SOFTWARE DESIGN PATTERNS (CSE 5322-001)
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Iteration 2

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Contents:

1) <u>Introduction:</u>

The National Trade Show Service (NTSS) assists customers in hosting trade shows for their designated domains. Interactive software will be developed so that NTSS may work with customers and carry out its functions.

<u>Project Requirements:</u>

R1. NTSS system shall allow various business customers to access NTSS applications by creating an account depending on their requirements.

> R1.1. NTSS system users must be able to:
>
>> R1.1.1. Admin to sign up by providing basic information like username, password, NTSS ID, contact number, email ID,   Date of Birth.
>>
>> R1.1.2. Event organization staff to sign up by providing basic information like username, password, NTSS ID, contact number, email ID, Date of Birth.
>>
>> R1.1.3. Speakers to sign up by providing basic information like username, password, NTSS ID, contact number, email ID, Date of Birth.
>>
>> R1.1.4. Exhibitors to sign up by providing basic information like username, password, NTSS ID, contact number, email ID, Date of Birth.
>>
>> R1.1.5 Observers to sign up by providing basic information like username, password, NTSS ID, contact number, email ID, Date of Birth.

R2. Users must be able to log into NTSS software using their username and password based on the above business customers:

> R2.1 User must be able to redirect to the NTSS Home page on successful login.

R3. NTSS application provides a separate Homepage based on the customer login.

> R3.1 Admins must be able to redirect to the Homepage with their profile details.
>
>> R3.1.1 Admins must have all the permissions to access, modify all other business customer details.
>>
>> R3.1.2 Admins must be able to keep track of all the event schedules. R3.1.3 Admins must be able to pick dates and locations for the event.
>>
>> R3.1.4 Admins must be able to fix the duration of the event.

R3.1.5 Admins must be able to cancel the event based on the situation

R3.1.6 Admins must be able to create remainder to customers regarding the event updates.

R3.2 NTSS application must be able to provide event organizers with access to their homepage with their login credentials

R3.2.1 Event organizers must be able to access the Homepage and personal details on successful login

R3.2.2 Event Organizers must be able to edit their personal details.

R3.2.3 Event Organizers must be able to view assigned event duties.

R3.2.4 NTSS application must be able to provide Event Organizers to plan the events

R3.2.5 The NTSS application must allow event planners to build a variety of events. R3.2.6 Event organizers must be able to use the NTSS application to advertise a variety of events.

R3.2.7 The NTSS application must be able to offer event organizers the ability to invite speakers to events.

R3.2.8 Event organizers must be able to register attendees/participants for events using the NTSS application.

R3.2.9 The NTSS application must be able to assist event organizers in allocating exhibitor booths.

R3.2.10 In the event of an emergency, the NTSS application must be able to allow event organizers to designate volunteers.

R3.3 NTSS application must be able to provide event exhibitors to access their homepage with their login credentials

R3.3.1 Event exhibitors must be able to access the Homepage and personal details on successful login

R3.3.2 Event exhibitors must be able to edit their personal details.

R3.3.3 Event exhibitors must be able to exhibit their products or services at the trade show.

R3.3.4 Event exhibitors must be able to pay for the booths depending on the size of the booth.

R3.3.5 Event exhibitors must be rented and requested for the booths for the whole duration of the event.

R3.4 NTSS application must be able to provide invited speakers to access their homepage with their login credentials

R3.4.1 Invited speakers must be able to access the Homepage and personal details on successful login

R3.4.2 Invited speakers must be able to edit their personal details.

R3.4.3 Invited speakers must be able to give a keynote address at the event.
R3.4.4 Invited speakers must be able to view their account balances, pending and recording charges.

R3.4.5 Invited speakers must be able to view the conference hall and time details.

R3.5 NTSS application must be able to provide selected speakers to access their homepage with their login credentials

R3.5.1 Selected speakers must be able to access the Homepage and personal details on successful login

R3.5.2 Selected speakers must be able to edit their personal details.

R3.5.3 Selected speakers must be able to speak at the event based on the evaluation of their proposals, which are evaluated by a committee of domain experts.

R3.5.4 Selected speakers must be able to wait for the decision of domain experts about their proposals.

R3.6 NTSS application must be able to allow observers to access their homepage with their Login credentials.

R3.6.1 Observers must be able to access the Homepage and personal details on successful login.

R3.6.2 Observers must be able to edit their personal details.

R3.6.3 Observers must be able to visit the trade show for various purposes.

R4. NTSS application must be able to allow organizing staff to create a trade show

R4.1 Event Organizers must be able to create a trade show which involves choosing a particular theme

R4.2 Event Organizers must be able to choose a slogan that is relevant to the selected theme and location.

R4.3 Event Organizers must choose the duration of the trade show based upon the activities involved in the event.

R5. NTSS application must allow organizing staff to Promote Trade Shows

R5.1 Promoting a trade show must involve advertising activities which can be done by using social media.

R5.2 To make it more interesting we can add a spin wheel to the website which involves various discount offers.

R5.3 Event organizers must be able to send notifications about upcoming events.

R6. NTSS application must allow event organizers to Organize the trade show

R6.1 The NTSS application must allow event organizers to identify both registered "invited"& "selected" speakers.

R6.2 This application must allow event organizers to send invitations to the registered speakers.

R6.3 This application must allow the selected speakers to submit their proposals.

R6.4 This application must allow the domain experts committee to evaluate the submitted proposals and decide to approve or reject them.

R6.5 This application must allow event organizers to notify the speakers regarding the status of their proposals submitted.

R7. NTSS application must allow event organizers to run the trade show:

R7.1 This application must allow event organizers to arrange meeting rooms for team meetings.

R7.2 This application must allow event organizers to distribute trade fair materials.

R7.3 This application must allow the admin to take up the onsite registration activities.

R7.4 This application must allow admin and event organizers to set up booths for the exhibitors.

R8. NTSS application must allow users to fill in and submit a feedback form

R8.1 Users must be redirected to the feedback form upon clicking on the feedback form.

R8.2 Users must be able to navigate to the home page after submitting the form

R8.3 Users must be able to see a feedback form on their account the first time they login into their account the event has finished.

R8.4 Users must have an option to ignore the feedback form

R8.5 Feedback form should have the capability to take the feedback using different input options, like buttons, text area, ratings, tables, dropdowns

R9. NTSS application must allow users to fill in and submit a contact us form: -

R9.1 Users must be able to fill in their details like name, contact number, email address, and an optional small text area for writing messages

R9.2 Users must be able to submit the contact us form and navigate back to the home page.

2) **Project Domain Modelling**

Brainstorming:

I.   Nouns/noun phrases

- bussiness customers(users): class
- trade shows(events): class
- NTSS(staff): class
- design/services: class
- booths:class
- exhibitors,participants,event organizers,invited/selected speakers,observers:class
- account(NTSS creates)
- service charges,payments received,account balances: attributes
- event proposals: class
- domains : class

II.   "X of Y" expressions

1.types of participants
2.selection of a theme
3.activity of on site registration
4.size of the booth
5.duration of the event

III.   Transitive verbs

1. service provider
   helps create, promote, organize, and run national and international trade shows
   customers
2. Business customer
   contact for the services they need
   NTSS
3. NTSS
   creates an account for
   each customer
4. Event
   can belong to
   predefined
   domains
5. Trade show
   attended by
   different types of participants(organization staff, the invited and/or selected

speakers, exhibitors, and observers)

6. All participants except the event organization staff and the event organizer <u>must register to attend</u> Event
7. Event organization staff <u>creates, prepares and runs</u> Event
8. Invited speakers <u>give a keynote address at</u> Event
9. Selected speakers <u>invited to speak at</u> Event
10. Proposals <u>reviewed by</u> a committee of reviewers
11. Booths <u>requested and rented for</u> Event.
12. Observers <u>visit</u> Trade show

IV.   Adjectives, enumeration

1. speakers
   registering
   participants exhibitors
2. service charges
   payments received
   maintain the account balances
3. Organization staff
   Invited and/or selected
   speakers Exhibitors
   Observers
4. pending
   review
   accepted
   rejected

V.   Numeric, quantity

1. An event can belong to one or more predefined domains.(multiplicity values)

2. depending on the size of the booth, e.g., large, medium, or small.(quantity)

VI.   Possession expressions

1. An event has contact information and possibly a website that provides further information about the event. (attribute)

2. The exhibitors come to the trade show to exhibit their products or services.

3. The exhibitors have to pay for the booths.

VII.   Consist of/part of expressions:

1. Products are part of booths

2. Advertisement activities are part of Promotion

3. Booths are part of events

4. NTSS staff are part of NTSS

VIII.   "X is a Y" expressions

1. Event Organizing staff, Exhibitors, Invited speakers, Selected Speakers, Observers are Business customers.

Classification:

- NTSS (Class)
    - username (Attribute)
    - password (Attribute)   email (Attribute)
    - id (Attribute)
    - dob (Attribute)
    - contact (Attribute)

- NTSS Staff (Class)
    - username (Attribute)
    - password (Attribute)   email (Attribute)
    - id (Attribute)
    - dob (Attribute)
    - contact (Attribute)

- Account (Class)
    - charges (Attribute)
    - balances (Attribute)
    - payments (Attribute)
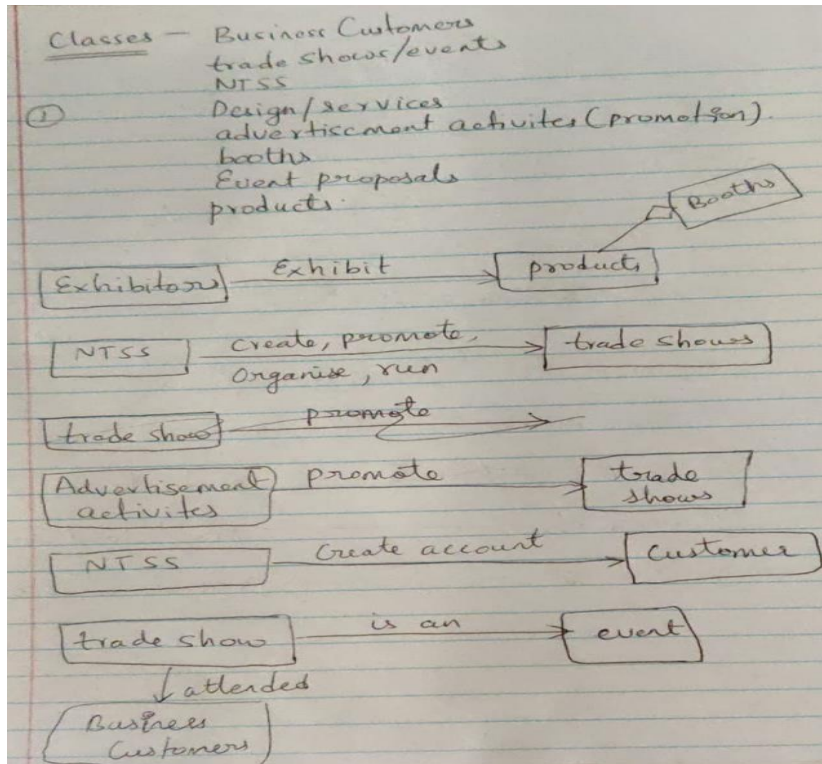
- Business Customers
    (Class) username
    (Attribute) password
    (Attribute)
    email
    (Attribute) id
    (Attribute)
    dob
    (Attribute)
    accountType (Attribute)
    contact (Attribute)

- Event Proposal (Class)
    proposalId
    (Attribute)
    feedback
    (Attribute) status
    (Attribute)

- Event Organizing staff (Class)

- Invited speakers (Class)

- Exhibitors (Class)

- Observers (Class)

- Selected Speakers (Class)
- Speaker Proposal
    (Class) status
    proposalId

- Trade Show Event
    (Class) location
    (Attribute)
    theme (Attribute)
    duration (Attribute)
    slogan (Attribute)
    services (Attribute)

- Booths (Class)
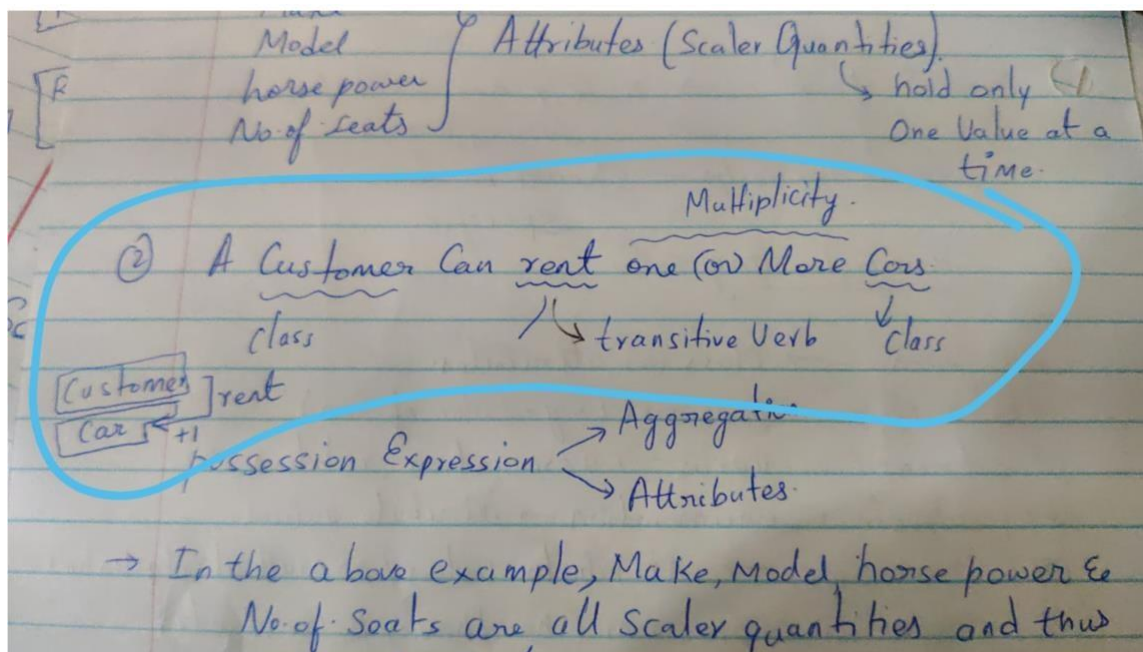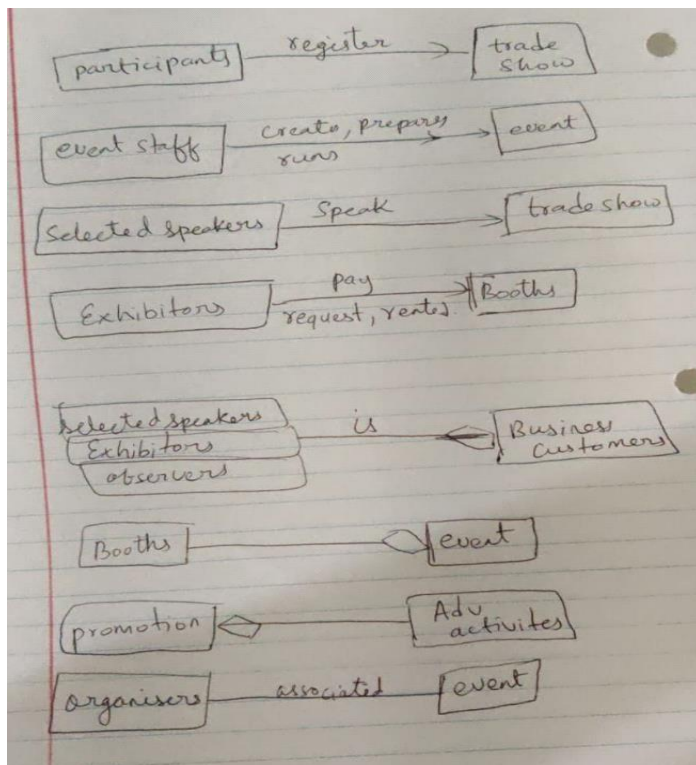   size (Attribute)
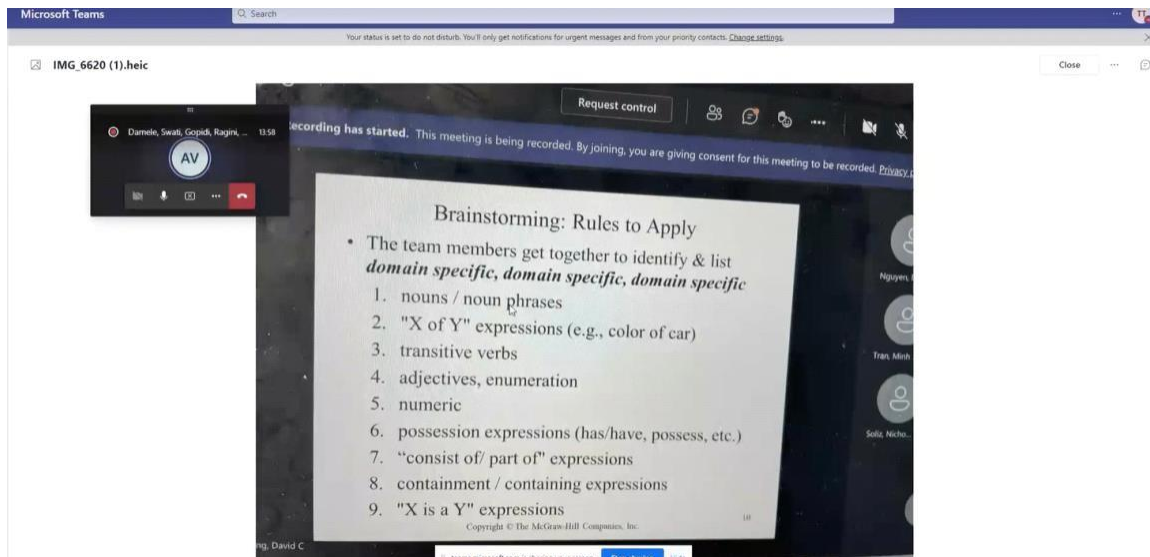   price (Attribute)
    status

(Attribute)
boothId (Attribute)
boothName (Attribute)

- Reviewers (Class)
  reviewerId (Attribute)

- Booth Lease Request(Class)

participants ——register——→ trade show

event staff ——create, prepares runs——→ event

Selected speakers ——Speak——→ trade show

Exhibitors ——pay request, rents——→ Booths

Selected speakers
Exhibitors ——is——◄ Business Customers
observers

Booths ——————◄ event

promotion ◄—————— Adv activites

organisers ——associated—— event

Model
horse power — Attributes (Scaler Quantities)
No of seats ⟶ hold only One Value at a time.

Multiplicity.

② A Customer Can rent one (or More Cars

class ↘ transitive Verb ↓ class

Customer rent
Car ←+1
possession Expression ⟶ Aggregation
⟶ Attributes.

→ In the abov example, Make, Model, horse power & No of Seats are all Scaler quantities and thus

NTSS (creates an account)/3 for each customer to record service charges/4, payments received/4, and maintain the account balances/4.

A trade show can be regarded as an event/9. For example, the 2008 Consumer Electronics Show took place in the Las Vegas Convention Center during January 7-10, 2008 and the 2008 MacWorld Conference took place at the Moscone Center, 747 Howard Street, San Francisco, CA 94103 during January 14-18, 2008. An event has an organizer, which can be a person or an organization. For example, the CES was organized by the Consumer Electronics Association while the MacWorld was organized by Apple, Inc. An event has contact information and possibly a website that provides further information about the event/6. An event can (belong to)/3 (one or more)/5 predefined domains. For example, the CES and MacWorld belong to Technology and Consumer Electronics, respectively. The list of predefined domains can change from time to time because new domains need be added and outdated domains need be removed.

A trade show is (attended by)/3 different types of participants including the event organization staff/4, the invited/4 and/or selected speakers/4, exhibitors/4, and observers/4. Except the event organization staff and the event organizer, all participants must register/3 to attend a trade show event. The registration charges a fee, which is different for different trade show event. The event organization staff creates/3, prepares/3 and runs/3 the event. The invited speakers are famous figures in the domain who were invited to (give a keynote address)/3 at the event. The selected speakers are (invited to speak)/3 at the event based on the evaluation of their proposals. The proposals are usually reviewed/3 by a committee of reviewers, who are experts in the domain and willing to help. The status of a proposal includes pending review/4, accepted/4, and rejected/4. The exhibitors come to the trade show to exhibit their products or services / 6. The exhibitors have to pay for the booths / 6 depending on the size of the booth, e.g., large, medium, or small / 5. Booths are (requested and rented)/3 for the whole duration of the event. Finally, the observers come to visit/3 the trade show for various purposes.

Domain Modeling Class Diagram:
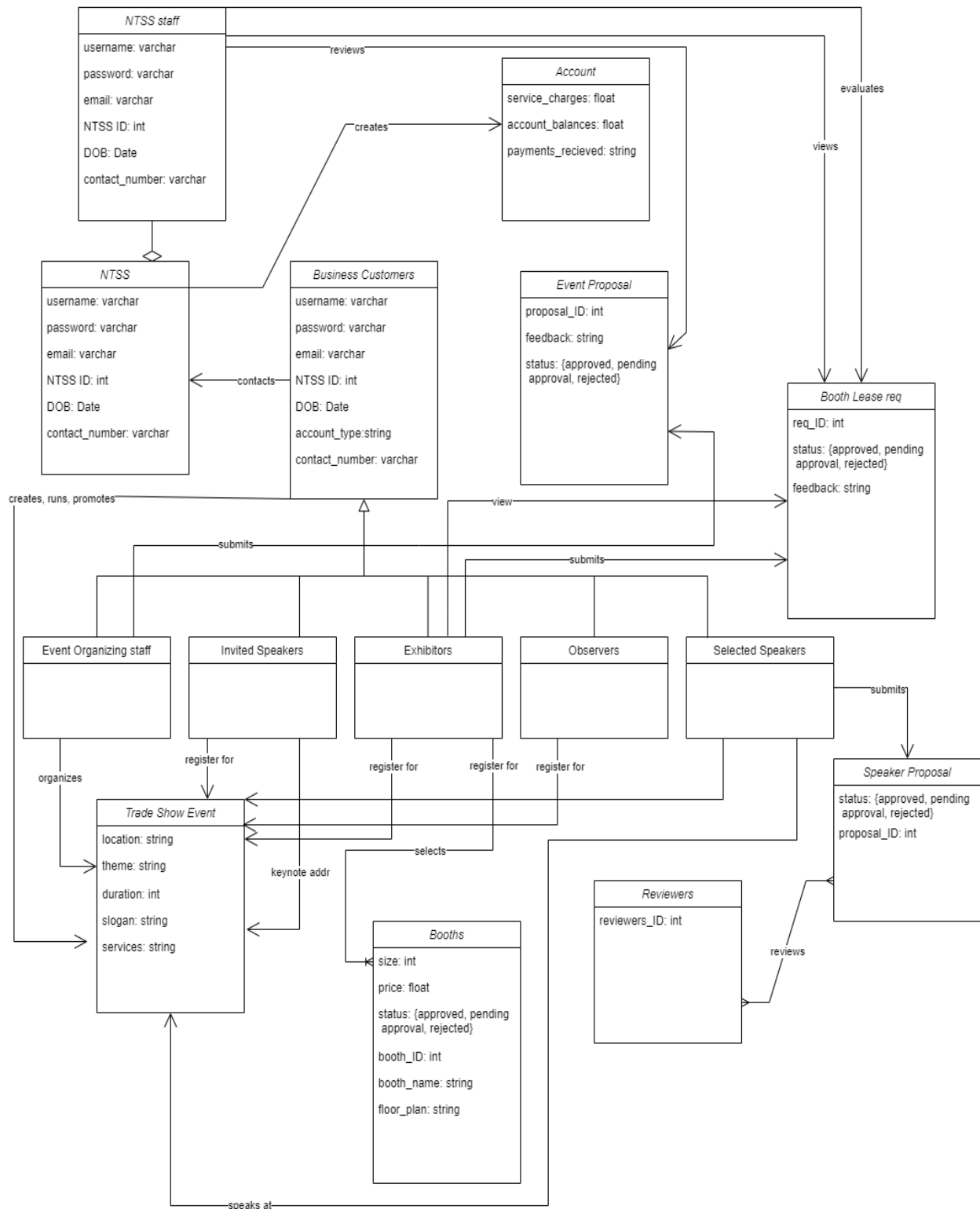
3) Abstract Use cases:

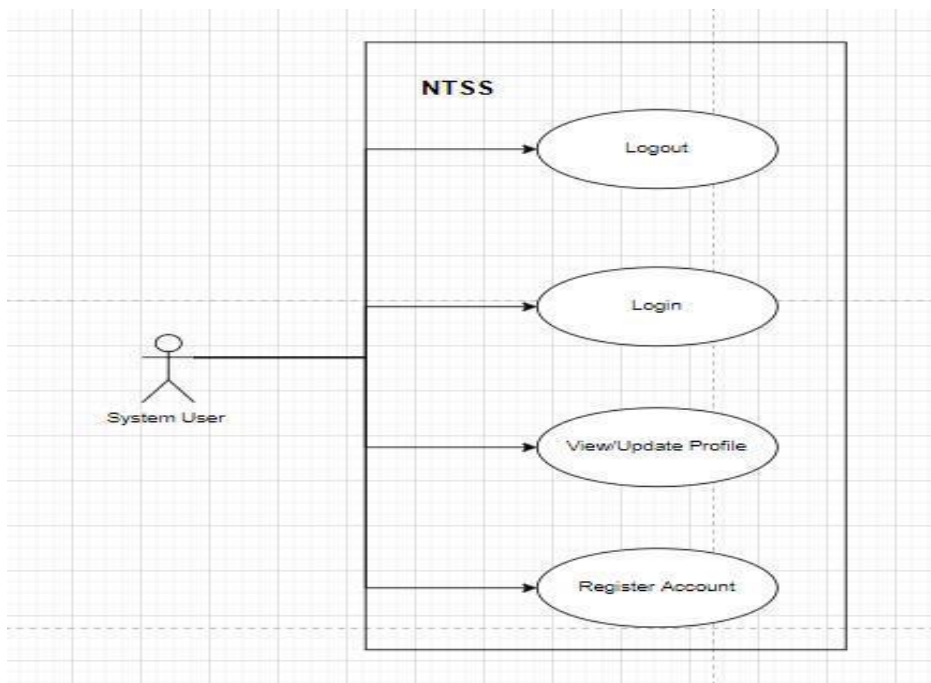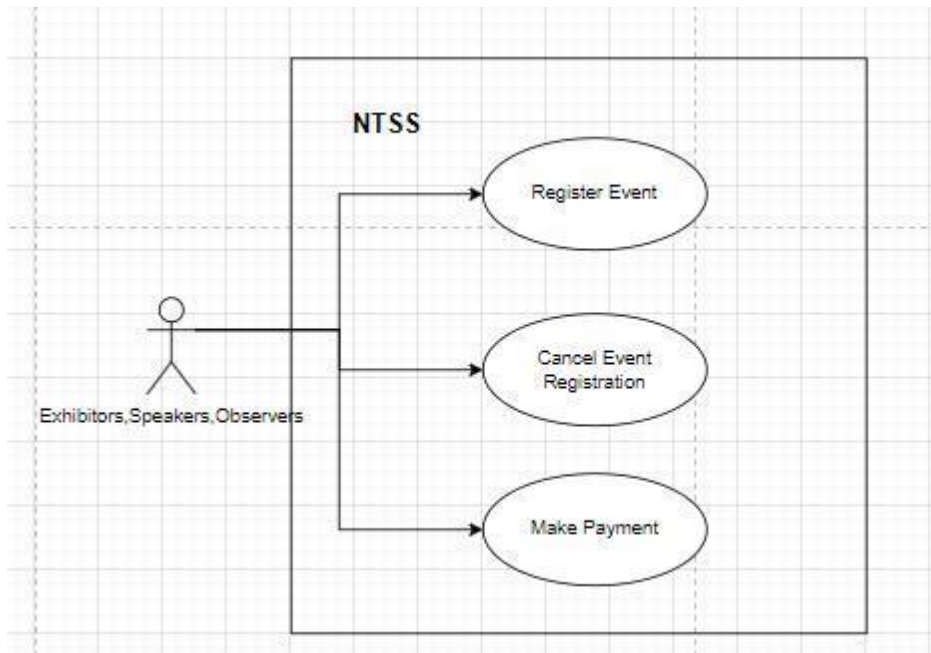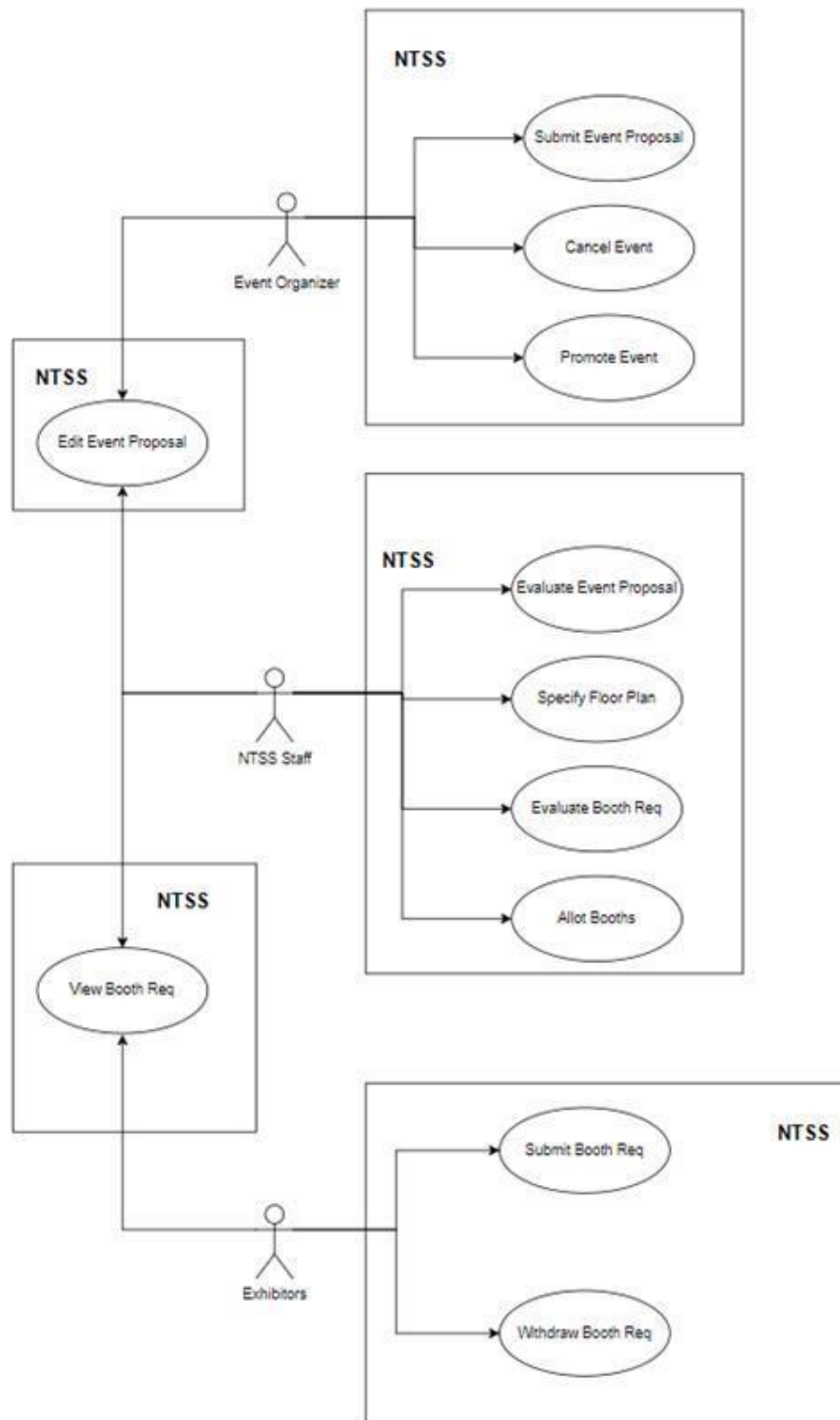| Actions	Users (Business Customers)	System
Register Account	System User (NTSS staff)	NTSS
Login Account (Sign in)	System User	NTSS
Logout	System User	NTSS
View Profile Information	System User	NTSS
Update Profile Information	System User	NTSS
Submit Event Proposal	Event Organizer	NTSS
Edit Event proposal	NTSS staff and Event Organizer	NTSS
Cancel Event	Event Organizer	NTSS
Evaluate Event Proposal	NTSS staff	NTSS
View Event Proposal	Event Organizer and NTSS staff	NTSS
Submission of Booth lease Request	Exhibitors	NTSS
Withdraw Booth lease request	Exhibitors	NTSS
View Booth Lease Request	Exhibitors and NTSS staff	NTSS
Evaluate Booth Lease Request	NTSS staff	NTSS
Allocate booth	NTSS staff	NTSS
Specify Floor Plan	NTSS staff	NTSS
Payment	NTSS staff	NTSS
Register for Event	Speakers, Observers, Exhibitors	NTSS
Promoting Event	Event Organizers	NTSS
Cancel Registration	Speakers, Observers, Exhibitors	NTSS

4) <u>High-Level Use Cases</u>

Team 8 – High-Level Use Cases		
Functions	**User**	**Use Case**
Register Account	System User (NTSS Staff)	**TUCBW** System User clicks on the register account button on the register page.
		TUCEW System User is redirected to the login page and sees a success message/prompt.
Login Account (Sign in)	System User	**TUCBW** System User clicks on the login button on the login page.
		TUCEW System User On successful login user is redirected to his/her dashboard.
Logout	System User	**TUCBW** System User clicks on the logout button on his/her dashboard
		TUCEW System User logged out of the system and is at the home page
View Profile Info	System User	**TUCBW** System User clicks on the My Profile button on his/her dashboard.
		TUCEW System User sees his/her profile details on his/her dashboard
Update Profile Info	System User	**TUCBW** System User clicks on the Edit button on his/her dashboard for updating the profile
		TUCEW Event Organizer clicks on the save button and sees a successful update message on his/her dashboard.
Submit Event Proposal	Event Organizer	**TUCBW** Event Organizer clicks on the submit event proposal button
		TUCEW Event Organizer sees a successful message "submission successful" on the events page and will be redirected to the homepage.
Edit Event Proposal	Event Organizer, NTSS Staff	**TUCBW** NTSS Staff/ Event organizer clicks on the edit event proposal button on the events page
		TUCEW NTSS Staff/Event Organizer edits the proposal and is redirected to the View Event Proposal screen
Cancel Event	Event Organizer	**TUCBW** Event organizer clicks on the cancel event button on the homepage.
		TUCEW Event organizer sees a canceled prompt upon successful cancellation

Evaluate Event Proposal	NTSS Staff	**TUCBW** NTSS staff clicks on the review event proposal button on the events page
		TUCEW NTSS staff sees the options for reviewing the proposal.
Submit Booth Request	Exhibitors	**TUCBW** Exhibitors click on the submit button on their home page
		TUCEW Exhibitor sees a success message on their Homepage.
Promote Event	Event Organizer	**TUCBW** Event Organizer clicks on the promote event button on the home page
		TUCEW Event Organizer sees a message("posted successfully") and redirects back to the home page
Specify Floor Plan	NTSS Staff	**TUCBW** NTSS staff selects a floor plan from the available ones on the floor plan page
		TUCEW NTSS staff sees the selected plan details on the floor plan page.
Withdraw Booth Request	Exhibitors	**TUCBW** Exhibitors click on the withdraw booth lease button on the Homepage
		TUCEW Exhibitors sees a success message on cancellation of booth requests and is redirected to the home page.
View Booth Request	Exhibitors, NTSS Staff	**TUCBW** Exhibitors/NTSS Staff click on the view request button on the Homepage
		TUCEW Exhibitors/ NTSS Staff views the booth requests from the exhibitors.
Evaluate Booth Request	NTSS Staff	**TUCBW** NTSS staff clicks on the evaluate booth lease request button on the booth request page
		TUCEW NTSS staff evaluates the booth lease request form by updating request status and is redirected back to the booth request page
Allot Booth	NTSS Staff	**TUCBW** NTSS staff clicks on the allot button in the booth request page based on the available place
		TUCEW NTSS staff sees a success message and allotted booth details.
Register Event	Observer, Speakers, Exhibitors	**TUCBW** Speakers/Observers/Exhibitors click on the register button on the events page.
		TUCEW Speakers/Observers/Exhibitors see the "registered successfully" message and is redirected to the Events page.

Cancel Registration	Speakers/Observers/Exhibitors	**TUCBW** Speakers/Observers/Exhibitors click on the cancel button in the events page.
		TUCEW Speakers/Observers/Exhibitors see a success message for event cancellation in the events page.
Make Payment	Exhibitor, Observer, Speaker	**TUCBW** The Exhibitor/Speaker/Observer clicks on the Payment button on their respective pages
		TUCEW The Exhibitor/Observer/Speaker sees payment summary in their account

5) USE CASE DIAGRAMS:

NTSS

- Register Event
- Cancel Event Registration
- Make Payment

Exhibitors, Speakers, Observers

NTSS

- Logout
- Login
- View/Update Profile
- Register Account

System User

6) <u>Expanded Use Cases</u>

1. Create an Online Account (Actor: User, System: NTSS)

Actor: User	System: NTSS website
	(0) NTSS website displays the home screen page with Login and Register button (to create an online account)
(1) **TUCBW** System User clicks on the register account button on the register page.	(2) NTSS website redirects to register page and displays Username, email, DOB, account type, Phone number input fields and a create account button on clicking the Register button.
(3) The System User fills out details shown on the page and clicks the Register button (which creates an account).	(*4) NTSS website sends an email to the System User with a temporary password and requests the User to set a new password by providing the link.
(5) System User receives an email with the temporary password and a link to set a new password and then the user creates a password for his account	(6) NTSS validates entered field values from database manager and sends the confirmation email notification to the user saying Password has been set and the account is successfully created.
(7) **TUCEW** System user will receive a success message/email/prompt and redirect to the login page.	
* Indicates Nontrivial step	

2. Login Account (Actor: User, System: NTSS)

Actor: User	System: NTSS website
	(0) NTSS website displays the home screen page with Login button and input fields to enter Username and Password
(1) **TUCBW** System User enters username and password fields and clicks on the Login button on the login page.	(*2) NTSS website validates the username and password entered by user.
(3) **TUCEW** System user will be redirected to his/her dashboard.	
* Indicates Nontrivial step	

3. Submit an event proposal (Actor: User, System: NTSS)

Actor: Event Organizer	System: NTSS website
	(0) NTSS website displays the dashboard which consists of different options like submitting an event proposal, registering for an event, etc.
(1) **TUCBW** The Event Organizer clicks on the event proposal option on the dashboard.	(2) NTSS website displays event proposal form with fields that describe the event.
(3) The Event Organizer fills the fields which are in the event proposal form and clicks on the submit button.	(*4) NTSS website validates the details and generates a payment slip upon submitting the event proposal form.
(5) The Event Organizer receives a payment slip and makes the payment.	(6) NTSS website shall change the status of the event proposal to "Pending Review" from "Submitted" when the payment is received.
(7) **TUCEW** The Event Organizer receives an email that the payment has been received and the proposal is pending review.	
"*" - indicates nontrivial steps	

4. Register Event (Actor: User, System: NTSS)

Actor: Exhibitor, Speaker, Visitor	System: NTSS
	(0) NTSS system displays main menu.
(1) **TUCBW** User clicks on the events button in the main menu.	(2) NTSS system retrieves and displays all the upcoming events to the user.
(3) User clicks on the event he wants to register.	(4) NTSS system retrieves information about that event and displays it to the user.
(5) User clicks on the register button.	(*6) Once the user is logged in, the system updates the event registration details in user's account and in the event attributes (Ex: No of available seats) and sends a successful registration message to the user.
(7) **TUCEW** User sees a success message on his screen	
"*" indicates Non trivial step	

7) Scenarios for Use Cases

Use Case 1: Create an online account

1. The System User clicks the Register button (Create Online Account) on the home page.
2. The RegisterUI displays the System User with a registration form to enter his personal details like Username, Email, Date of Birth, Account type, Mobile number
3. The System User enters the above details and submits the form to the RegisterUI by clicking on the register button.
4.1 The entered personal details by the system user are sent to RegisterUserController by RegisterUI.
4.2 The RegisterUserController validates to see if the user exists or not.

> 4.2.1 RegisterUserController will display a message saying "User already exists, can you please login instead" if the user already exists.

4.3 The RegisterUserController saves the details entered by the System User to the DB Manager if the user doesn't exist.
4.4 The RegisterUserController receives the System User's email from the DBMgr.
4.5 RegisterUserController sends an email with a temporary password and requests to set a new password by providing the link.
4.6 The RegisterUserController writes "Temporary Password sent to email". The Password must contain 8-14 characters which consist of Uppercase, Lowercase, Numbers and Symbols" to msg.
4.7 The RegisterUserController sends the above message to RegisterUI.
4.8 The RegisterUI will display a message to the System User.
5. The System User clicks on the link in the email to set the password.
6. The RegisterUI displays the field to input the Temporary Password and displays the fields to set New Password and Confirm the password and submit it.
7. The RegisterUI sends the above details to RegisterUserController.
8. The RegisterUserController saves the details received to the DBMgr.
9. The RegisterUserController writes "Your account has been successfully created" to msg.
10. The RegisterUserController sends back the msg to RegisterUI.
11. The RegisterUI displays the stored msg to System User.

Use Case 2: Login Account

1 System User enters username and password on LoginUI and clicks Login Button.
2.1 LoginUI sends username and password to the LoginUserController.
2.2 The LoginUserController validates username and password on DB Manager.

> 2.2.1 If user doesn't exist in DBMgr LoginUserController sends failure message "Credentials not found" to msg.
> 2.2.2 LoginUserController clears the username and password field values on LoginUI.

2.3 LoginUserController displays msg to LoginUI.
2.4 If user exists LoginUserController sends success message to UserDashboardUI.

3. LoginUserController sends message "Successfully logged In" to msg.
4. LoginUserController sends msg to UserDashboardUI.

Use Case 3: Submit an event proposal

1. The Event Organizer clicks on the event proposal option on the dashboard.
2. NTSS website displays event proposal form with fields that describe the event.
3. The Event Organizer fills the fields which are in the event proposal form and clicks on the submit button.
4.1 EventUI sends the event proposal form to EventController.
4.2 EventController validates the details of the event proposal form sent by EventUI.
4.3 EventController saves the event proposal form in the DBMgr.
4.4 EventController displays form to the Event organizer to make a payment.
4.5 EventController generates a payment slip and sends it to Event organizer
 through email.
5. The Event Organizer receives a payment slip via email and makes the payment.
6. NTSS website shall change the status of the event proposal to "Pending Review" from "Submitted" when the payment is received.
7. The Event Organizer receives an email that the payment has been received and the proposal is pending review.

Use Case 4: Register for an Event

1) User/Actor clicks on the events button.
2) RegisterEventUI retrieves all the upcoming events from database manager and displays it to user.
3) User/Actor clicks on the event he/she wants to register.
4) RegisterEventUI retrieves more information about that event and displays it to user.
5) User/Actor clicks on the register button.
6) RegisterEventUI calls register function of RegisterEventscontroller.
    6.1) RegisterEventscontroller checks with DBMgr to see if seats are available.
            6.1.1) If seats are available,
                    6.1.1.1. RegisterEventscontroller calls updateseats function to reduce the number of available by 1.
                    6.1.1.2. RegisterEventscontroller sets the message to "registered Successfully".
            6.1.2) If seats are not available,
                    a. RegisterEventscontroller sets the msg to "Seats are full".
    6.2) RegisterEventUI sends the message to user.
 7) User sees the msg on his screen.

8) Scenario Table

1. Create an online account

#	Subject	Subject Action	Other Data/Objects	Object Acted Upon
1.	System User	clicks	Register button (Create Online Account)	RegisterUI
2.	RegisterUI	displays	Register form r	System User
3.	System User	enters	personal details	RegisterUI
4.1	RegisterUI	sends	Personal details	RegisterUserController
4.2	RegisterUserController	validates	Personal details	DB Manager
4.2.1	RegisterUserController	displays	message	RegisterUI
4.3	RegisterUserController	saves	User details	DB Manager
4.4	RegisterUserController	receives	Email from	DB Manager
4.5	RegisterUserController	sends	Email	System User
4.6	RegisterUserController	writes	message	msg
4.7	RegisterUserController	sends	message	RegisterUI
4.8	RegisterUI	displays	message	System User
5.	System User	clicks	link l	RegisterUserUI
6.	RegisterUI	displays	fields	System User
7.	RegisterUI	sends	New Password p	RegisterUserController
8.	RegisterUserController	saves	New password p	DB Manager
9.	RegisterUserController	writes	message	msg
10.	RegisterUserController	sends	msg	RegisterUI
11.	RegisterUI	displays	msg	System User

2. Login Account

#	Subject	Subject Action	Other Data/Objects	Object Acted Upon
1.	System User	enters	username and password	LoginUI
2.1	LoginUI	sends	username and password	LoginUserController
2.2	LoginUserController	validates	username and password	DB Manager
2.2.1	LoginUserController	sends	message	msg
2.2.2	LoginUserController	clears	username and password	LoginUI
2.3	LoginUserController	displays	message	LoginUI
2.4	LoginUserController	sends	message	UserDashboardUI
3.	LoginUserController	sends	message	msg
4.	LoginUserController	sends	msg	UserDashboardUI

3.Submit an event proposal

#	Subject	Subject Action	Data/Object	Object acted upon
1.	Event Organizer	clicks	event proposal form	NTSS website(dashboard)
2.	NTSS website	displays	event proposal form	Event Organizer
3	Event Organizer	Fills	event proposal form and clicks submit button	EventUI
4.1	EventUI	Sends	event proposal form	EventController
4.2	EventController	validates	Details of event proposal form	EventUI
4.3	EventController	saves	event proposal form	DBMgr
4.4	EventController	displays	Form (make a payment)	Event Organizer

| 4.5	EventController	generates	Payment slip	Event Organizer
5	Event Organizer	receives	Payment slip via email and makes the payment	NTSS website
6	NTSS website	changes	status	Event Organizer
7	Event Organizer	receives	Email that payment is received and proposal is pending review	NTSS website

4. Register for an Event

#	subject	Subject action	Other data/objects	Objects acted upon
1	User	clicks		Event
2.1	RegisterEventUI	Gets	events	DB Manager
2.2	RegisterEventUI	displays	events	System User
3	Actor	views	event	Event object/ RegisterEventUI
4.1	RegisterEventUI	gets	event	DB Manager
4.2	RegisterEventUI	displays	event	Actor
5	Actor	register	event	Event object / RegisterEventUI
6	RegisterEventUI	register	event	RegisterEventController
6.1	RegisterEventController	check	event	Db Manager
6.1.1a	RegisterEventController	UpdateEvent Attributes	event	Db Manager
6.1.1b	RegisterEventController	set		msg
6.2	RegisterEventUI	send	msg	Actor
7	Actor	views		msg

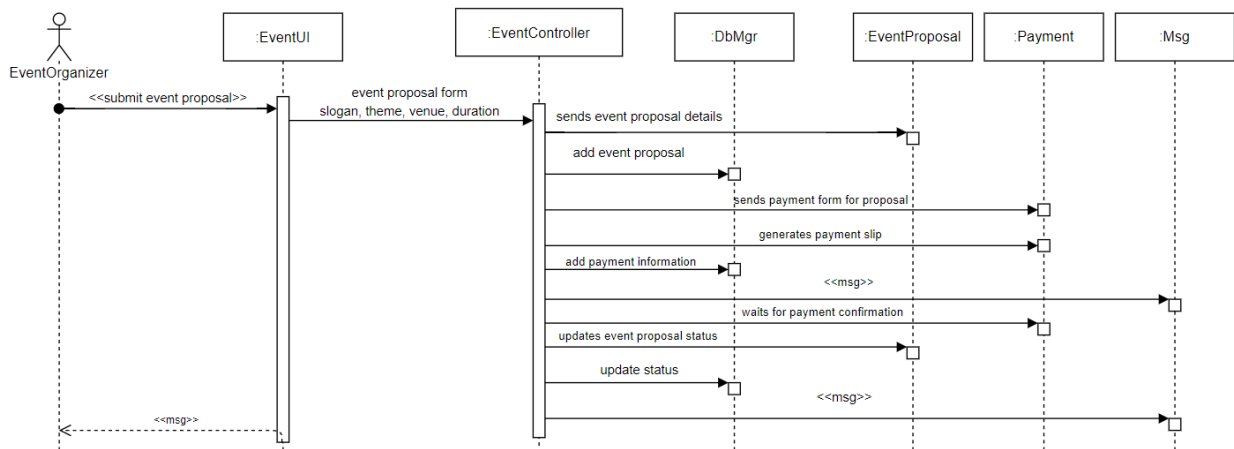# 9) Informal Sequence Diagram:

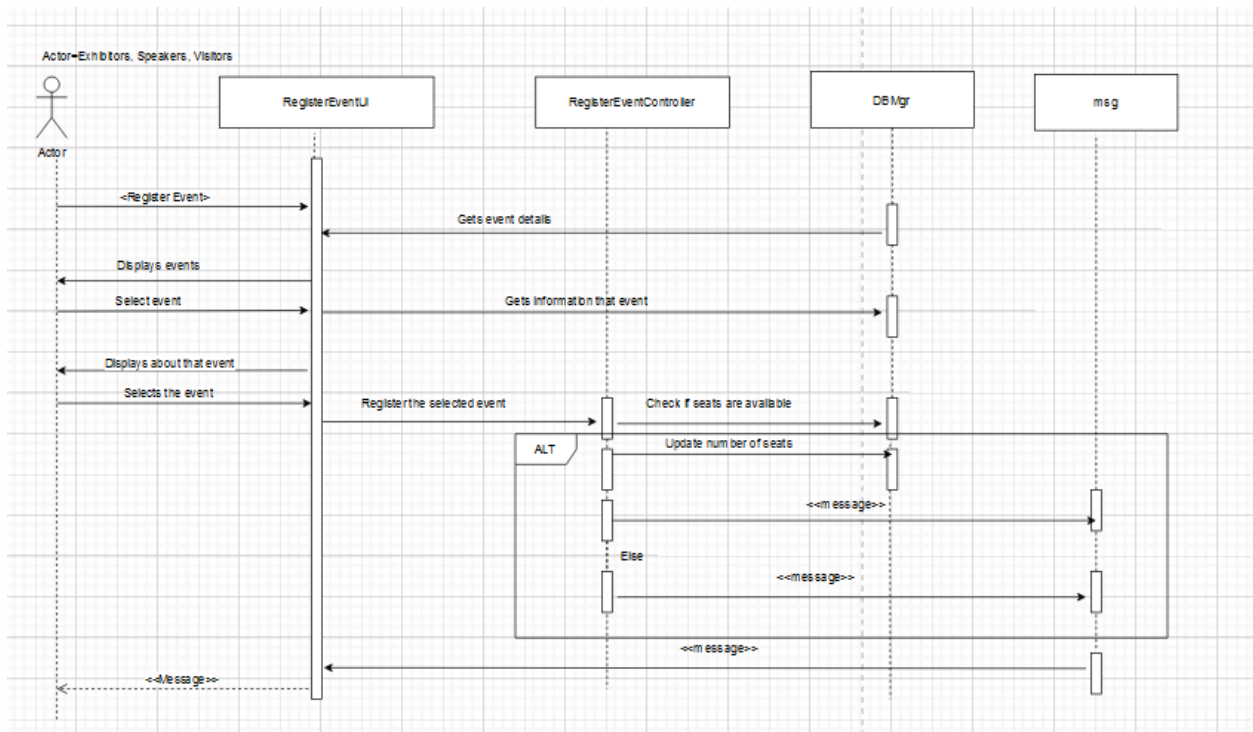## 1. Create an online account
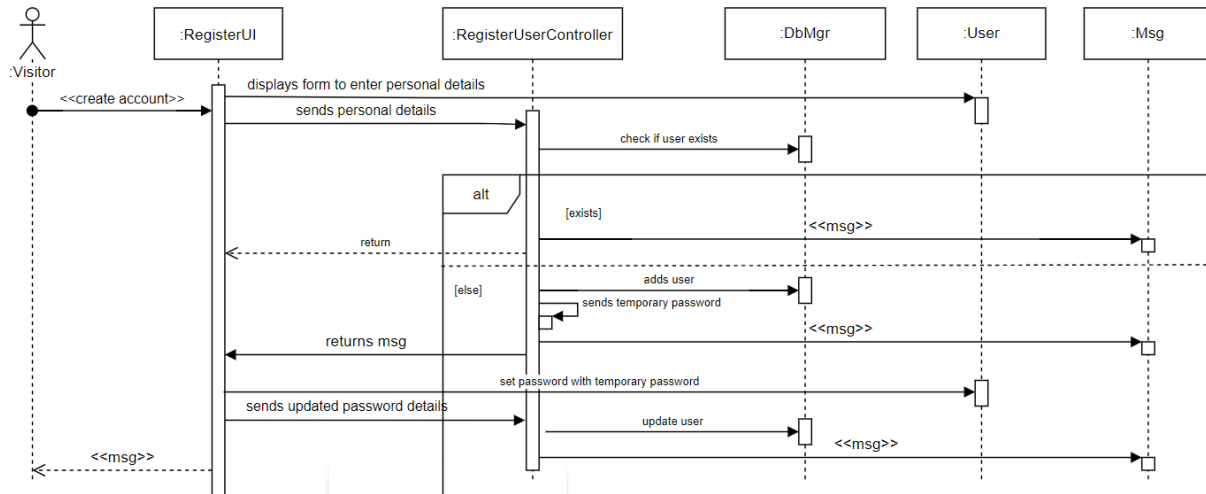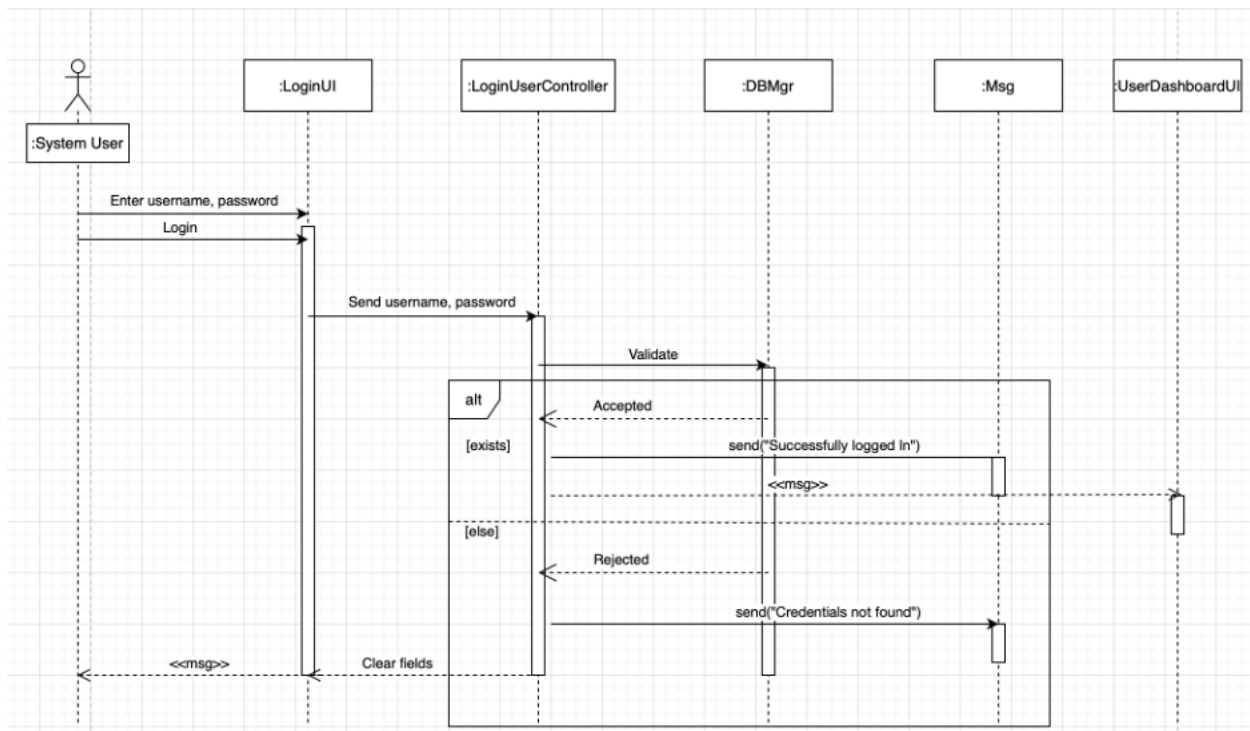
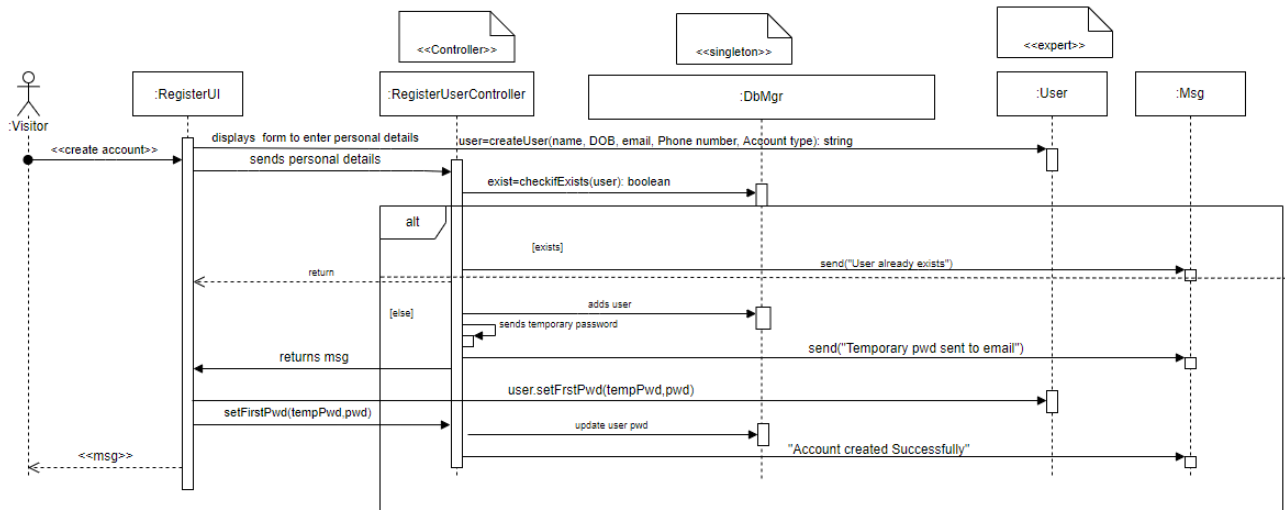
2. Login Account

3. Submit an event proposal

4. Register for an Event

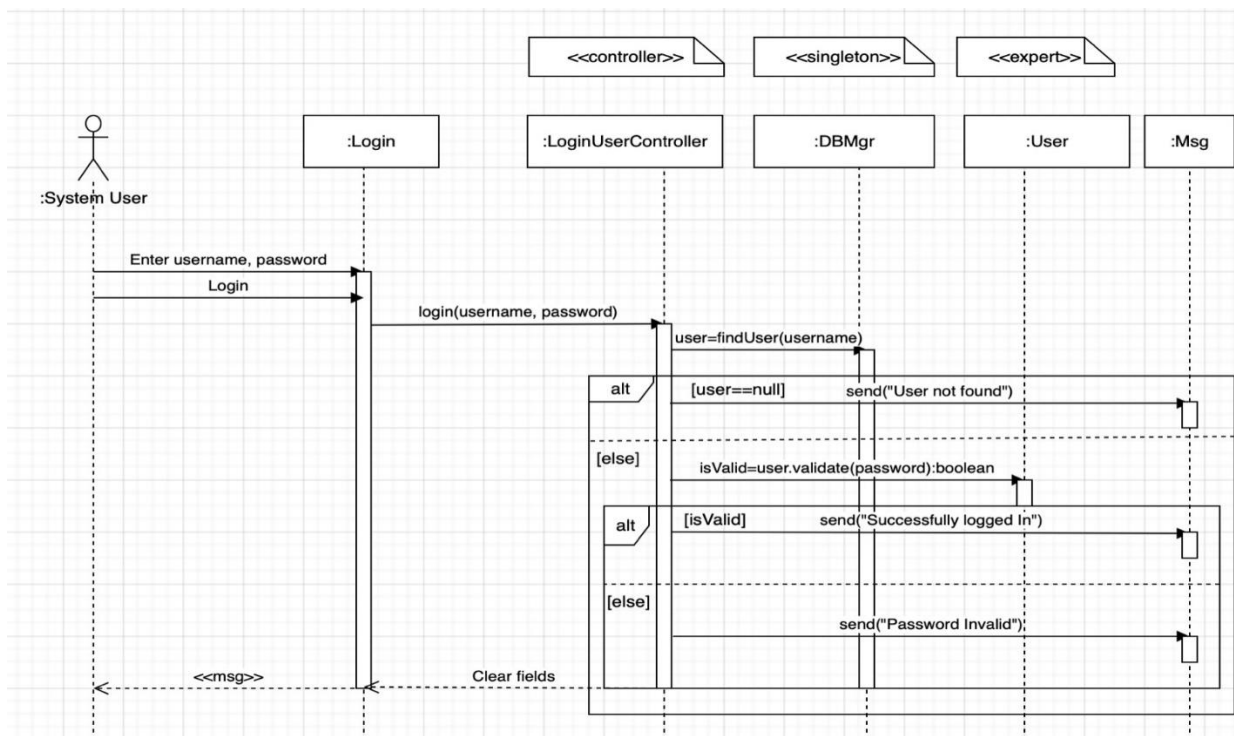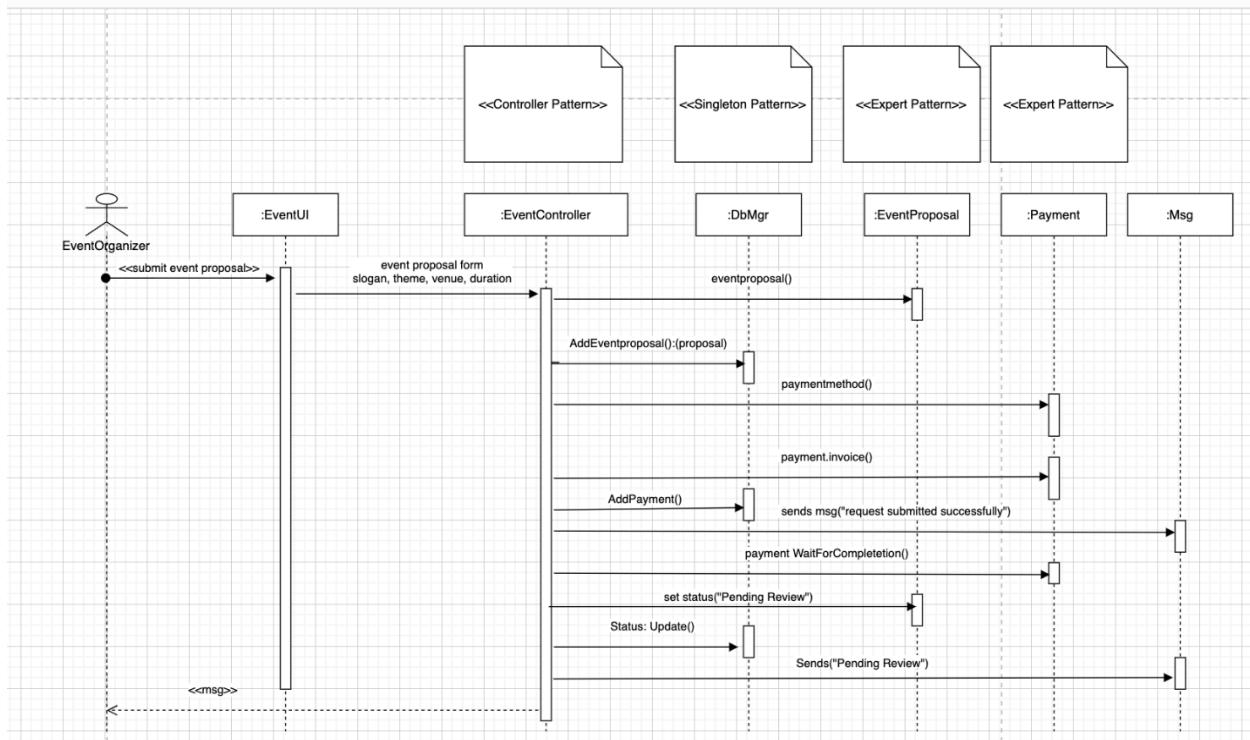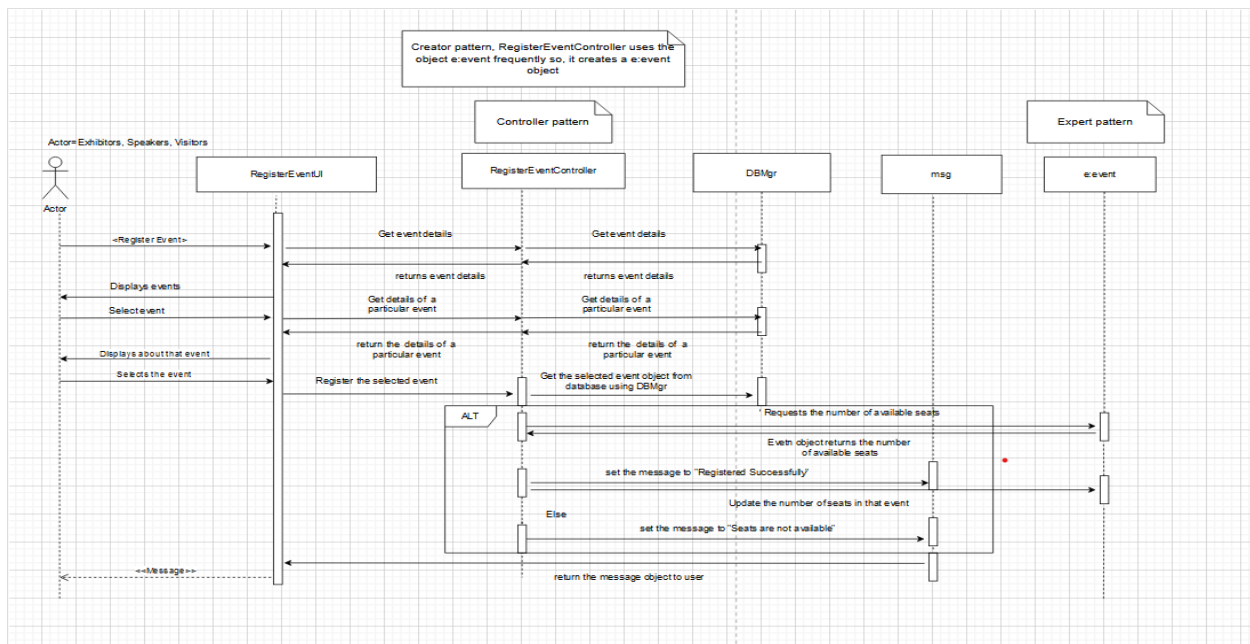# 10) Formal Sequence Diagram:

1. Create an online account

2. Login Account

3. Submit an event proposal

4. Register for an Event

11) **Design Class Diagram:**