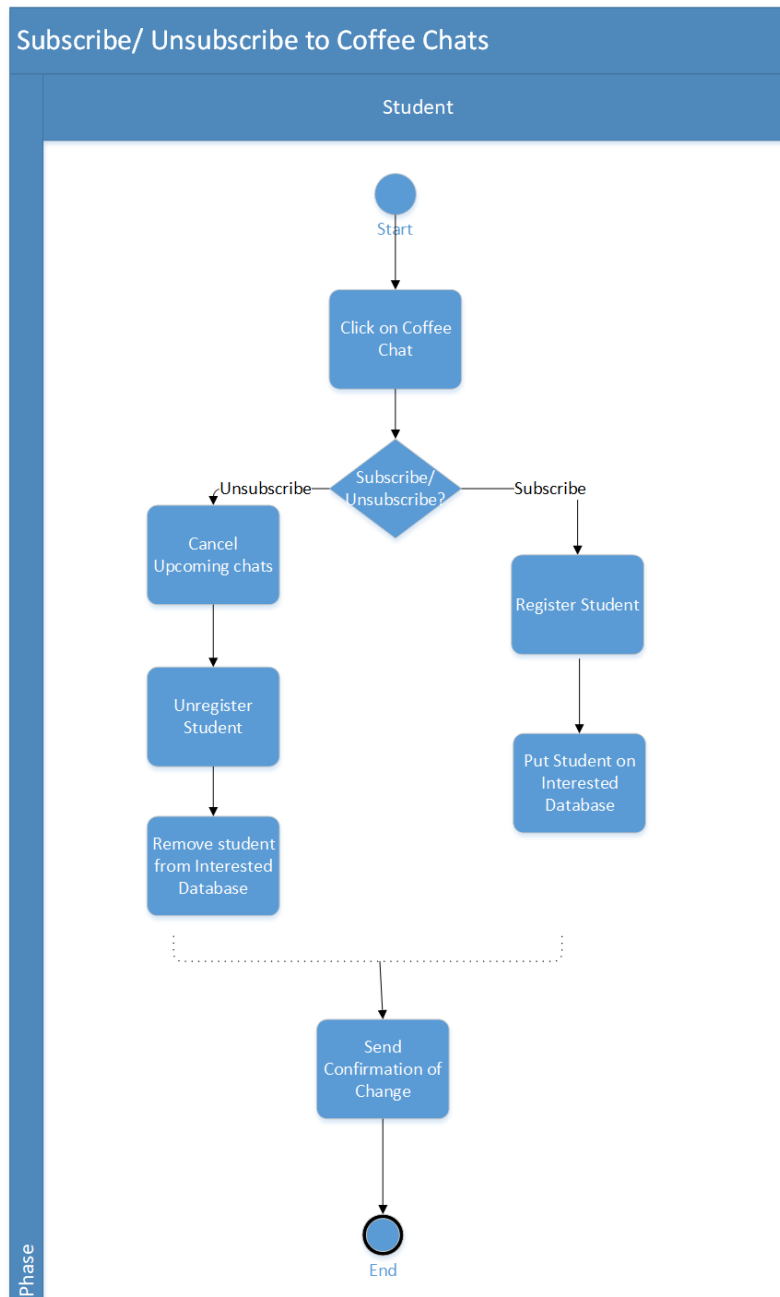


Figure 2-2 Subscribe/Unsubscribe to Coffee Chats

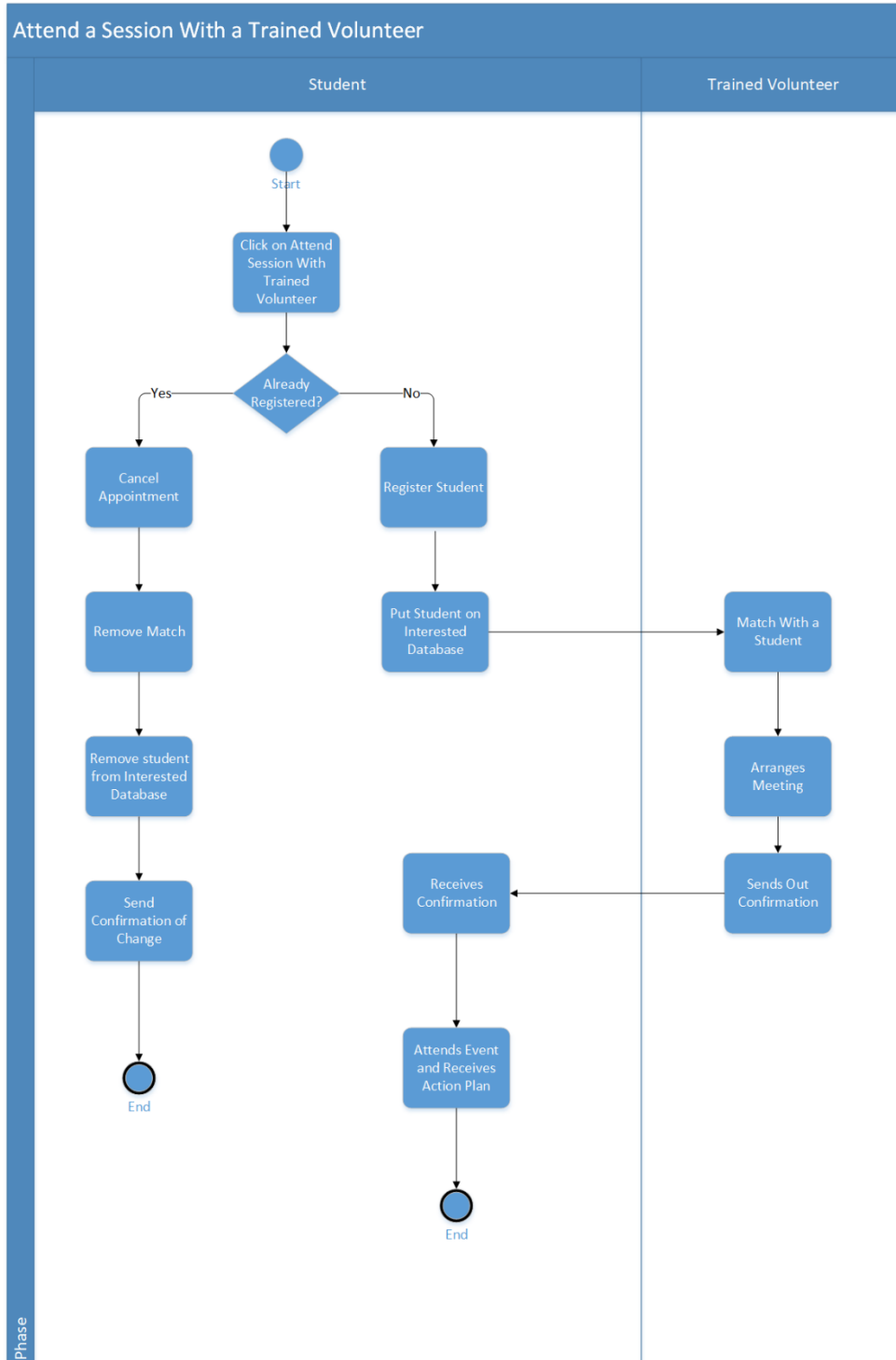


Figure 2-3 Attend a Session with a Trained Volunteer

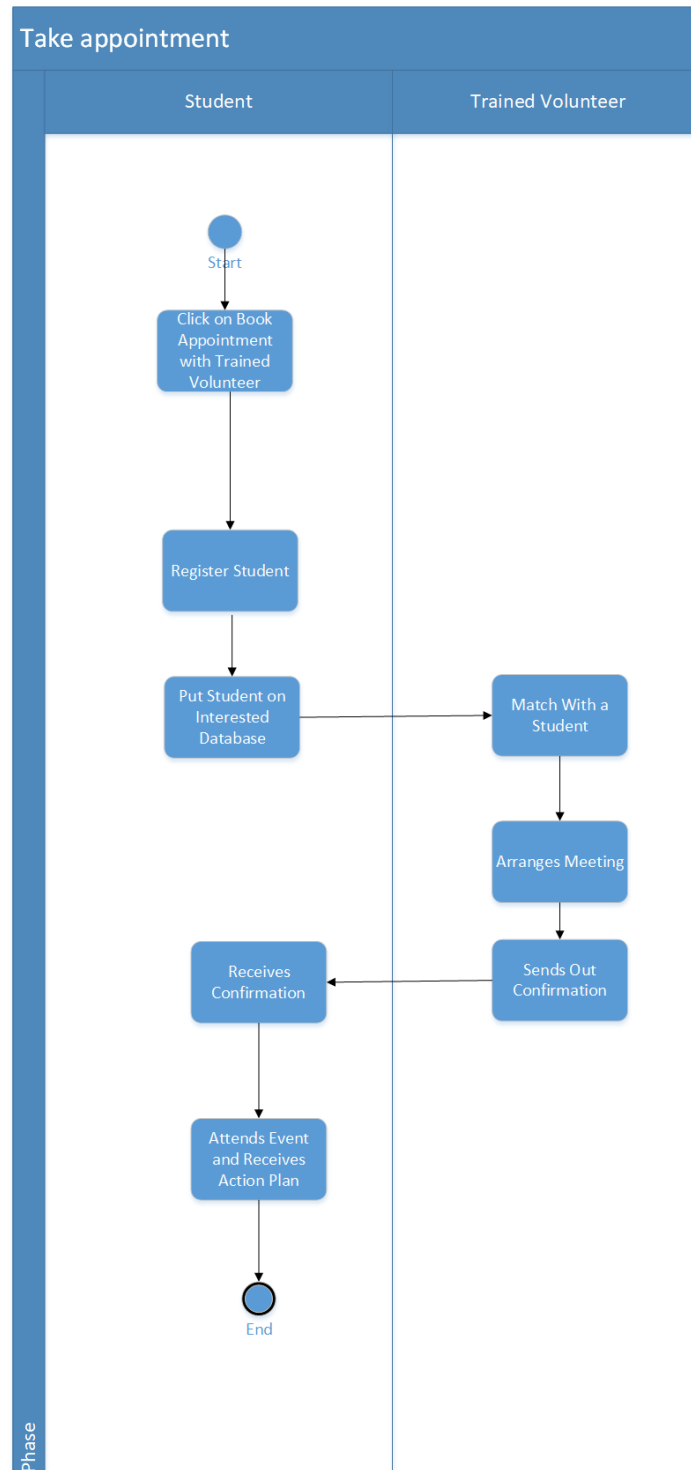


Figure 2-4 Take appointment

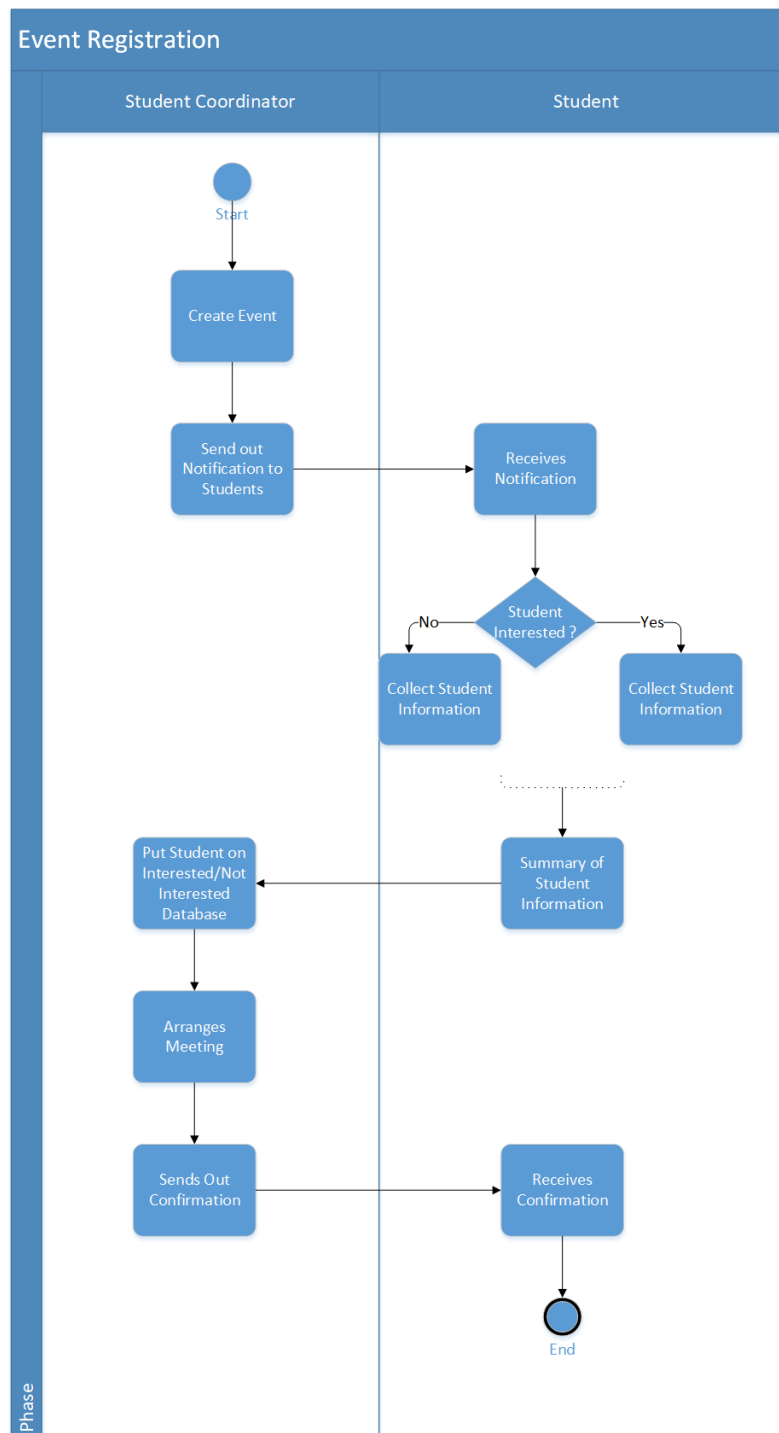


Figure 2-5 Event Registration

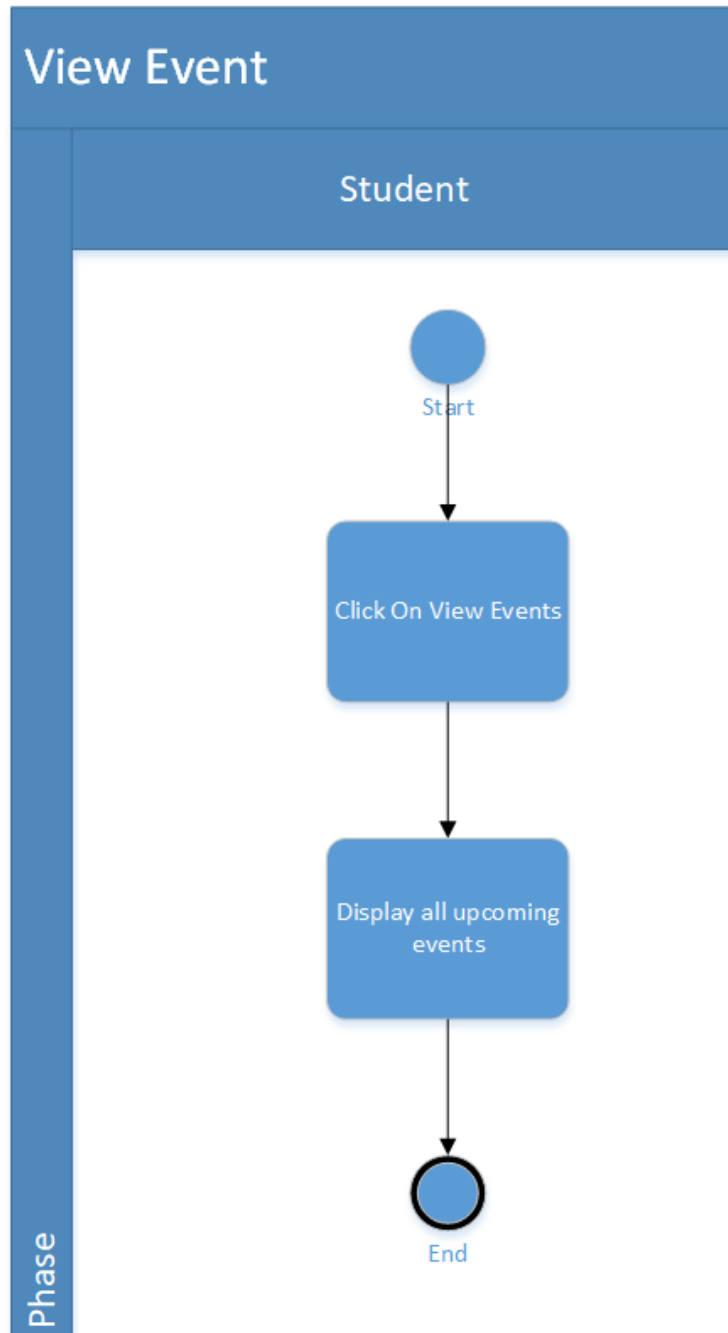


Figure 2-6 View Event

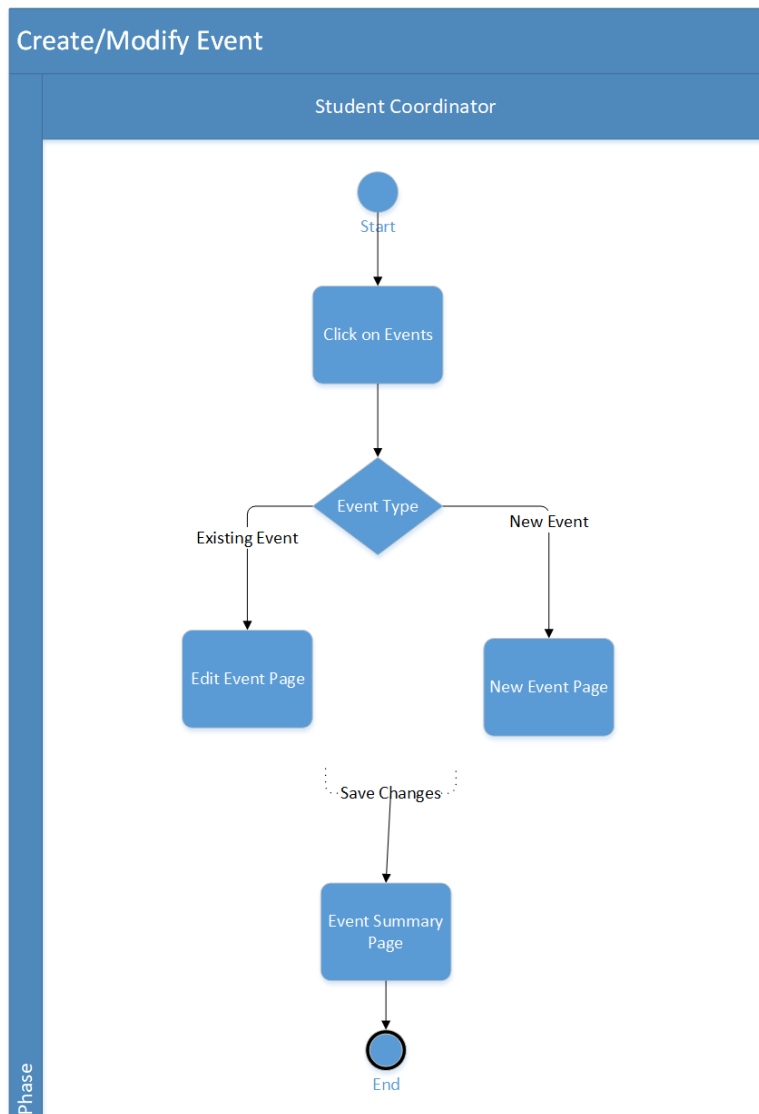


Figure 2-7 Create/Modify Event

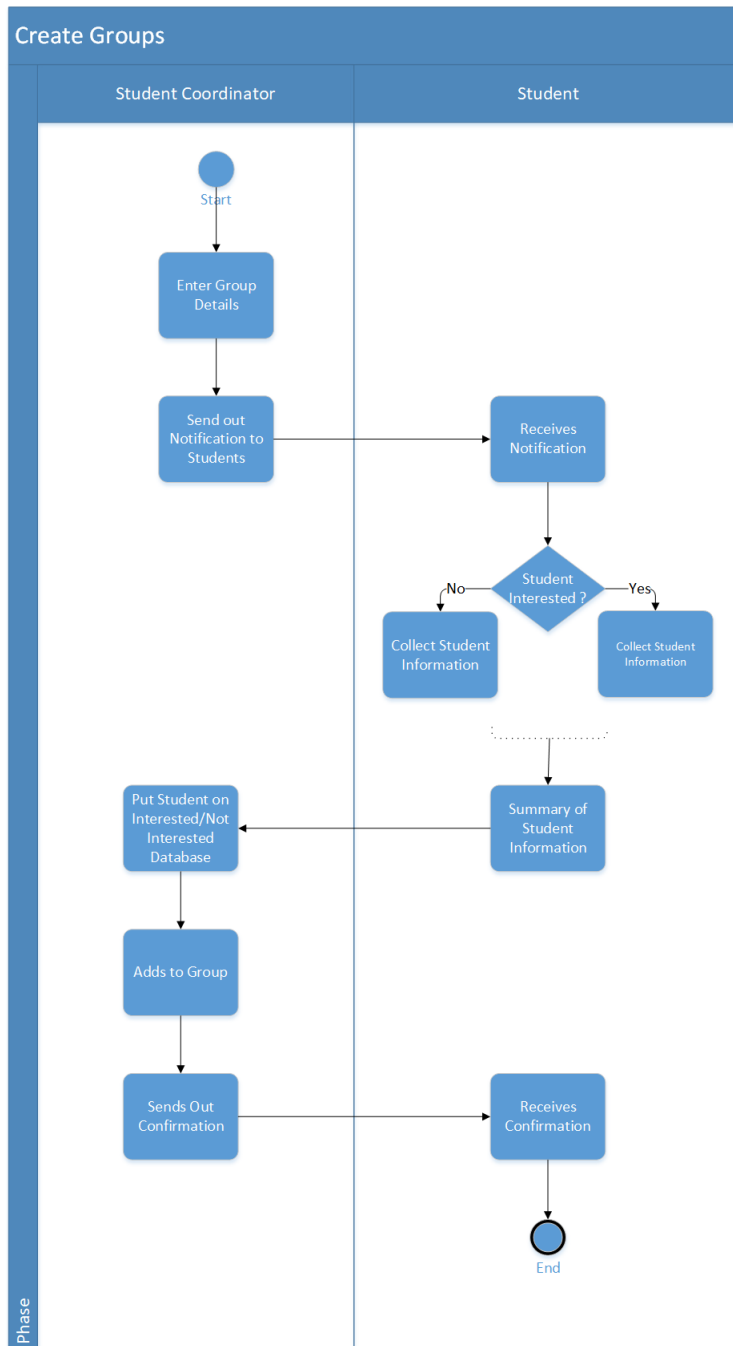


Figure 2-8 Create Groups

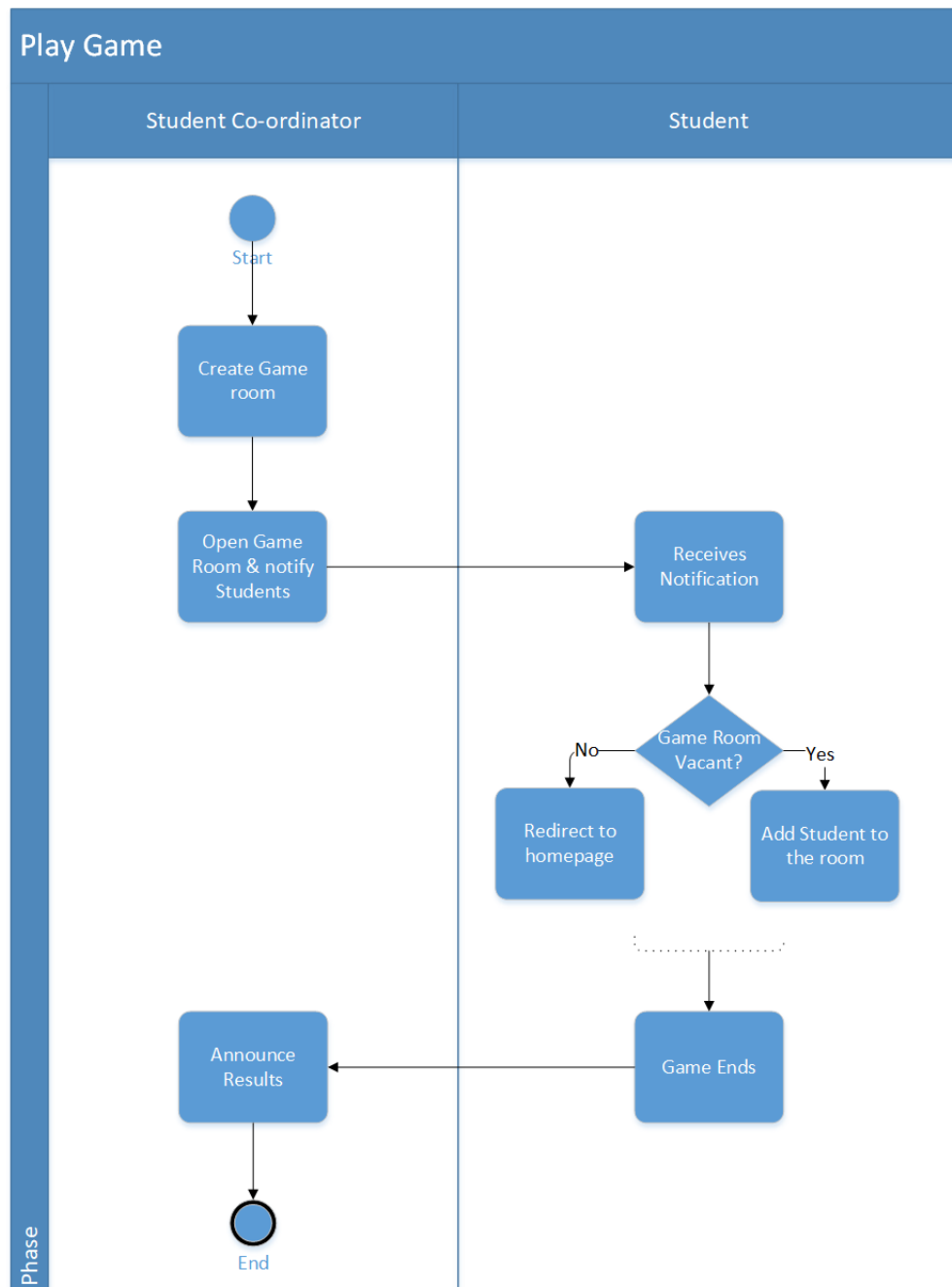


Figure 2-9 Play Game

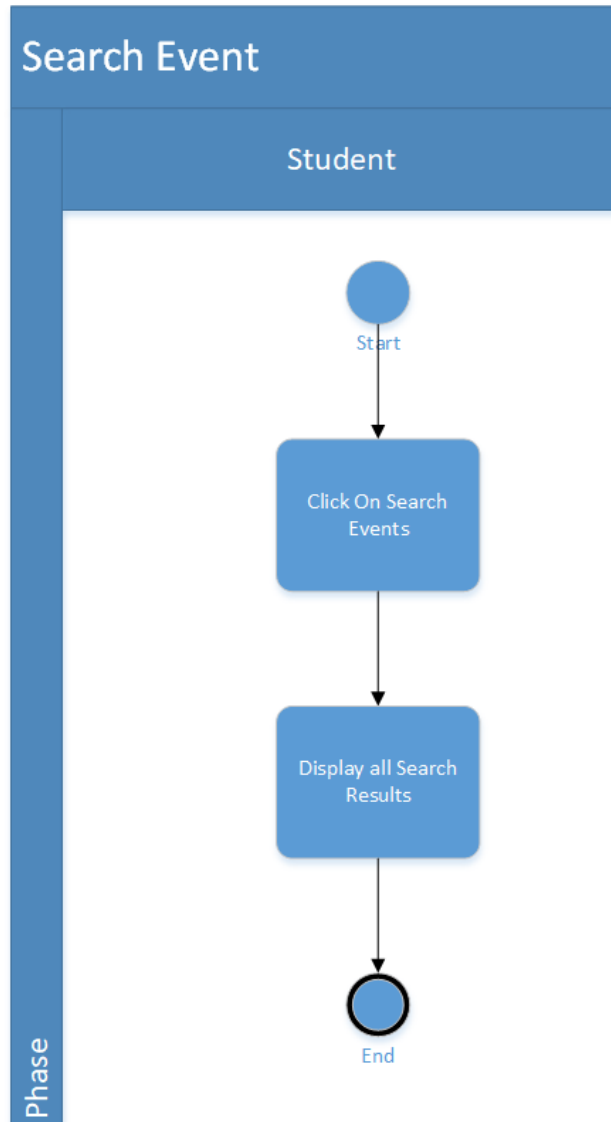


Figure 2-10 Search Event

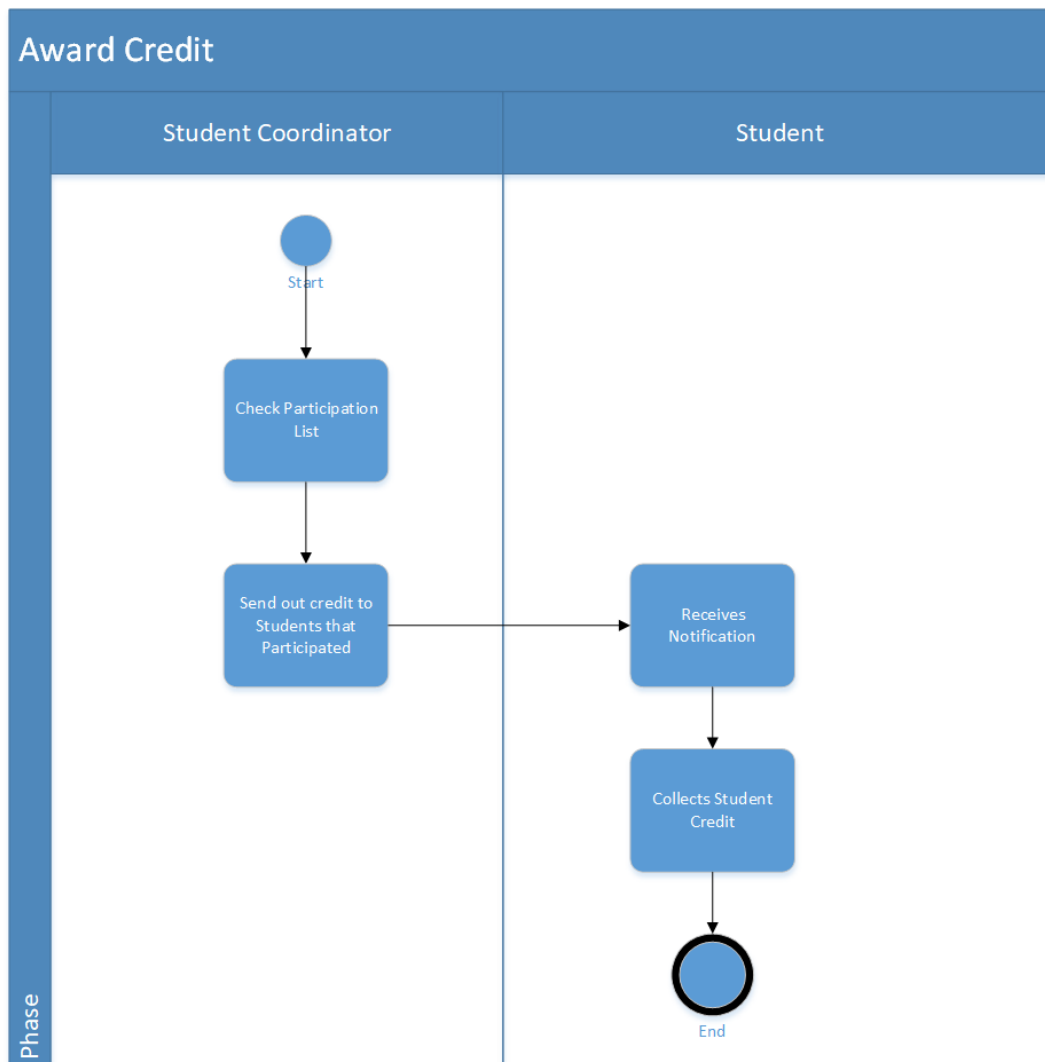


Figure 2-11 Award Credit

Check Credits

Student

Phase

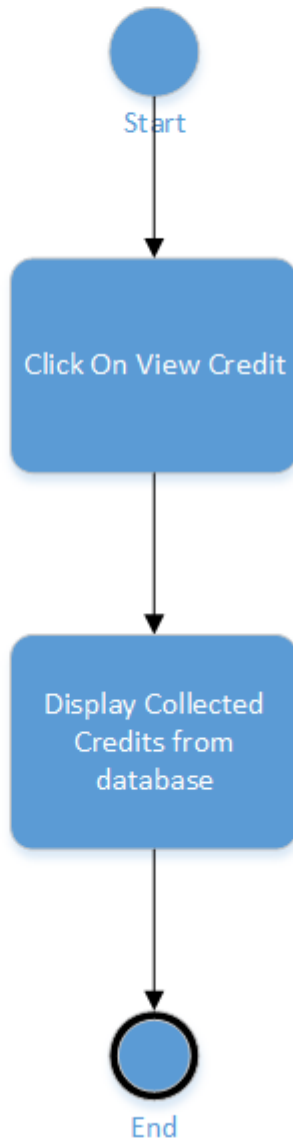


Figure 2-12 Check Credits

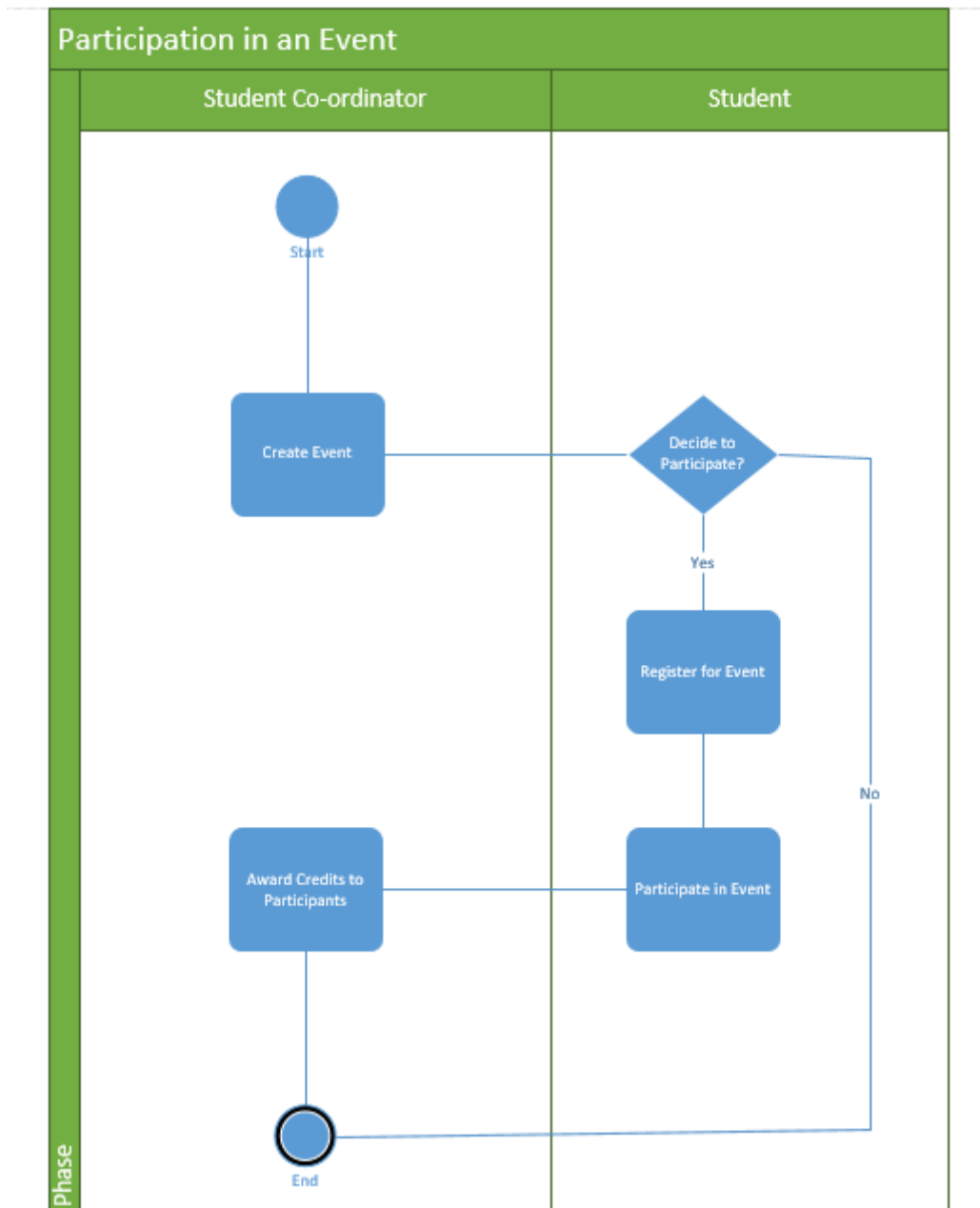


Figure 2-13 Participation in an Event

Business Process Diagram

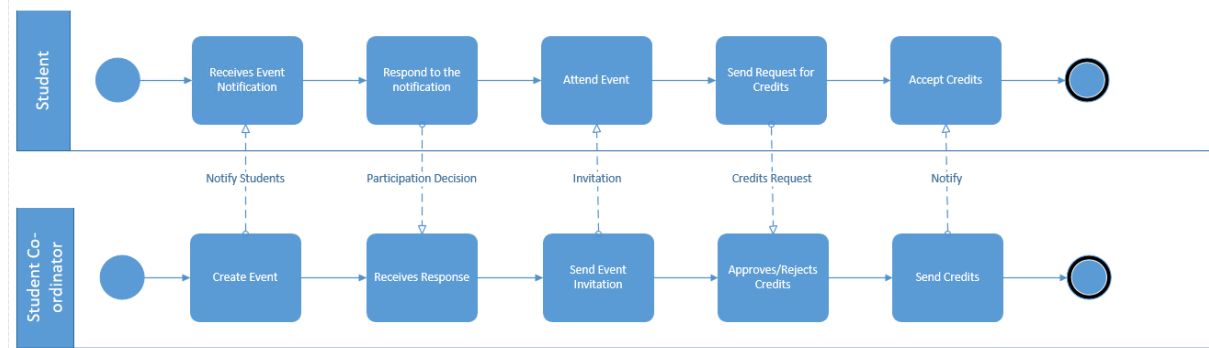


Figure 2-14 BPD

Class Diagram

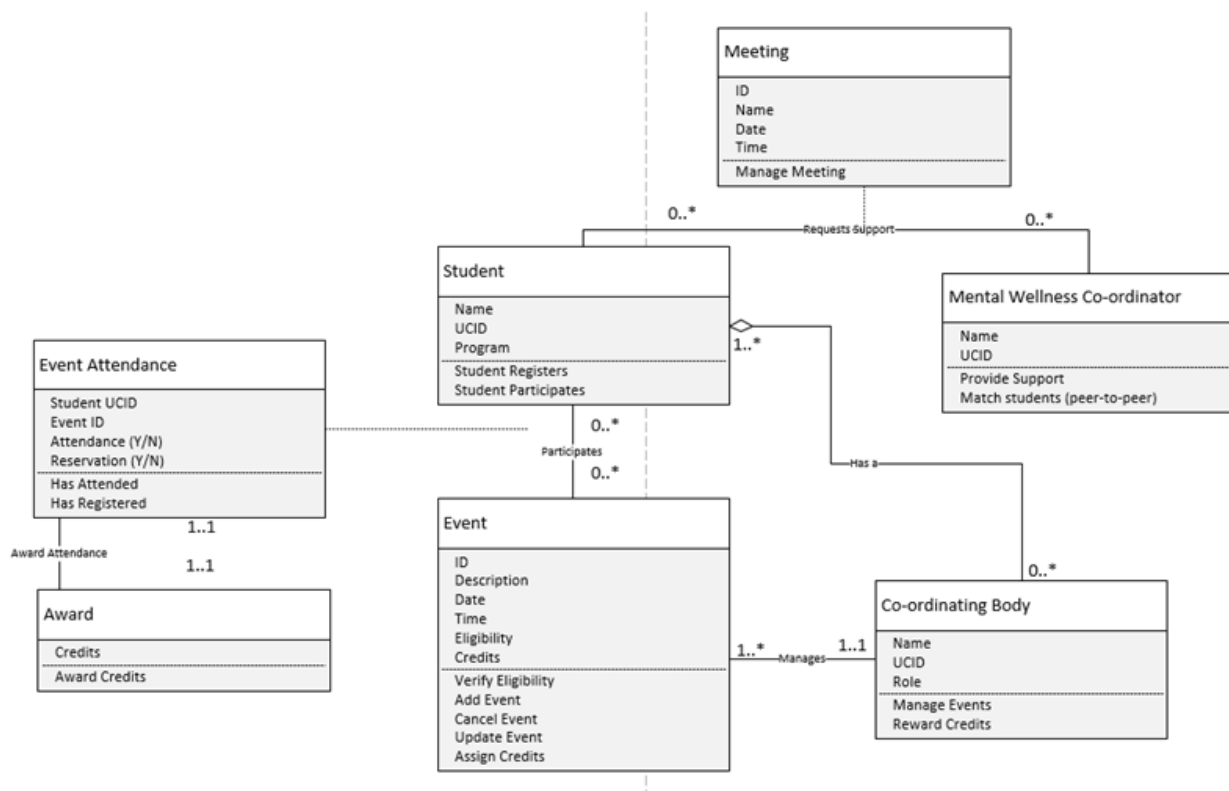


Figure 2-15 Class Diagram

State Transition diagrams

Event

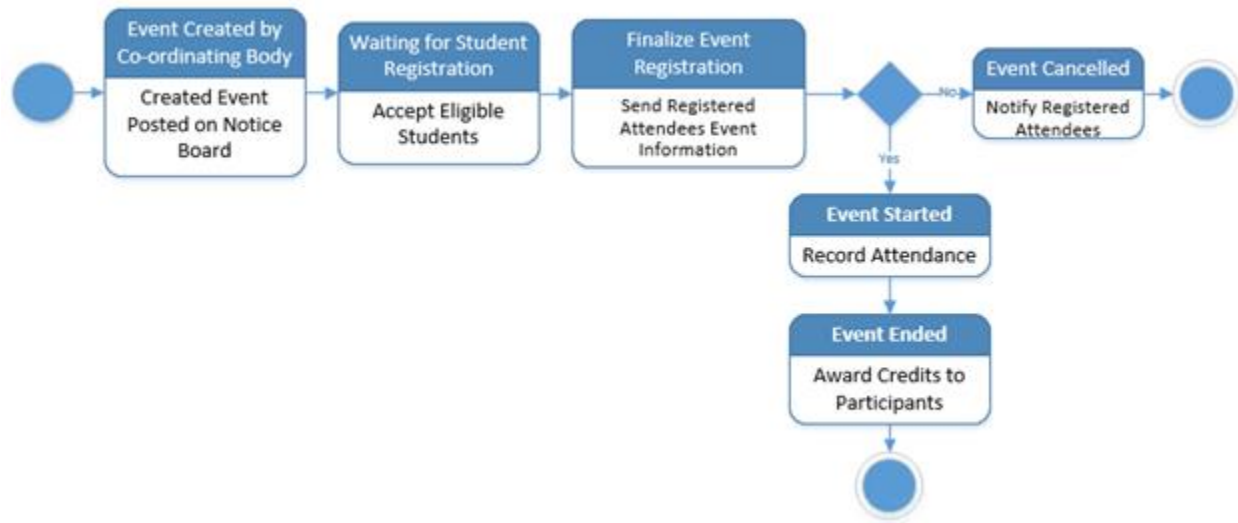


Figure 2-16 Event Diagram

This diagram depicts the creation of an event. Once the event is created by the event coordinating body, students are able to view and join them. When the event is finalized, an email is sent to all registered students regarding the event information. After the event has ended, the students who participated will be rewarded their credits. If the event does not get finalized, then it will be cancelled, and an email will be sent to all registered students.

The diagram allows us to visualize how an event is created and what will happen when it is finalized.

Student Register for Event

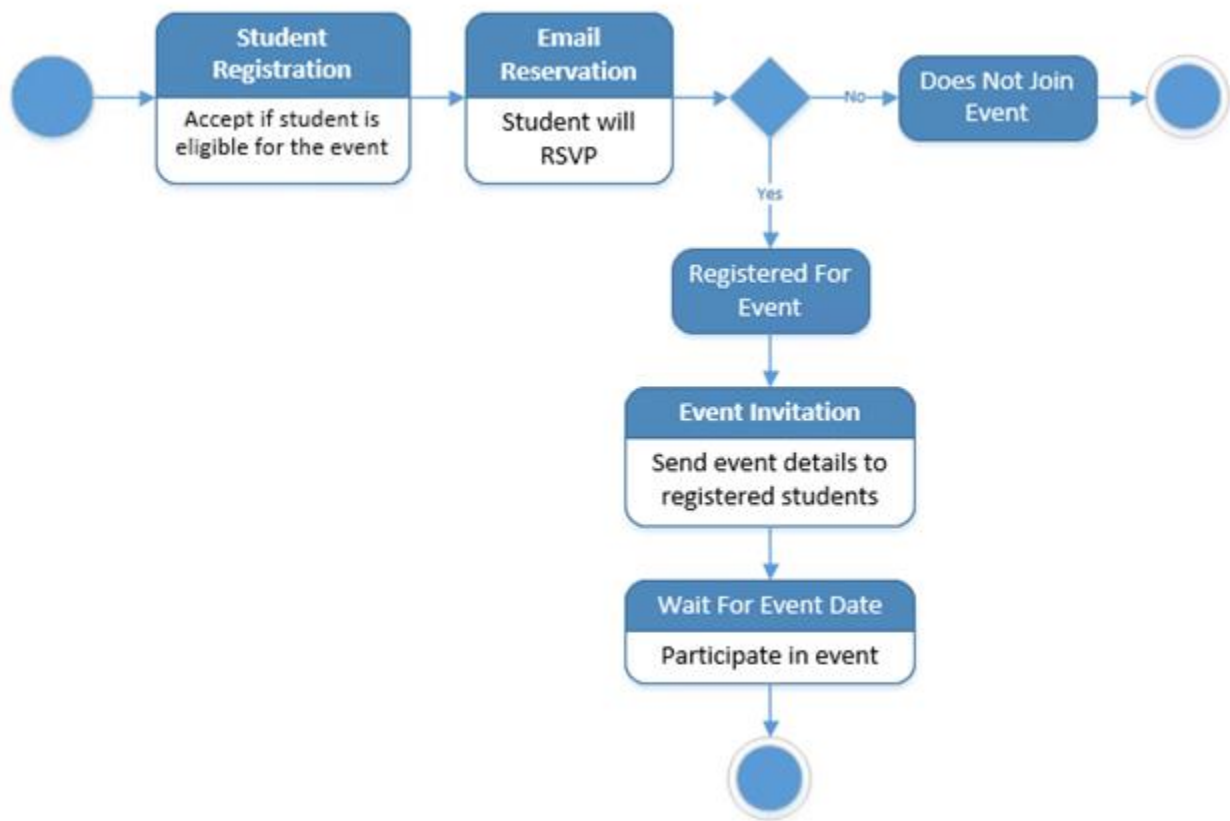


Figure 2-17 Student Register for Event Diagram

This diagram shows a student registering for an event that is posted by the coordinating body. Once a student registers and is accepted, they are sent an email reservation. If the student reserves their spot, they are entered in the event and are sent the event details. If the student does not reserve their spot, they forfeit their position and are not able to participate in the event.

This diagram allows us to see the registration process that a student will go through.

Mental Wellness Co-Ordinator

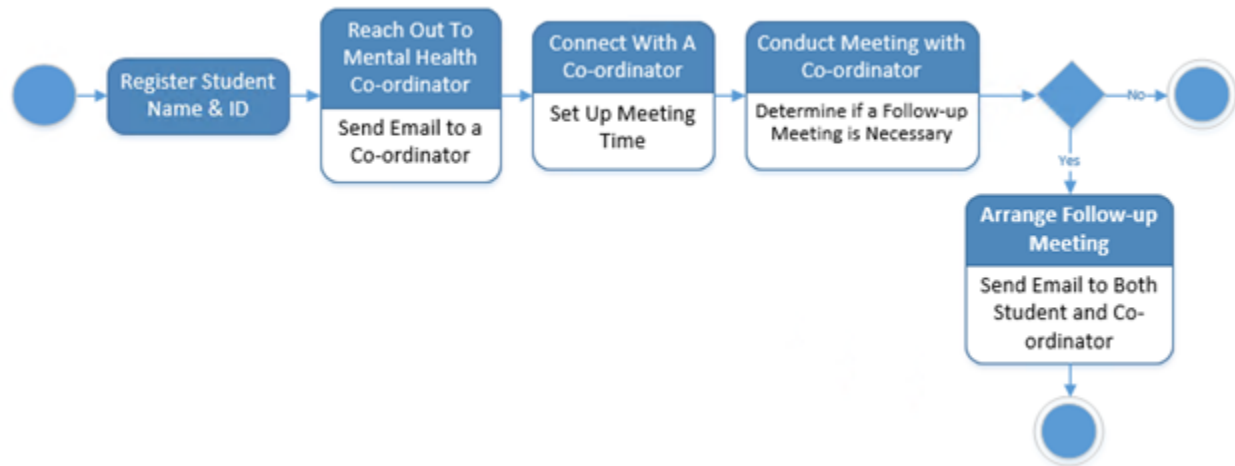


Figure 2-18 Mental Wellness Co-Ordinator Diagram

The diagram above shows the process of a student when they reach out to a mental health coordinator. Once the meeting is set up and conducted, the student will have an opportunity to schedule a follow up meeting if they wish. If they would like a follow up meeting, they can arrange it with the coordinator.

With this diagram, we can visualize how a student will register a meeting regarding their mental health with a coordinator.

Data Flow diagrams

Context Data Flow Diagram

A Context Data Flow Diagram (also known as Level 0 Diagram) utilizes minimal processes and represents the functionality of the whole system from a high-level perspective. It does not give details about each process and its aim is to provide an overall scope of the system in terms of its functionality. This also gives end users a sense of where the data they input ultimately impacts the system and how it is processed.

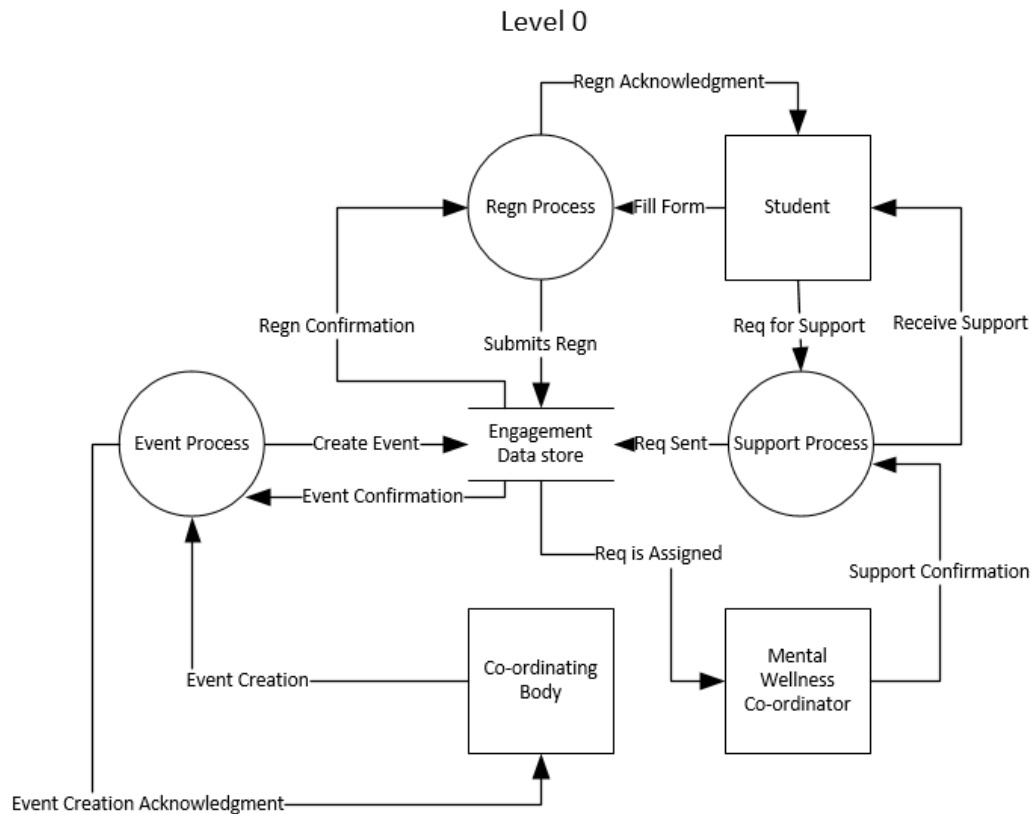


Figure 2-19 Context Data Flow Diagram

Level 1 Diagrams:

Contrary to Level 0, Level 1 diagrams further dive one level down and visualizes the whole system. This is done by breaking down high level processes of Level 0 into sub-processes. It maps out data flows from entities, processes, and data store.

Support Process

The support process gives an overview of how data flows when a student requiring support requests for one. The student submits a request which gets stored in the data store. A search is performed for an available coordinator and the response is sent back to the module. The appointment data is shared with the student and the coordinator who then provides support to the student.

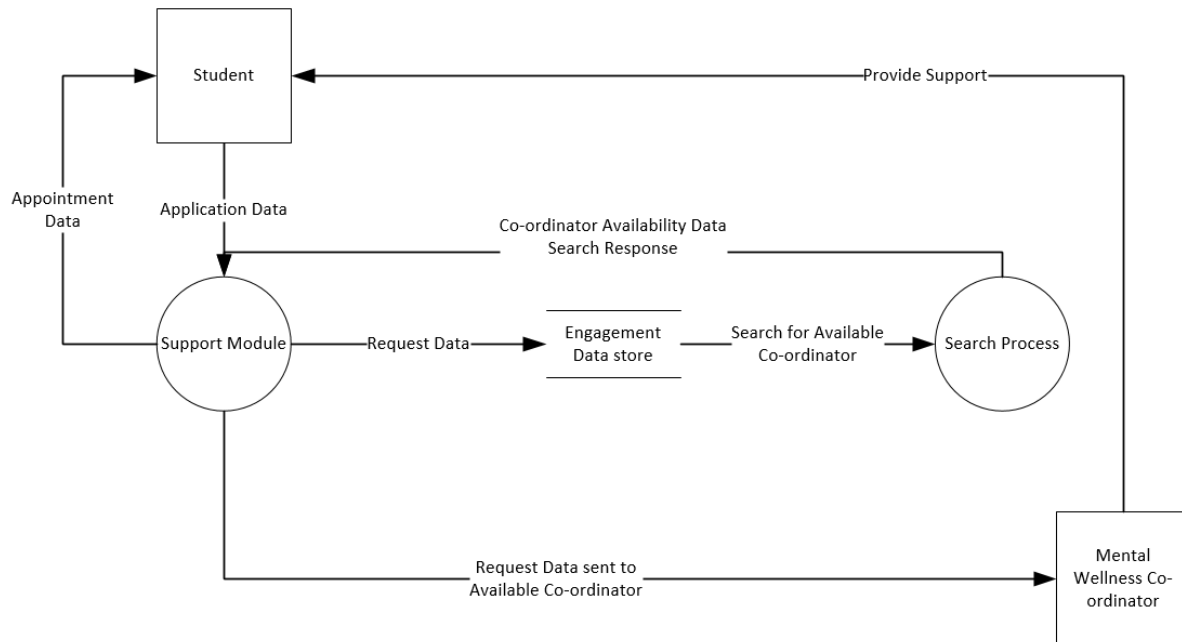


Figure 2-20 Support Process Diagram

Event Process

The event process gives an overview of how data flows in the system right from event creation to participation. It begins with the coordinating body creating events and sending out notification to the students. Interested and eligible students register for the event and the entire participants list is sent to the coordinating body. Student participates in the event using the event details and the attendees list is sent to the coordinating body for verification and awarding credits. Successful attendees are then awarded credits for their participation.

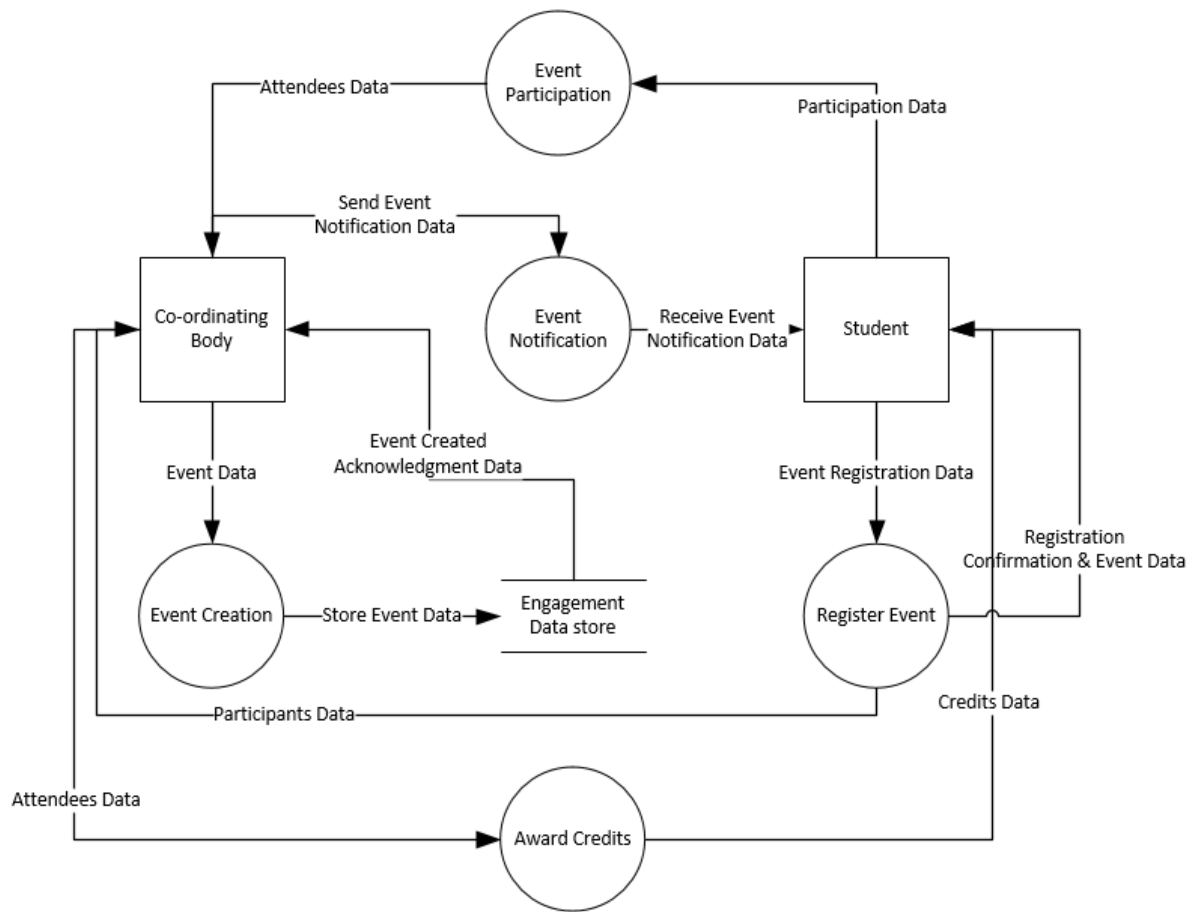


Figure 2-21 Event Process Diagram

Sequence Diagram

The sequence diagrams for all the activity diagrams have been created and consolidated into following ones:

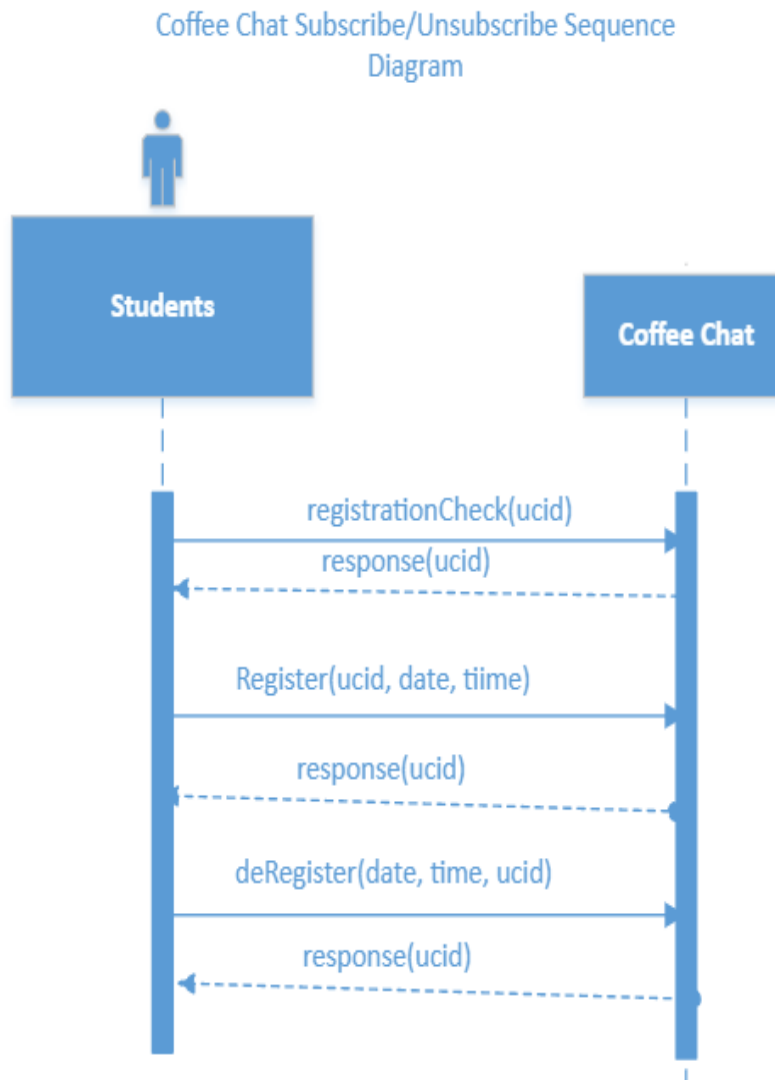


Figure 2-22 Sequence Diagram Coffee Chat

Session Appointment and Attendance with Trained Volunteer Sequence Diagram

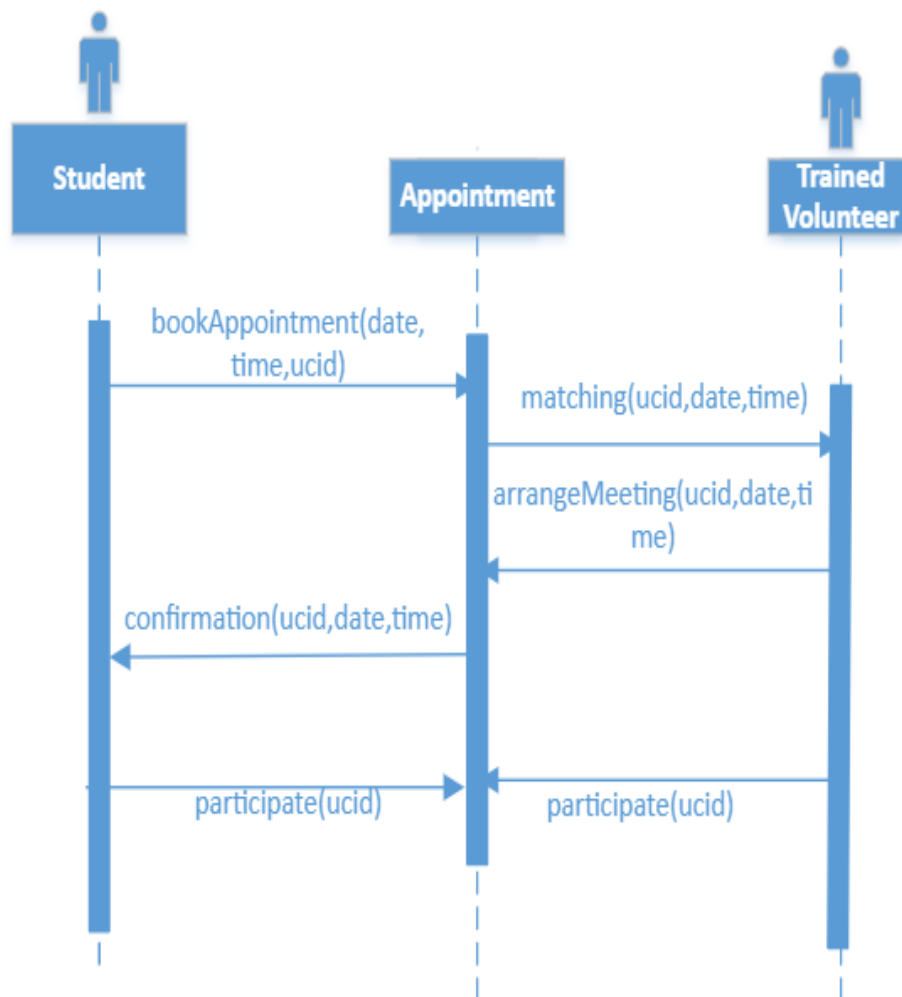


Figure 2-23 Sequence Diagram Session Appointment

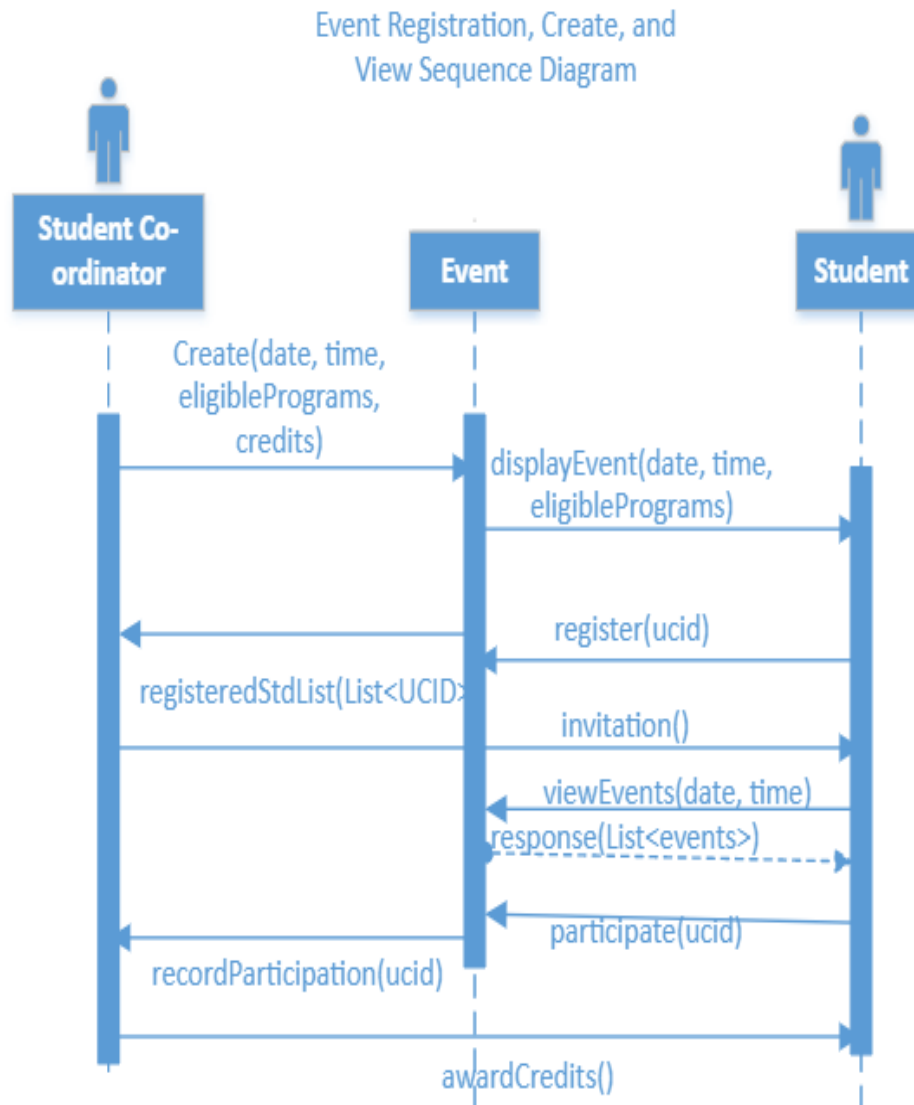


Figure 2-24 Sequence Diagram Event Registration

Play A game Sequence Diagram

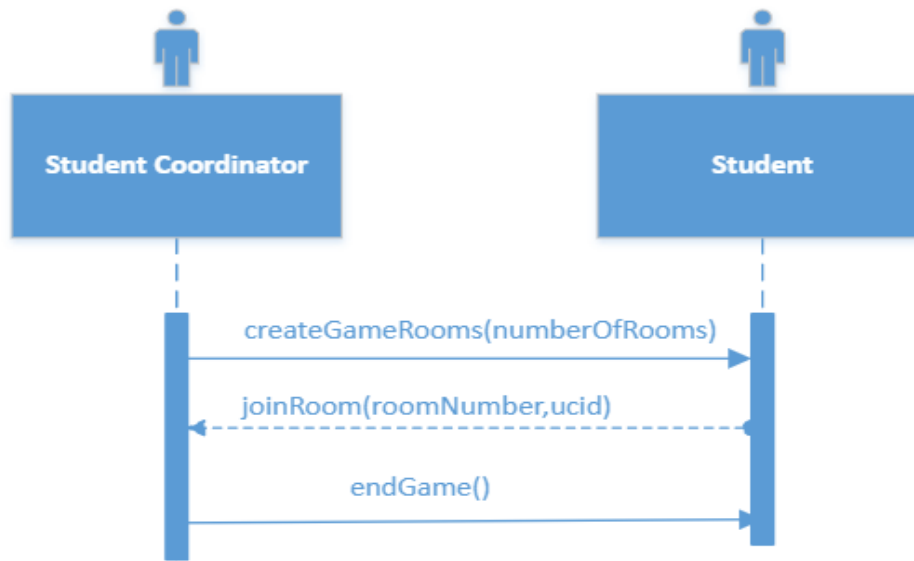


Figure 2-25 Sequence Diagram Play a Game

Create A student group Sequence Diagram

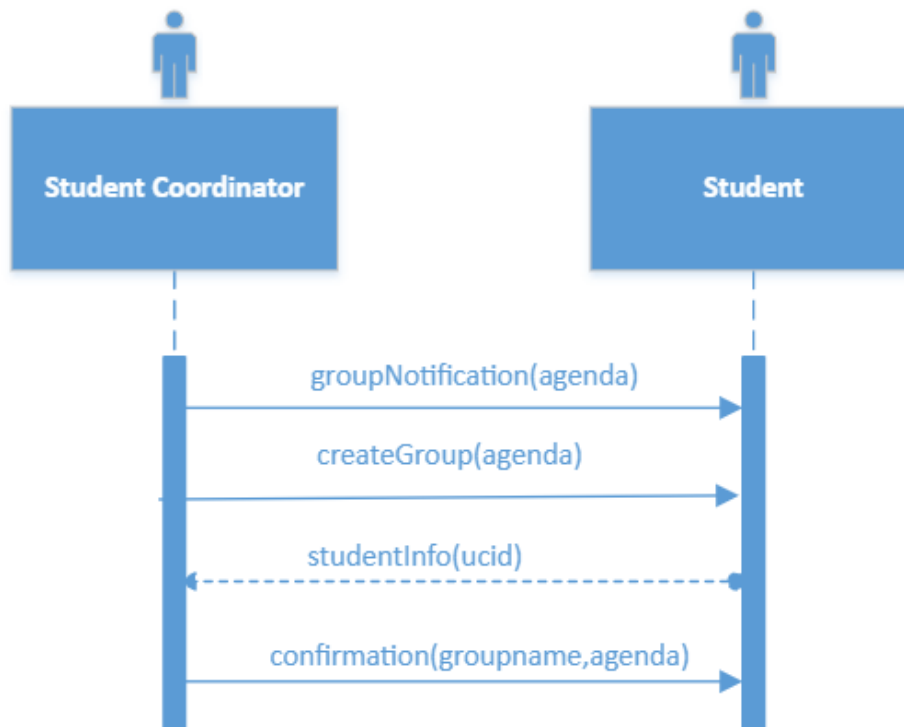


Figure 2-26 Sequence Diagram Create a Student Group

Communication Diagram

The communication diagrams for the respective sequence diagrams are as follows.

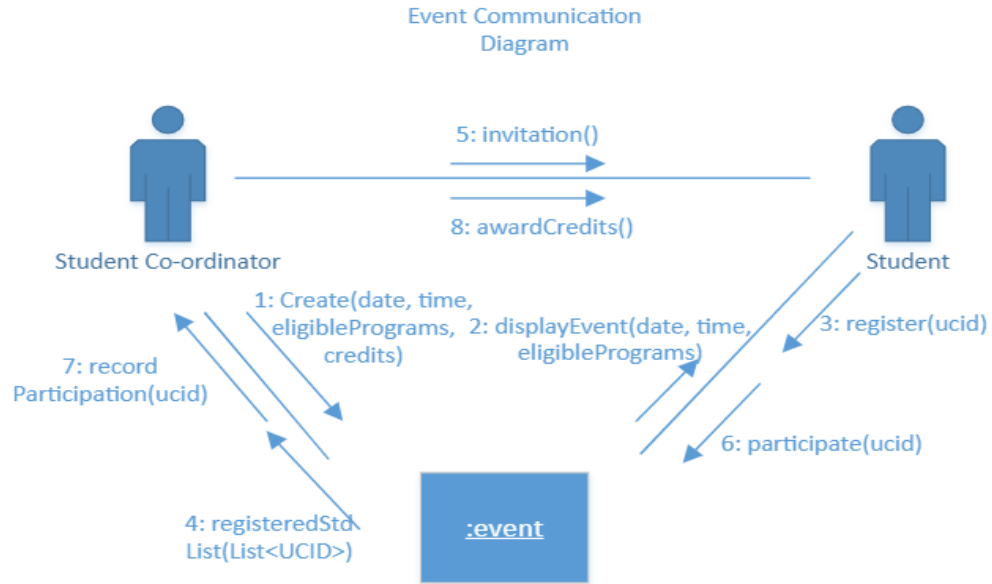


Figure 2-27 Event Communication Diagram

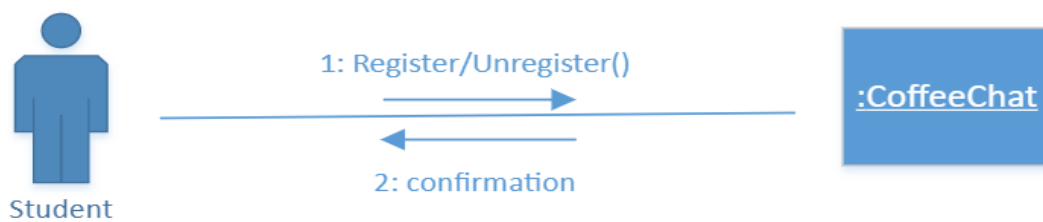


Figure 2-28 Coffee Chat Communication Diagram

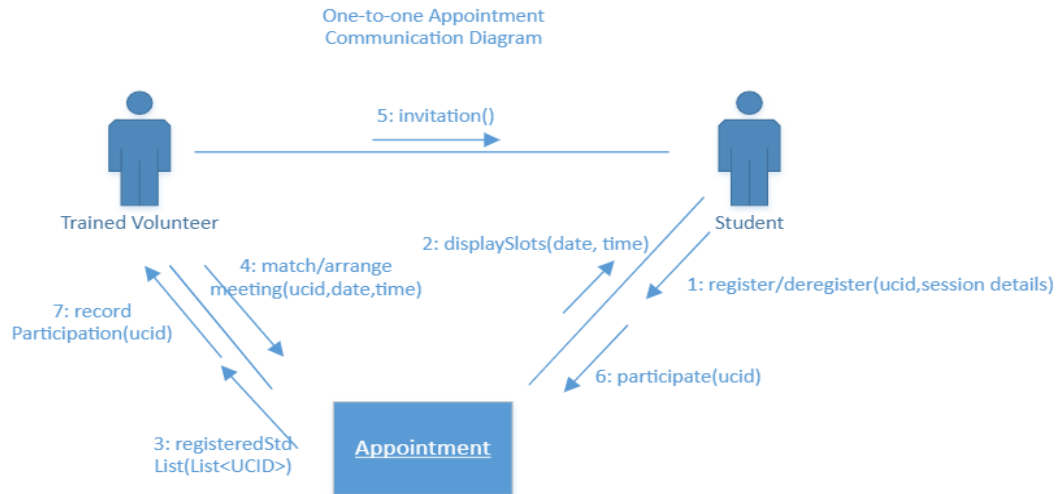


Figure 2-29 One on One Appointment Communication Diagram

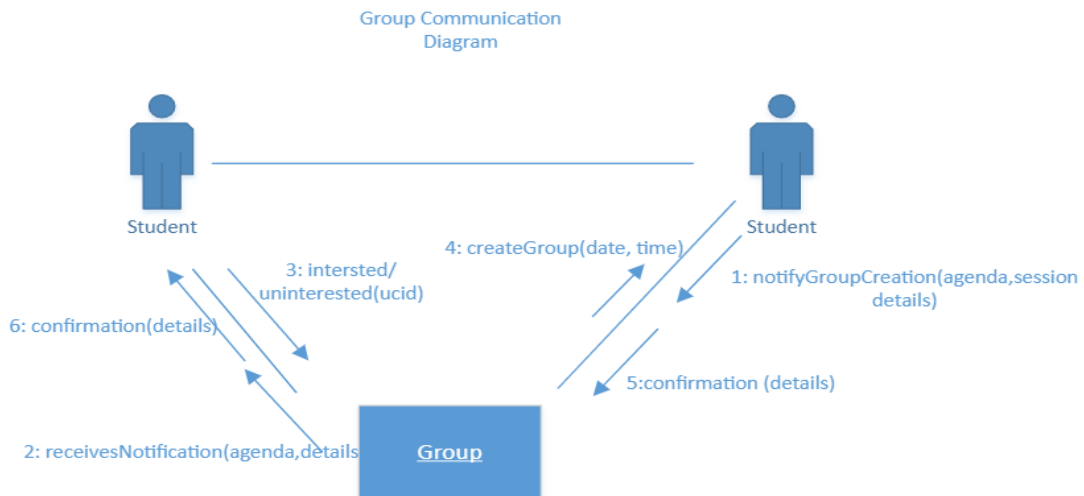


Figure 2-30 Group Communication Diagram

Network Architecture

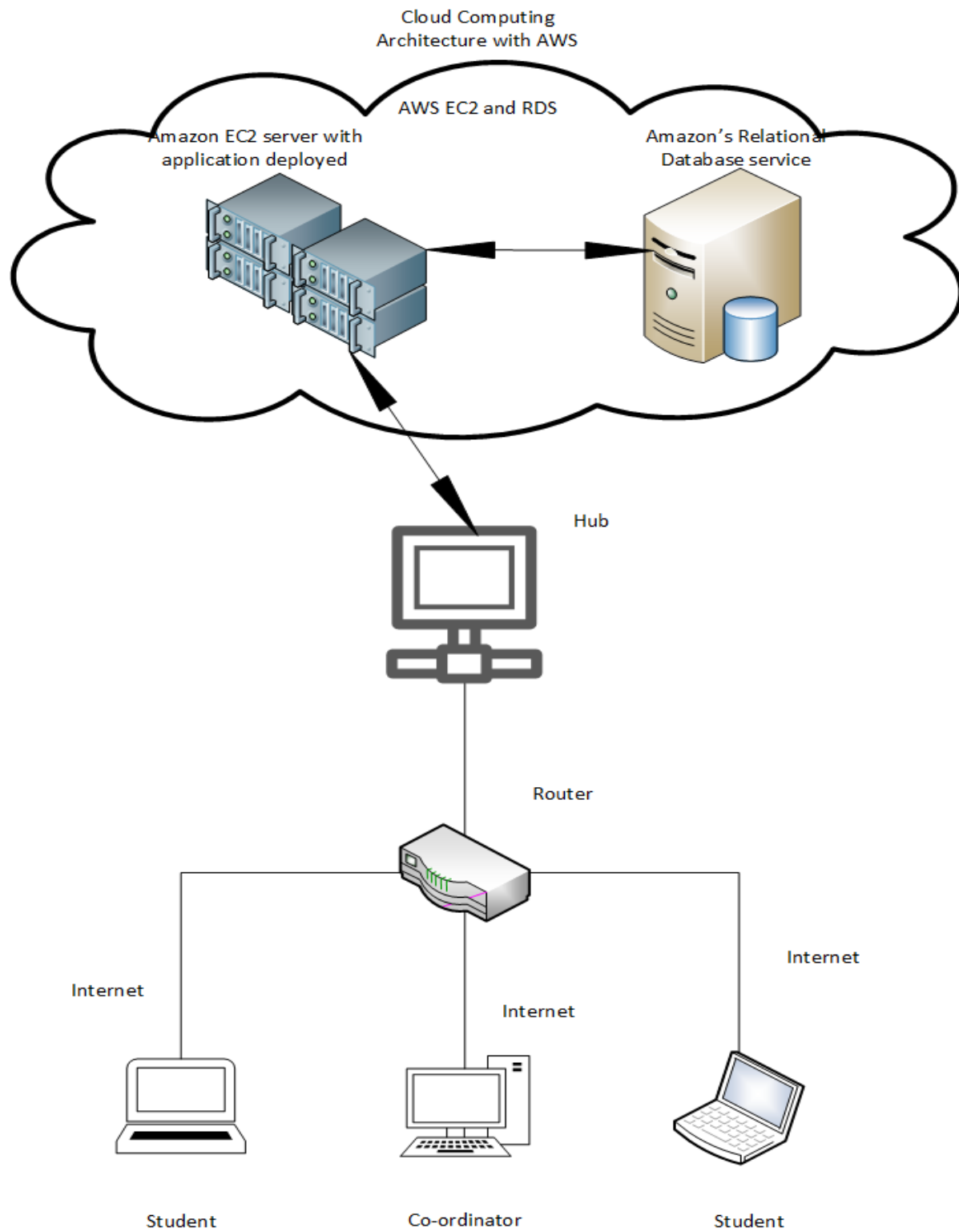


Figure 2-31 Network Architecture Diagram

IMPLEMENTATION PHASE

Development activities

The core development activities related to developing the system can be categorized into the following buckets.

1. **Architecture:** This step involves creating a high-level architecture of the system which indicates how the different components like backend, frontend and integration with University's SSO system work.
2. **Flow of logic/control:** The second step involves determining the components which relate to different user interfaces and models.
3. **Backend application:** To obtain the data, a backend application which exposes the APIs for consuming the data needs to be developed. This application will integrate with University's system to obtain the data related to the students.
4. **User Interface:** The fourth bucket of the development would involve developing the user interface for the application. This application will use the APIs developed in the previous step.

Team organization

The suggested structure of programming team and its organization is as follows.

1. Product Owner: 1
2. Full stack developers: 4
3. Architect: 1
4. Quality Assurance Analysts: 1
5. Testers: 2

The suggested approach for implementation is top-down approach.

Testing Plan

Testing and modification plan with alpha, beta, and production systems, including quality assurance (QA) testing (technical reviews and inspections) through acceptance, integration, system and unit testing.

Stage	Time required	Method
Alpha testing	5 days	Unit Testing & Integration testing by the QA team and developers to discover the bugs.
Fixing issues found in Alpha testing	10 days	Unit Testing (2 nd phase)
Technical review	5 days	QA testing
Beta Testing	2 weeks	Acceptance Testing on the Production system by the client (Susan & Students).
Fixing issues before release	2 weeks	Unstructured fixing of bugs based on feedback from end users (Primarily integration testing)
Technical review	5 days	QA testing
Production testing	4-6 weeks	Acceptance tests (Monitoring the tickets

		from the users and fixing issues.)
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Table 3-1 Testing Plan.

Data to be used for testing:

1. For the initial stage, the data can be mocked to test the process logic.
2. Once the integration with University's system is complete, the actual data can be used for testing.
3. Some of the scenarios to be used while testing are:
 - a. Test the system with a valid user enrolled in university's system.
 - b. Try to register for event with a student that does not exist.
 - c. A student tries to sign up for an event for which his/her program is ineligible.

Data conversion tools

The main source of information is the records from the existing database of the University.

Tools for converting the data.

Online sources like Excel To Json, Freeformatter and other open-source tools can be used to convert the data from csv/excel file to the format which is compatible with system.

Installation plan

Activity	Time
1. Setting up pipeline to deploy the applications.	1 week
2. Deploy the applications and make the entire system ready for launch.	2 weeks

Table 3-2 Installation Plan

We will be following a phased approach for installing the system where we will break the delivery into multiple manageable pieces.

Documentation needed.

1. User manual
2. Technical documentation for developers.

User training plan

1. We will provide short video (demo) tutorials to help all the users learn the system.
2. A non-mandatory course on D2L outlining the usage of the application.

Plan for ongoing maintenance activities

1. The maintenance will be handled by the existing IT team of University of Calgary.
2. The teams will monitor the tickets related to the system on a daily basis through open-source applications ClickUp.

Overall Review

The project should be considered as it is a feasible option and directly addresses the issue of community engagement and mental health. The system is expected to provide several opportunities of virtual engagement with peers and acts as a one-stop integrated platform for community engagement. Although the initial scope of the project is for the Haskayne students, it can later be scaled to the entire University of Calgary community. The system does add more responsibilities as it requires an additional student body who generate ideas for social events. However, students are willing to actively take up such opportunities for volunteer experience. Overall, the system aligns well with the main issue of community engagement and is expected to make a lot of impact on the engagement.