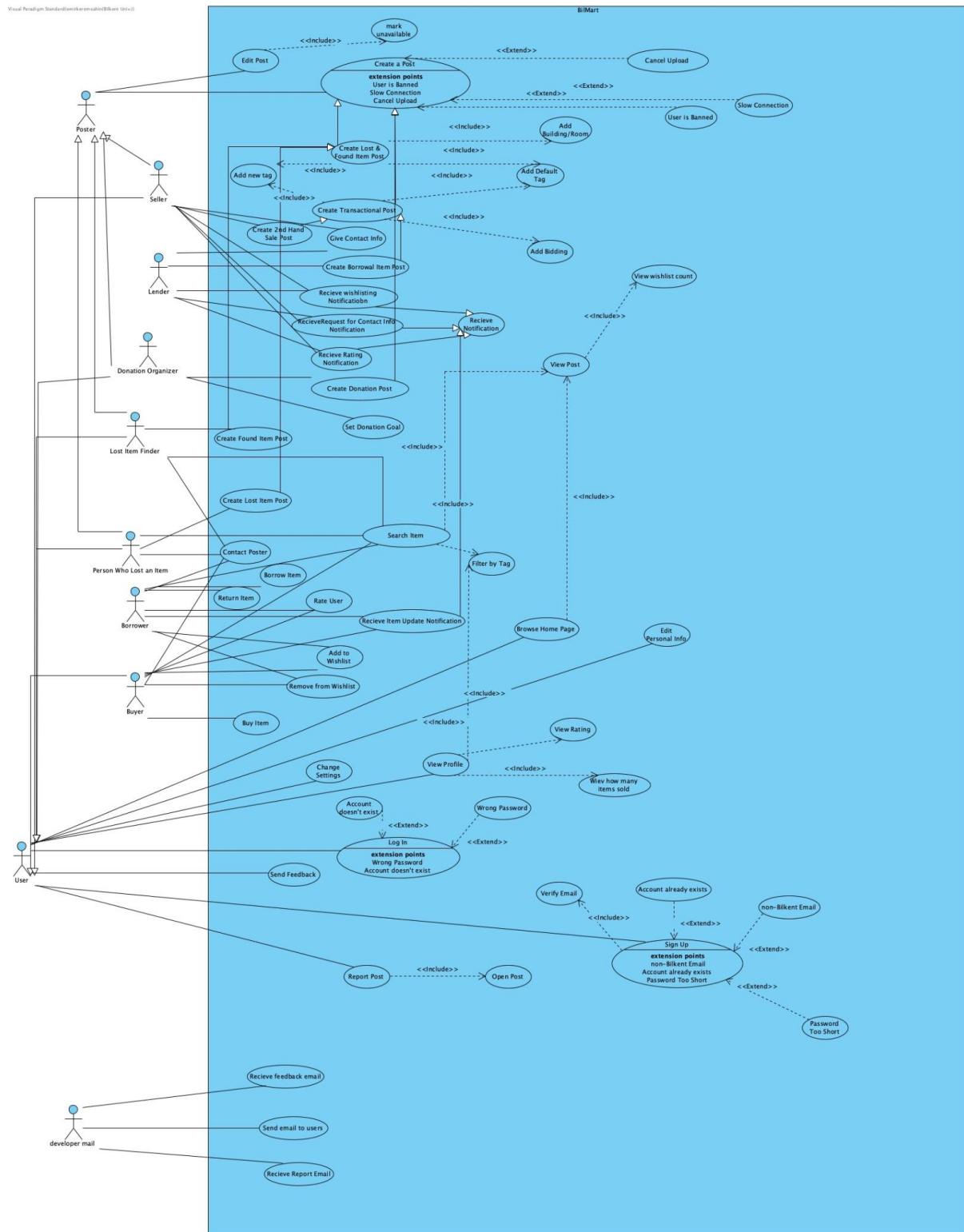


Use Case Diagram



Textual Description

1. Create a Post
 - a. Participating Actors: Lost Item Finder, Person who lost an item, Lender, Seller, and Donation Organizer
 - b. Entry Condition: A user who is logged in wants to create a post
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the post type, chooses the title, tags, and description, adds images if needed, and publishes the post.
 - e. Special/quality requirements: Should create posts on each and every device that has access to the internet and browser [Supportability]
2. Create Lost & Found Item Post
 - a. Participating Actor: Lost Item Finder and Person who lost an item
 - b. Entry Condition: A user who is logged in and losted an item creates a post, A user who is logged in and finds an item creates a post.
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the Lost and Found button, chooses whether it is lost or found, adds the location where the item was lost/found, chooses the title and description, adds an image if there is one, and posts the post.
 - e. Special/quality requirements: Should create the correct post and display it correctly on the Lost &Found page [Performance requirement]
3. Create a Lost Item Post
 - a. Participating Actor: A person who lost an item
 - b. Entry Condition: A user who is logged in and lost an item creates a post
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the Lost & Found button, chooses whether it is a lost button, adds the location where the item was lost, chooses the title and description, adds an image if there is one, and posts the post.
 - e. Special/quality requirements: Should create the correct post and display it correctly on the Lost &Found page [Performance requirement]
4. Create Found Item Post
 - a. Participating Actor: Lost Item Finder
 - b. Entry Condition: A user who is logged in and finds an item creates a post.
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the Lost and Found button, chooses whether it is a found button, adds the location where the item was lost, chooses the title and description, adds an image if there is one, and publishes the post.
 - e. Special/quality requirements: should create the correct post and display it on the Lost &Found page correctly [Performance requirement]

5. Create a Transactional Post
 - a. Participating Actor: Seller, Lender
 - b. Entry Condition: The user who is logged in and wants to sell or lend an item creates a post
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the post type to sell or lend, chooses the title, tags, and description, adds images if needed, and publishes the post.
 - e. Special/quality requirements: Creates correct post in the correct section of the site [Performance requirement]
6. Create a Second-Hand Sale Post
 - a. Participating Actor: Seller
 - b. Entry Condition: A user who is logged in wants to create a post for selling a 2nd hand item
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the post type to sell, chooses the title, tags, and description, adds price, adds images if needed, and publishes the post.
 - e. Special/quality requirements: Creates posts that can be seen through different devices that have access to the internet and browser [scalability- > performance requirement]
7. Create Borrowal Item Post
 - a. Participating Actor: Lender
 - b. Entry Condition: A user who is logged in wants to create a post for lending an item
 - c. Exit condition: The user cancels the post, the connection is lost or the post is created
 - d. Flow of Events: The user selects the post type to lend/borrow, chooses the price, chooses the title, tags, and description, adds images if needed, and publishes the post.
 - e. Special/quality requirements: Creates a post that can be accessed through different devices that have access to internet and browser [Scalability-> Performance requirement]
8. Edit Post
 - a. Participating Actor: Lost Item Finder, Person who lost an item, Seller, Lender, and Donation Organizer
 - b. Entry Condition: One of these actors who has logged in decides to edit a post
 - c. Exit condition: The user cancels the editing, the connection is lost or the post is edited
 - d. The flow of events: The actor edits the title, state of the item if it is an item post, donation goal if it is a donation post, description, and image, and then saves the post.
 - e. Special/quality requirements: The edited post is updated for everyone [performance requirement]

- 9. Give Contact Info**
 - a. Participating Actor: Lost Item Finder, Person who lost an item, Seller, Lender, Donation Organizer
 - b. Entry Condition: The actor who is logged in wants to give contact information to the other part
 - c. Exit condition: Connection is lost; contact information is sent
 - d. The flow of Events: The actor accepts the contact request, and the contact information is sent to the other party
 - e. Special/quality requirements: The other party should get the contact information within 10 minutes. [performance requirement]
- 10. Receive Notification**
 - a. Participating Actor: User
 - b. Entry Condition: Something happens to a post related to the user
 - c. Exit condition: Notification is received
 - d. Flow of Events: Something is updated about a post that a user created or interacted with, and the user receives a notification about the update
 - e. Special/quality requirements: Notifications should be accessible with a single icon from the main page. [usability requirement]
- 11. Receive Wishlisting Notification**
 - a. Participating Actor: Seller, Lender
 - b. Entry Condition: A buyer who is interested in a transactional item puts it on his/her wishlist.
 - c. Exit condition: Notification is received by the seller
 - d. The flow of Events: A buyer who is interested in a secondhand item puts it on his/her wishlist, and the seller receives a notification about the wishlisting.
 - e. Special/quality requirements: The notification should contain a link to the item post. [usability requirement]
- 12. Receive Request for Contact Info Notification**
 - a. Participating Actor: Lost Item Finder, Person who lost an item, Seller, Lender, and Donation Organizer
 - b. Entry Condition: A user who is interested in a post sends a request to contact the poster.
 - c. Exit condition: notification is received.
 - d. Flow of Events: A user who is interested in a post sends a request to contact the poster, the system sends a notification to the poster, and the poster is given the option to accept or deny the request. If the request is accepted, the contact information of the poster is sent to the user who requested it.
 - e. Special/quality requirements: The notification should contain a link to the post [usability requirement].
- 13. Receive Rating Notification**
 - a. Participating Actor: Seller, Lender

- b. Entry Condition: After a transaction is finished, the buyer/borrower rates the seller/lender.
- c. Exit condition: notification is received.
- d. Flow of Events: After a transaction, the seller/lender edits the item and documents the transaction. The buyer/borrower is given the option to review the seller/lender. If the buyer/borrower chooses to give a rating, the seller/lender receives a notification about the rating.
- e. Special/quality requirements The notification should contain a link to the post and the rating score [usability requirement].

14. Receive Item Update Notification

- a. Participating Actor: Borrower, Buyer
- b. Entry Condition: The price or availability of an item is changed
- c. Exit condition: notification is received.
- d. Flow of Events: The lender/seller changes the price or availability of an item, The buyer/borrowers who wishlisted the item receive a notification about the change.
- e. Special/quality requirements The notification should contain a link to the post and information about the change to the item [usability requirement].

15. Create a Donation Post

- a. Participating Actor: Donation Organizer
- b. Entry Condition: The user wants to open a donation post
- c. Exit condition: The user cancels the post, the connection is lost or the post is created
- d. The flow of events: The user selects the option to open a post, selects donation post as the post type, chooses the title, donation goal, and description, adds an image if there is one, adds IBAN, and publishes the post.
- e. Special/quality requirements: Creates a post that can be accessed through different devices that have access to the internet and browser [Scalability-> Performance requirement]

16. Set a Donation Goal

- a. Participating Actor: Donation Organizer
- b. Entry Condition: Actor who is logged in wants to set a donation goal
- c. Exit condition: The user cancels the action, the connection is lost or the goal is set
- d. Flow of Events: The actor selects to edit the donation post, sets the goal to the desired amount, updates necessary information, and saves the post.
- e. Special/quality requirements: Updates the donation goal for every account [Performance requirement]

17. Add to Wishlist

- a. Participating Actor: Buyer, Borrower
- b. Entry Condition: A buyer or borrower who is logged in wants to add a transactional item to the wishlist to purchase or rent it
- c. Exit condition: Connection is lost, Item is added to wishlist, Item is deleted

- d. Flow of Events: Buyer chooses an item and pushes the wishlist button to add it to the wishlist
- e. Special/quality requirements: The user can add any item at any time to the wishlist [availability -> performance]

18. Remove from wishlist

- a. Participating Actor: Buyer, Borrower
- b. Entry Condition: A buyer or borrower who is logged in and wants to add an item to the wishlist to purchase it
- c. Exit condition: Connection is lost, Item is removed from wishlist, Item is deleted
- d. Flow of Events: Buyer or borrower chooses an item from his/her wishlist and removes it from the list.
- e. Special/quality requirements: The user can add any item at any time to the wishlist [availability -> performance]

19. Borrow Item

- a. Participating Actor: Borrower
- b. Entry Condition: A borrower borrows an item privately
- c. Exit condition: User is banned, item is borrowed successfully, item is already borrowed.
- d. Flow of Events: Borrower contacts the poster of a borrowing item post. The owner of the post indicates that the item is borrowed and specifies the time of borrowing and the user who borrowed the item.
- e. Special/quality requirements: The information of the user who is borrowing shouldn't be available to other users [Security].

20. Return Item

- a. Participating Actor: Borrower
- b. Entry Condition: A borrower returns an item they borrowed
- c. Exit condition: User is banned, item is returned successfully
- d. Flow of Events: After borrower is done with the item, he/she returns the item to the owner. The owner of the post indicates that the item is returned.
- e. Special/quality requirements: After the item is returned, borrower should be able to rate the item owner [Functionality]. After the item is returned, someone else should be able to borrow that item [Usability].

21. Buy Item

- a. Participating Actor: Buyer
- b. Entry Condition: A buyer purchases an item privately
- c. Exit condition: User is banned, item is bought successfully, item is already bought.
- d. Flow of Events: Buyer contacts the poster of a 2nd hand item post. The owner of the post indicates that the item is bought and specifies the user who borrowed the item.
- e. Special/quality requirements: The information of the user who is borrowing shouldn't be available to other users [Security]. After the item is returned, someone else should be able to borrow that item [Usability].

22. Rate Seller

- a. Participating Actor: Buyer, Borrower
- b. Entry Condition: A buyer or borrower who is logged in and purchased or borrowed and returned an item from a specific seller wants to rate the seller

- c. Exit condition: Rating is canceled, Connection is lost, or the Rating is made
- d. Flow of Events: The buyer or borrower selects rate the seller from notifications; a rating scale is shown to the buyer, and the buyer rates the seller
- e. Special/quality requirements: The rating of the seller is updated within 10 minutes [Performance time requirement]

23. Search Item

- a. Participating Actor: Buyer, Person who lost an item, Borrower
- b. Entry Condition: The user who is logged in wants to search for a specific item or an item list with specific properties such as tags or keywords
- c. Exit condition: Connection is lost, No item with this keyword exists, The item post is chosen
- d. The flow of Events: The user clicks on search, chooses post type, adds tags and keywords, clicks on proceed/ find/search and a list of items is shown
- e. Special/quality requirements: The search result is shown within 2 minutes, at any time, considering that the user is logged in [performance time and Availability requirements]

24. Contact Poster

- a. Participating Actor: Buyer, Person who lost an item, Person who found an item, borrower
- b. Entry Condition: The user who is logged in wants to contact the poster
- c. Exit condition: Poster has blocked any contact requests, Connection is lost, and a Contact request is made
- d. Flow of Events: User chooses a post. If the contact information of the poster is private, the user sends a request to get the poster's contact information and if it's approved by the poster the user gets the phone number, If the contact information is public, the user messages the poster directly.
- e. Special/quality requirements: After a user is approved to get the contact info of a poster, the info should appear on all of their posts [Usability].

25. Change Settings

- a. Participating Actor: User
- b. Entry Condition: The user wants to change settings
- c. Exit condition: Change is canceled, Connection is lost, Change is saved
- d. Flow of Events: The user clicks on change settings, changes the information or preferences the user wants to change, and clicks on save the changes
- e. Special/quality requirements: The user can change settings at any given time as long as the user is logged in and there is an internet connection [Availability]

26. Browse Home Page

- a. Participating Actor: User
- b. Entry Condition: The user wants to browse through the home page
- c. Exit condition: Connection is lost, no more new posts, the user is done browsing, user is banned

- d. Flow of Events: The user adds tags if he or she wants to and browses through the feed page until he/she finds a post or until there are no more posts to see
- e. Special/quality requirements: The user is easily able to go through posts just by scrolling, given that he/ she is connected to the internet and is logged in [Usability]. The home page feed should be personalized based on users information and previous activities on the website [Functionality].

27. Edit Personal Info

- a. Participating Actor: User
- b. Entry Condition: The user wants to edit the profile page
- c. Exit condition: Editing is canceled, Connection is lost, Changes are saved
- d. Flow of Events: The user selects change profile info, changes information such as name, profile picture, description, and the saves the changes
- e. Special/quality requirements: Changes are shown on the profile page after it is updated, given that the user is logged in and has an internet connection [Reliability]

28. View Profile

- a. Participating Actor: User
- b. Entry Condition: The user wants to view a profile
- c. Exit condition: Connection is lost, Profile is viewed
- d. Flow of Events: The user chooses a profile, clicks on it, and views it
- e. Special/quality requirements: Profile can be viewed by pressing profile picture or username [Usability]. The profile shows every post made by that user [Functionality].

29. Log In

- a. Participating Actor: User
- b. Entry Condition: The user wants to log in
- c. Exit condition: Account does not exist, The connection is lost, Password does not match the account, Account is banned, Logged in
- d. The flow of Events: User selects login, enters email or Bilkent ID, enters the password, and pushes the login button
- e. Special/quality requirements: user can log in at any time given that they already have an account that is not banned and internet connection [Availability requirement]

30. Send Feedback

- a. Participating Actor: User
- b. Entry Condition: A user who is logged in wants to send feedback to developers
- c. Exit condition: Feedback is canceled, Connection is lost, Feedback is sent
- d. Flow of Events: The user selects send feedback from the settings page, writes the feedback, and sends it

- e. Special/quality requirements: The user can send feedback at any given time as long as the user is logged in and there is an internet connection [Availability]

31. Sign Up

- a. Participating Actor: User
- b. Entry Condition: Future user who has access to the internet wants to sign up
- c. Exit condition: Sign up is canceled, Connection is lost, An account with this email already exists, signing up is successful
- d. The flow of events: A future user selects sign up, enters an email address, Bilkent ID, password, and other required information, adds a profile picture if desired, and selects the signup button
- e. Special/quality requirements: The process of sign-up is straightforward and self-explanatory [Usability]

32. Report Post

- a. Participating Actor: User
- b. Entry Condition: The user who is logged in wants to report a post
- c. Exit condition: Report is made, Connection is lost, Report is canceled
- d. The flow of Events: The user selects the report post, selects the reason from the given choices or adds another reason, and clicks on send the report.
- e. Special/quality requirements: Report is sent to the developers within 10 minutes and is evaluated within a week [Performance time]

33. Receive Feedback Email

- a. Participating Actor: Developers' Mail
- b. Entry Condition: Developers' mail receives email
- c. Exit condition: Mail is in spam, mail is empty, mail is full
- d. The flow of Events: Developers receive notifications, open mail, and receive feedback email
- e. Special/quality requirements: An email is sent to the developers within 10 minutes [performance time]

34. Send Email to Users

- a. Participating Actor: Developer's Mail
- b. Entry Condition: The developer wants to send an email to a user
- c. Exit condition: Mail is canceled, there is no internet connection, and mail is sent
- d. Flow of Events: The developer opens their mail, finds the user's email address, writes the email, and sends it
- e. Special/quality requirements: Users' emails are accessible to developers at any given time [Reliability]

35. Receive Report Email

- a. Participating Actor: Developer Mail
- b. Entry Condition: Developers' mail receives email
- c. Exit condition: Mail is in spam, mail is empty, mail is full

- d. Flow of Events: Developers receive notifications, open mail, and receive a report email
- e. Special/quality requirements: An email is sent to the developers within 10 minutes [performance time]

Non-functional Requirements

Any button or interactable element should do what is written on it [Usability]

All listings and user profiles must have an image [Usability]

All actions must take at most three mouse clicks [Usability]

Any update to the site should be complete in 500 ms [Performance]

The site must display all listing information correctly [Reliability]

If an error occurs from the user's input the site must explicitly explain where the error occurred and highlight the area [Error handling]

The site must look appropriately sized on different screen resolutions. The site must function properly for 1920x1080 screen resolution for PC's and 360x800 screen resolution for mobile[Hardware]

A user must only have access to their own data and public data of others [Security]

A person's active listings list should not exceed 10 [Resource management]

The site must be able to support at least 100 users at any given time [Performance]

Constraints

The implementation of the backend must be done in Node.js and Express.js.

TechStack

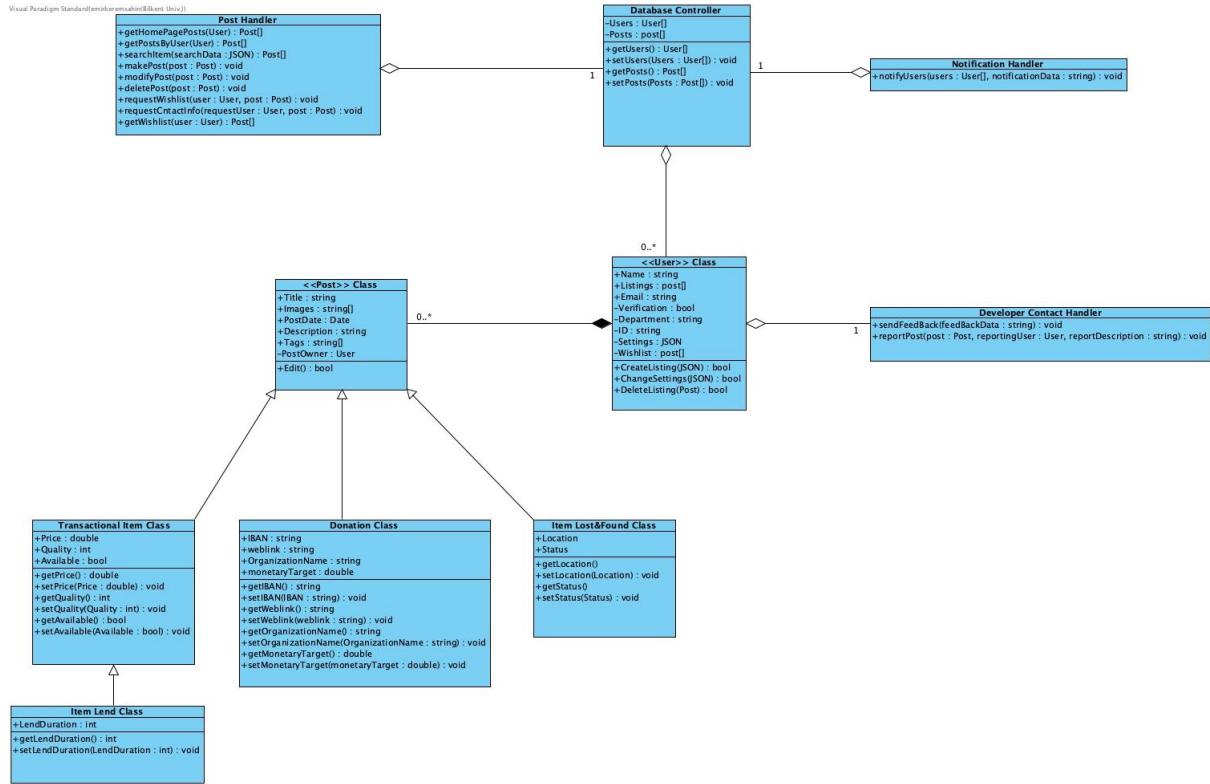
We plan on using MongoDB for storing and accessing our database as it stores unstructured data faster than MySQL.

For programming language we chose JavaScript and its frameworks express.js and node.js

for the backend. Express.js framework helps to reduce programming time while building the backend apps. Node.js is exceptional for data intensive real time applications

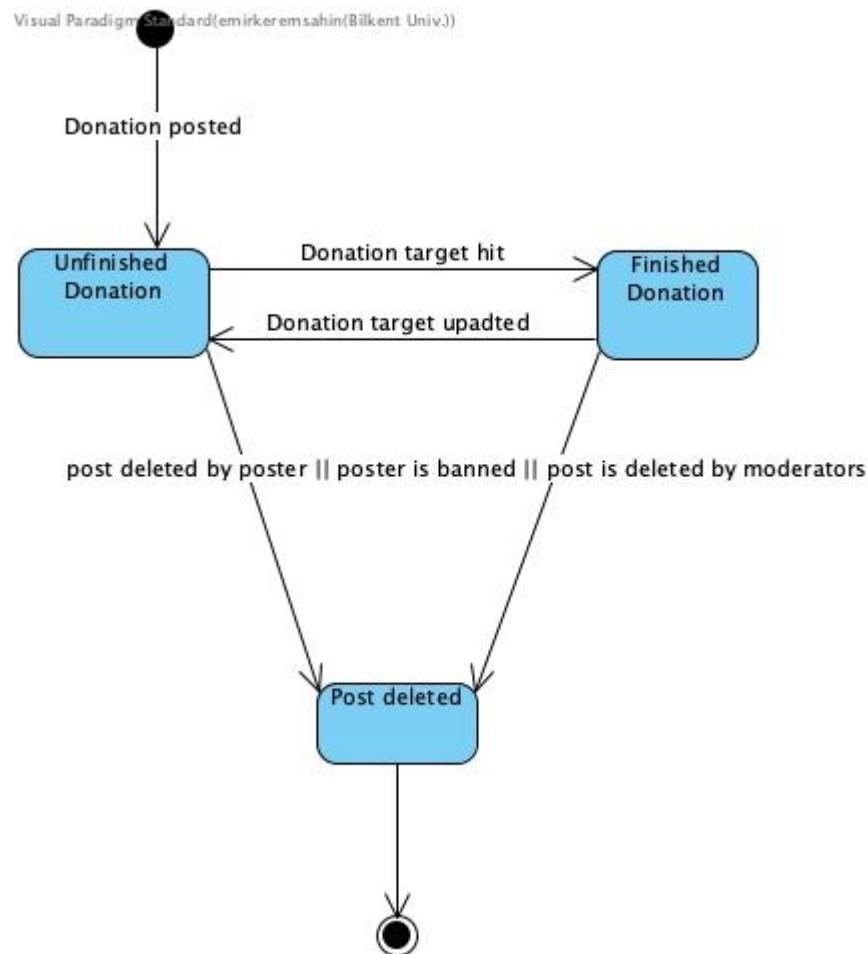
For the front end we plan on using react.js as its potential to reuse components can be of great value.

Class Diagram

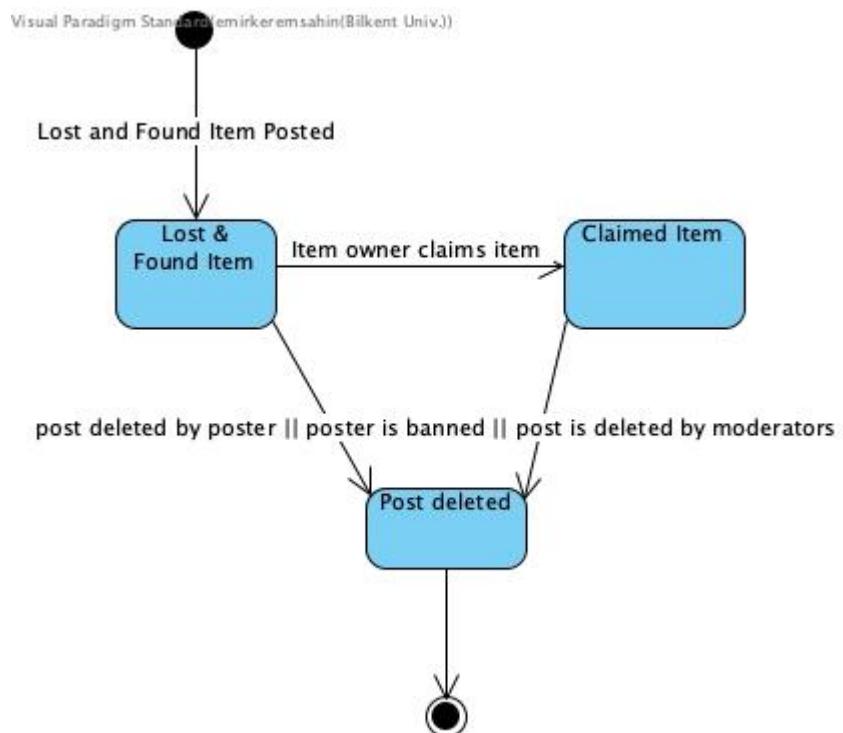


State Diagrams

1. Donation States

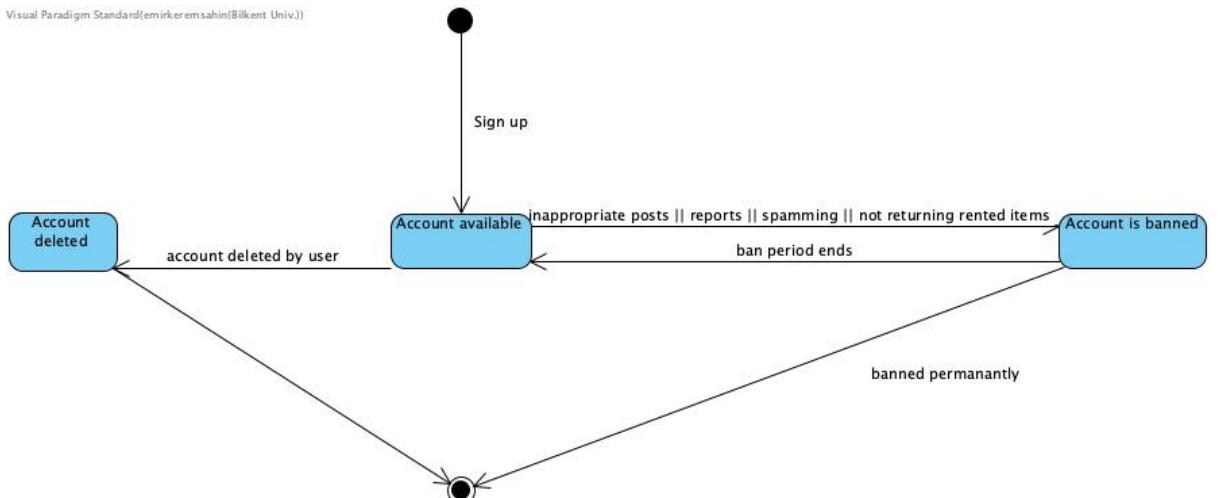


2. Lost & Found Item States



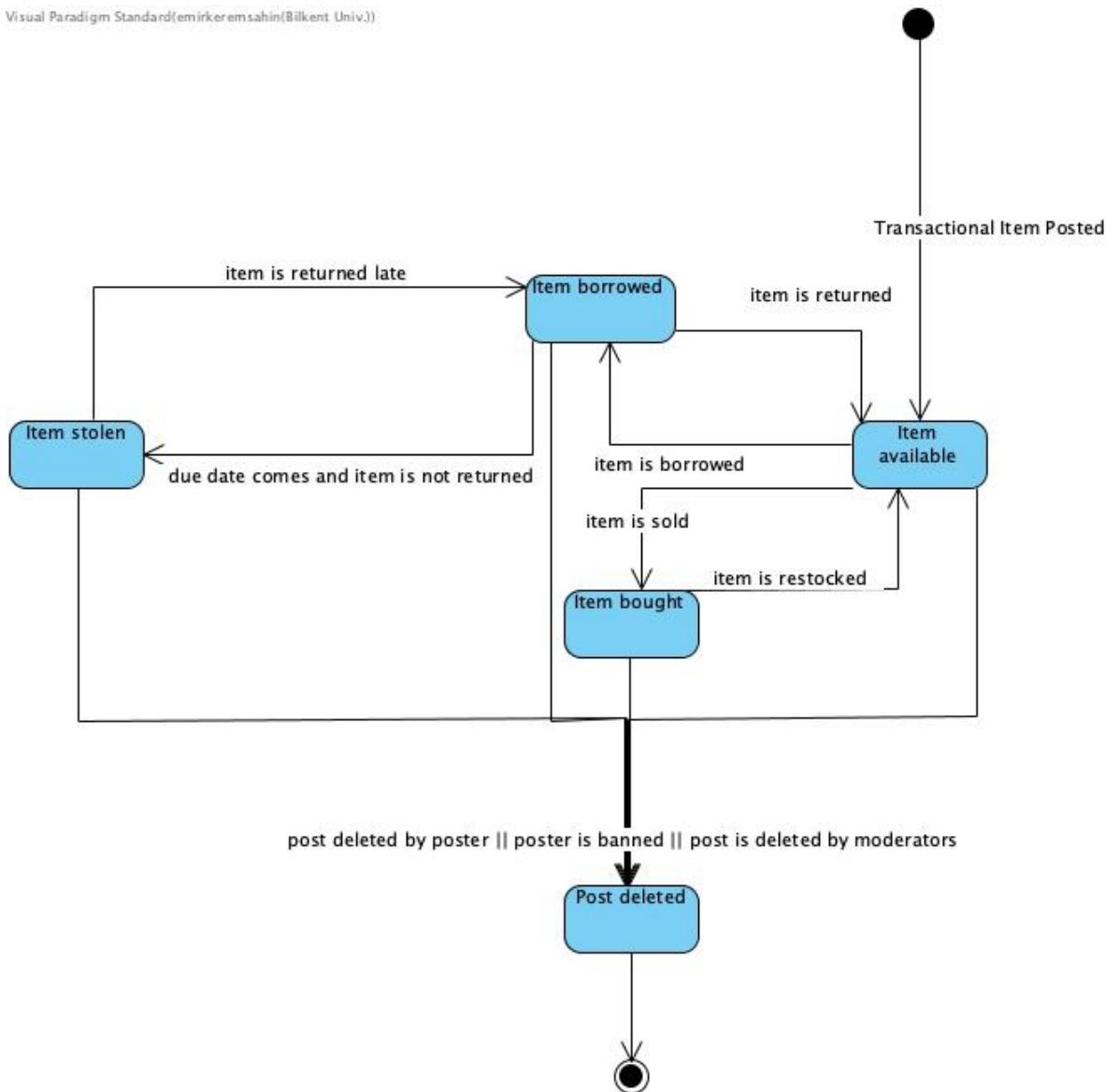
3. Account States

Visual Paradigm Standard(emirkeremsahin(Bilkent Univ.))



4. Transactional Item States

Visual Paradigm Standard(emirkeremsahin(Bilkent Univ.))



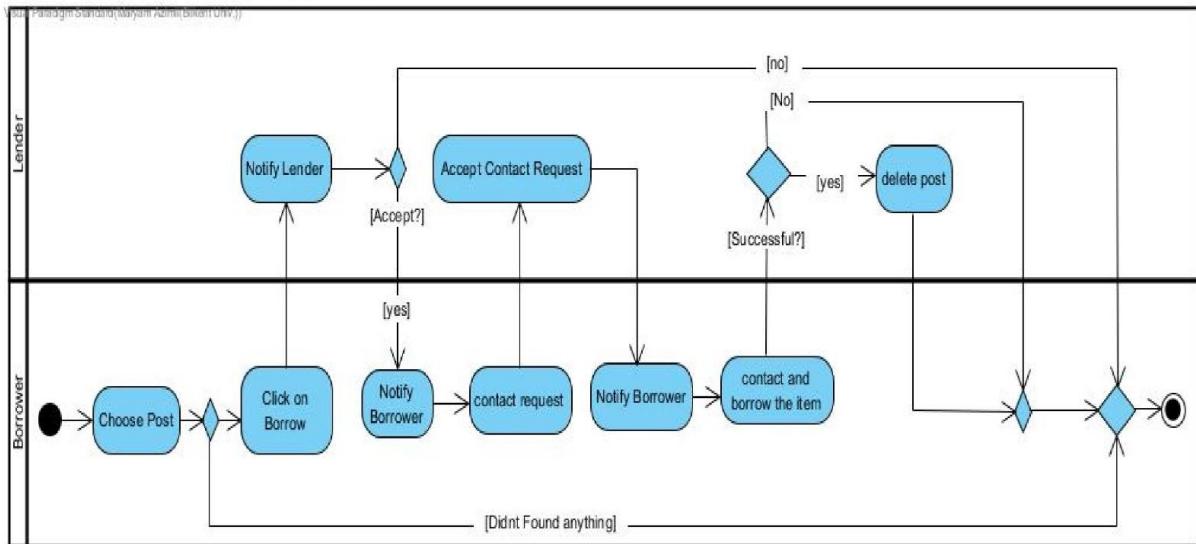
Activity Diagrams

Group 10-01

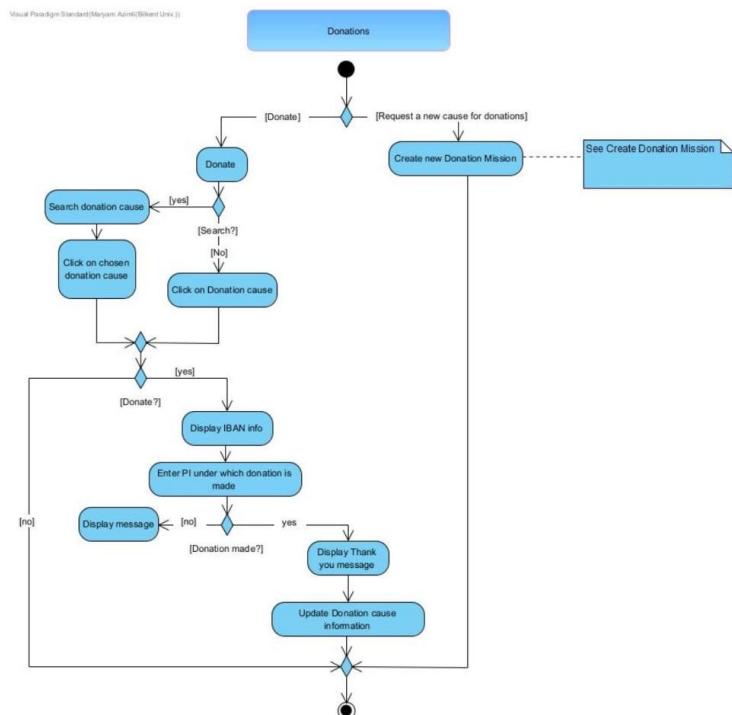
Activity Diagrams

Updated/Final version

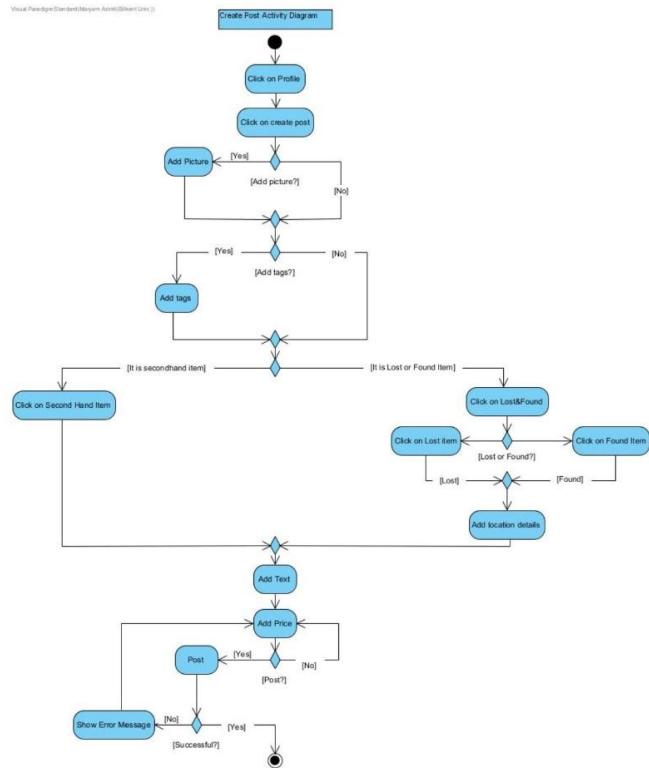
Borrow-Lend Process Activity Diagram



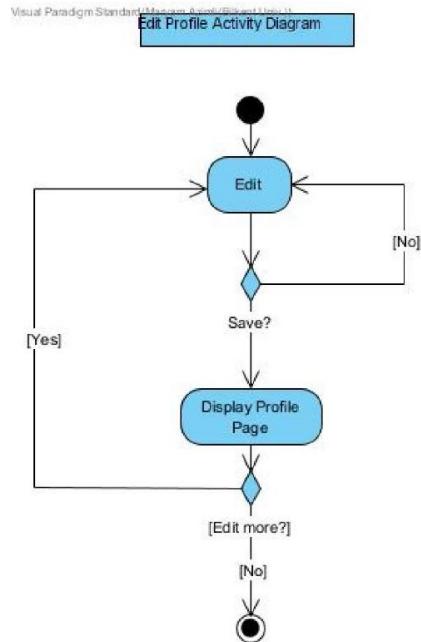
Donations Activity Diagram



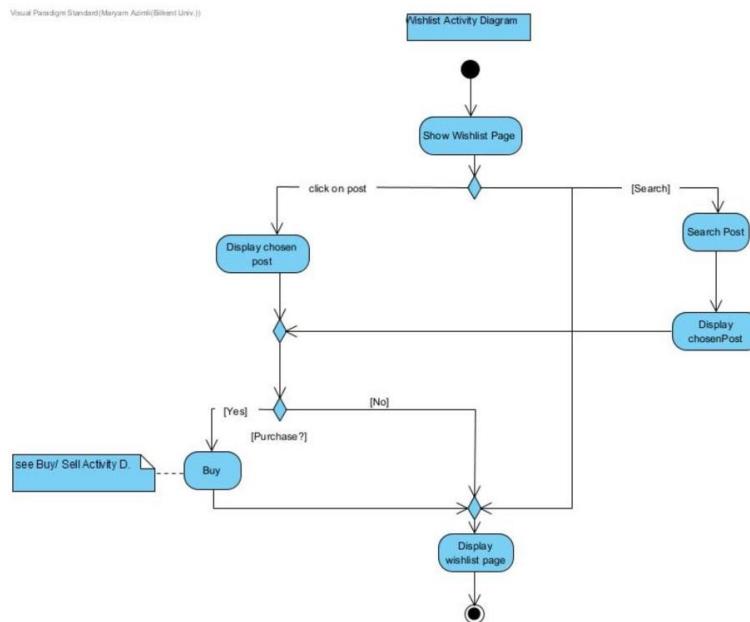
Create Post Activity Diagram



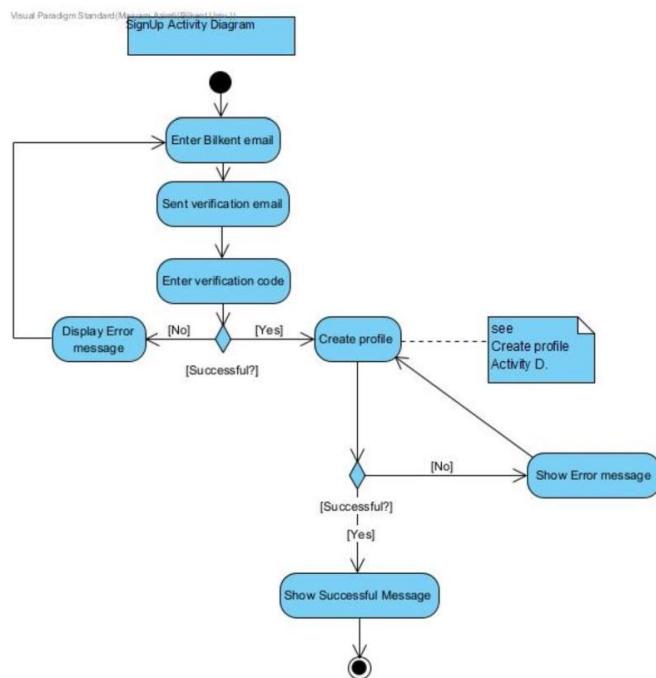
Edit Profile Page Activity Diagram



Wishlist Activity Diagram

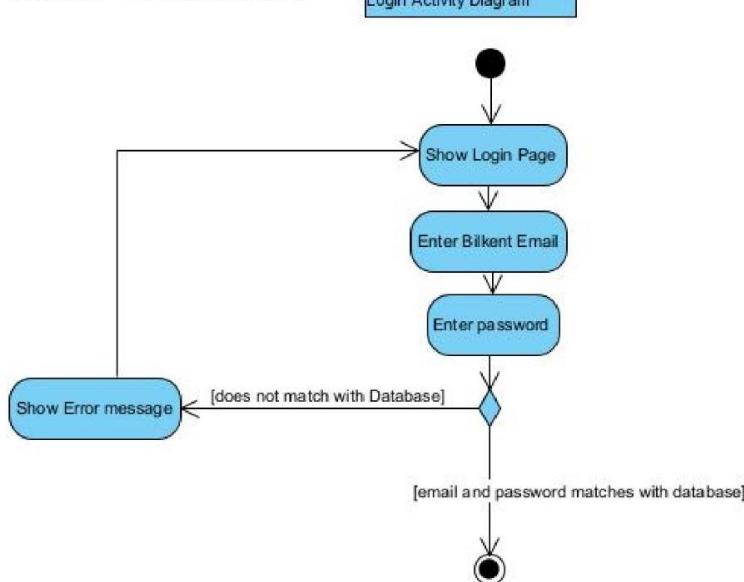


SignUp Activity Diagram



Login Activity Diagram

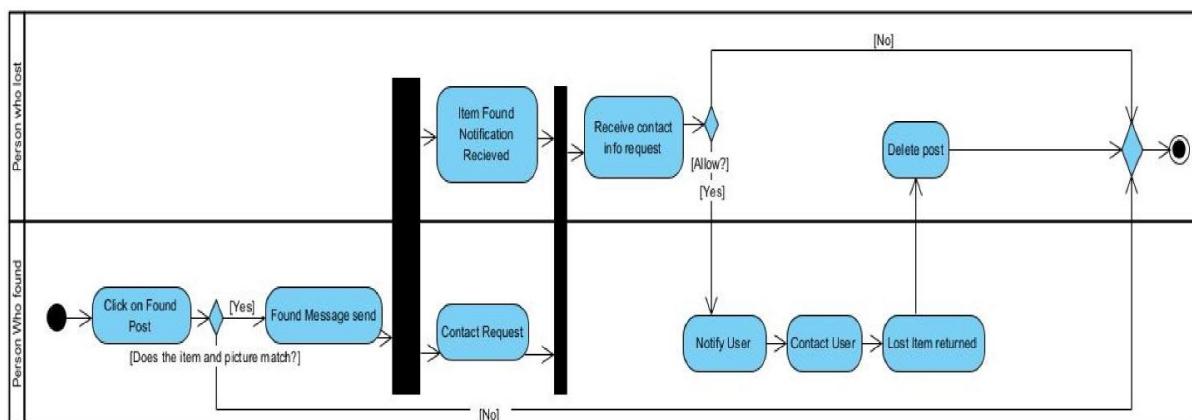
Visual Paradigm Standard (Maryam Azimi) (Bilkent Univ.))



Lost&Found Activity Diagram

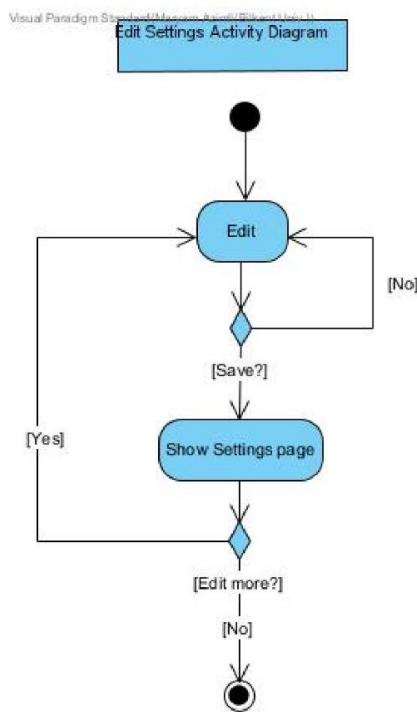
Visual Paradigm Standard (Maryam Azimi) (Bilkent Univ.))

Lost & Found Process Activity Diagram

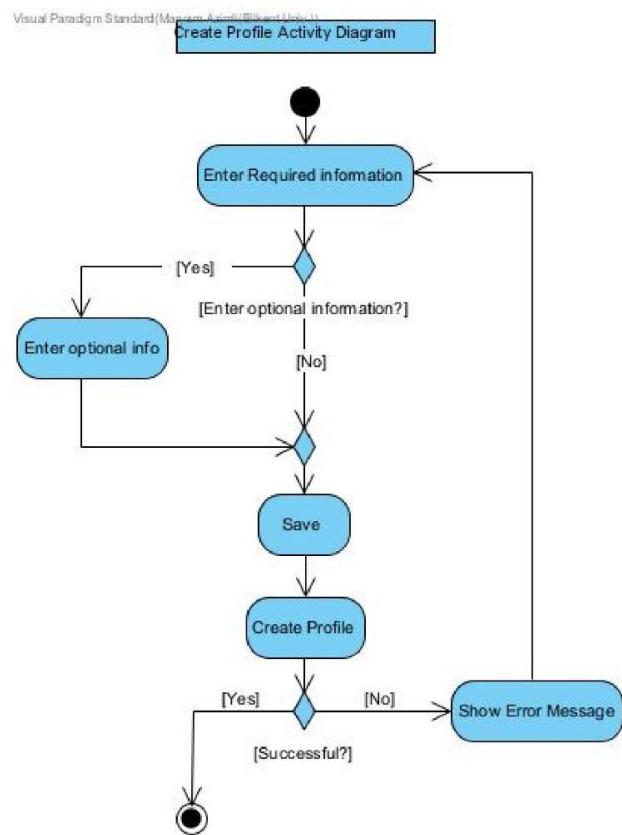


Used merge node to connect everything before sending it to the end node
 Used fork node instead of branching out in order to stop dead ends
 Renamed some of the activities that were similar to state namings

Edit Settings Page Activity Diagram



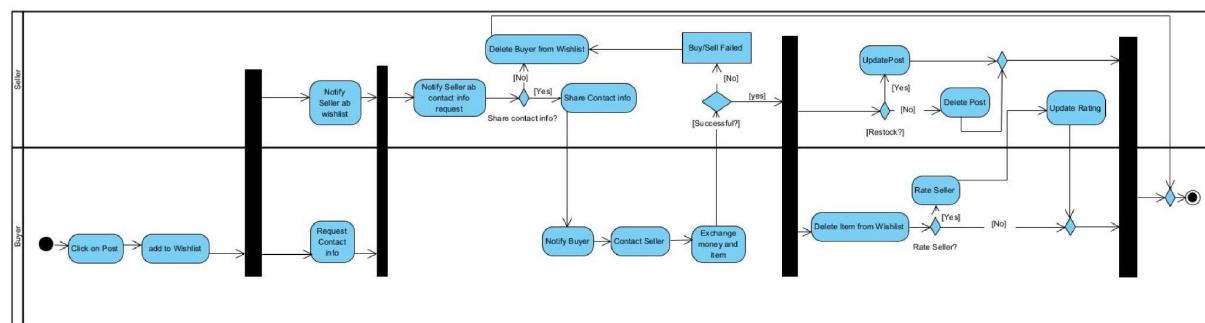
Create Profile Activity Diagram



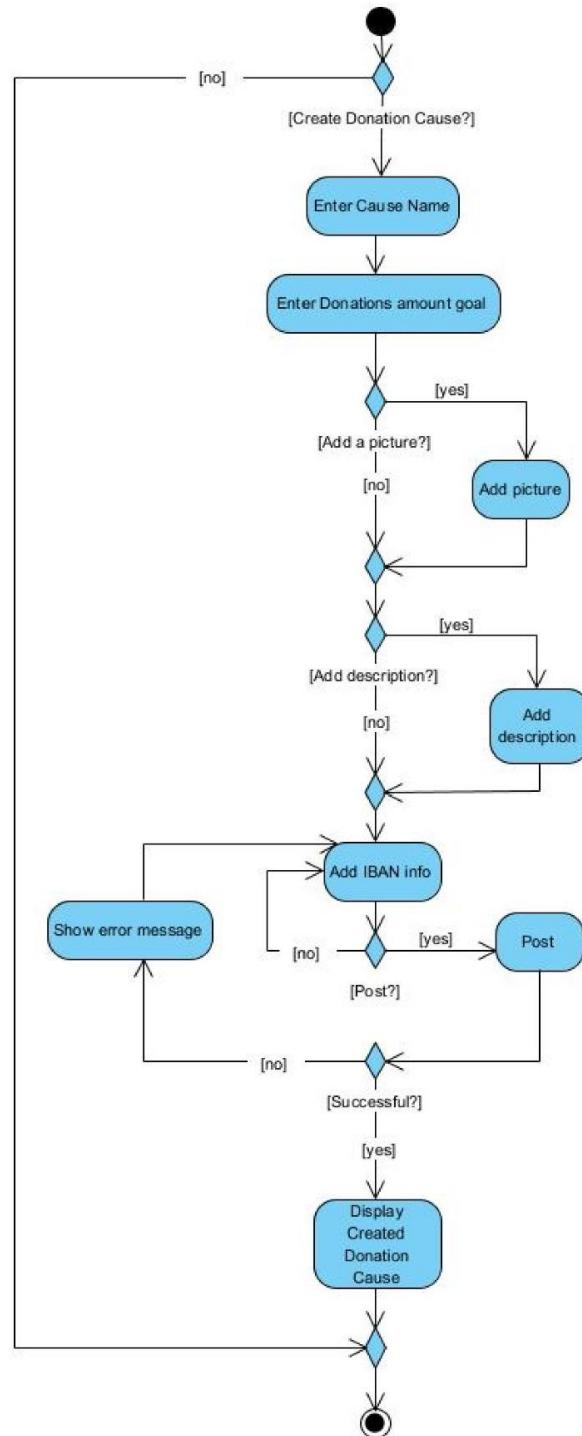
Buy and Sell activity Diagram

Java Paradigm Standard/Mayhem Junct(Bikken Univ.)

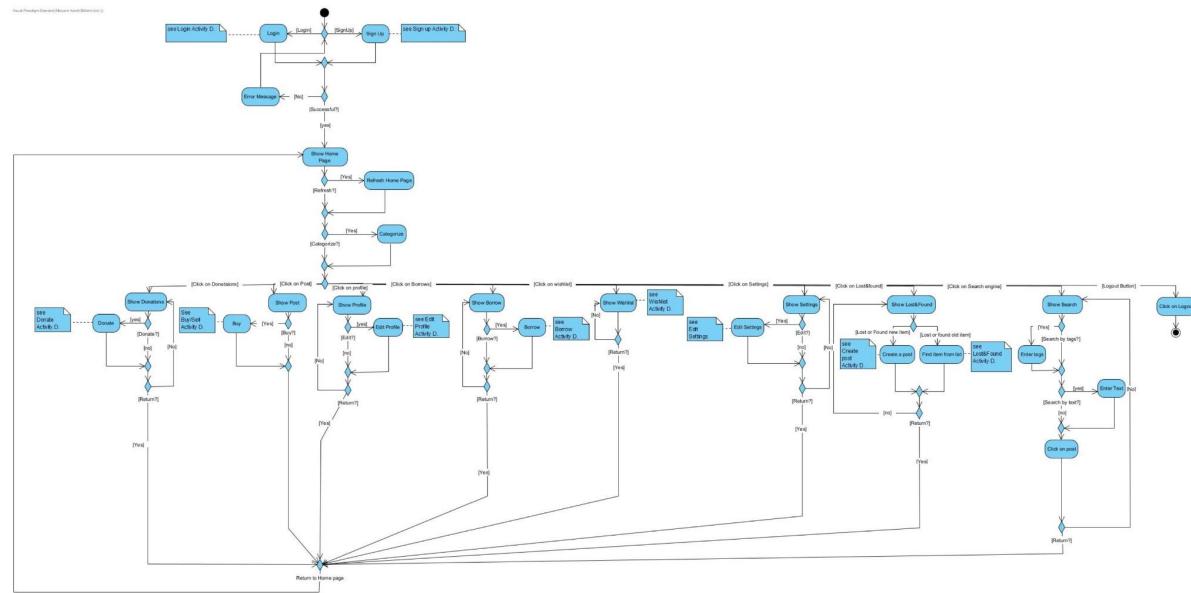
[Buy/Sell Activity Diagram](#)



Create Donation cause Activity Diagram



Main Activity Diagram



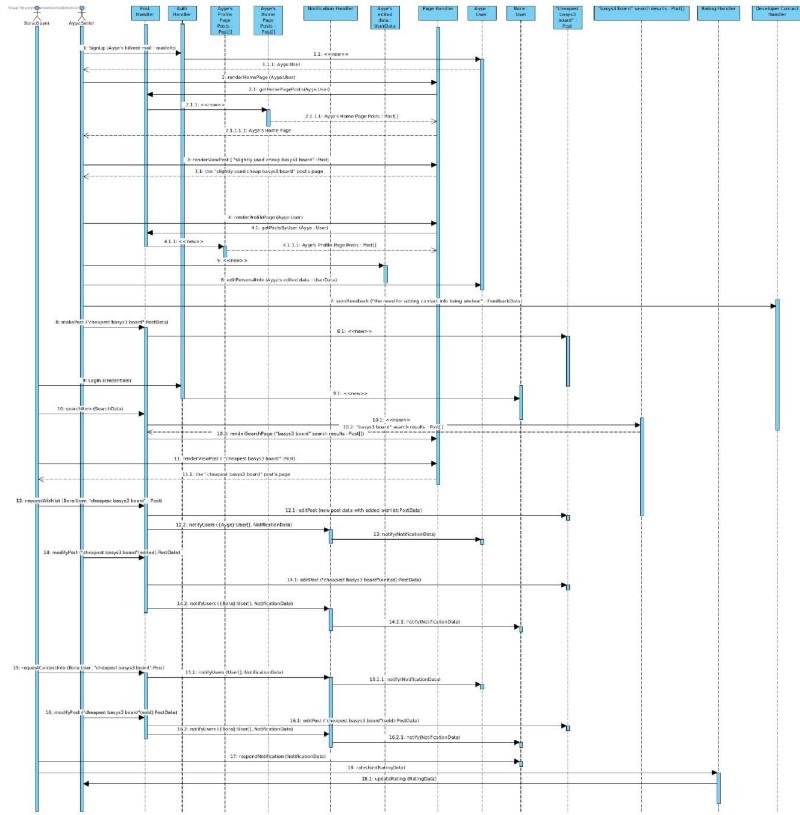
Sequence diagrams

Ayşe signs up for the Bilmart app. After this, the app automatically shows the homepage. Ayşe clicks the “slightly used cheap basys3 board” post. After that Ayşe notices her contact info is missing, so goes to her own profile page, edits the contact info. Then, Ayşe sends feedback to the developers about “the need for adding contact info being unclear”. Lastly, Ayşe adds a post with the title “cheapest basys3 board”.

Another already signed up user Bora logs in to the app and then makes a search of “basys3 board” with CS223 tag. While swiping the posts in the search page, Bora adds the “cheapest basys3 board” post to his wishlist.

After Ayşe receives notification about the wishlist, she decides to lower the price. Some time later, in Bora’s other session, a notification states that the “cheapest basys3 board” post has a discount. After going to this post’s page, Bora requests Ayşe’s contact info.

Ayşe accepts the request for contact info, then sale happens outside the app. After Ayşe indicates that the product was sold to the user Bora. Bora will receive a notification to rate the sale and seller. Then, he rates Ayşe.



Mockups

The screenshot displays a user profile page on a platform called BilMart. The top navigation bar includes a search bar, 'Search' button, 'About' link, 'Home' link, 'Wishlist' link, 'Notifications' link, 'Settings' link, and a 'Profile' link with a user icon.

User Profile:

- Profile Picture:** A circular icon with a stylized blue and red design.
- Name:** Mert Fidan
- Major:** Computer Science
- Level:** Third Year Student
- Post Count:** 122 Posts
- Rating:** ★★★★☆ (4 stars)
- Bio:** I'm a web designer, I work in programs like figma, adobe photoshop, adobe illustrator and I am mainly here to sell items
- Buttons:** 'Edit profile' and 'New Post +'

Posts Section:

- Sort By:** A dropdown menu with options: Price (Low to High), Price (High to Low), Date (New to Old), and Date (Old to New).
- Items:**
 - Discrete Maths Book** (Used)
Discrete Mathematics and Its Applications book
AVAILABLE: Book, MATH, MATH132, CM
Edit Post ₺649,99
 - Calculus 101-102 Book** (Used)
Calculus Metric Version 9th Edition Book needed for Math101-Math102
AVAILABLE: Book, MATH, MATH101, MATH102, CM
Edit Post ₺750
 - HUM111 The Epic of Gilgamesh** (Used)



Wishlist

Search wishlist

Search

Sort By ^

Price (Low to High)

Price (High to Low)

Date (New to Old)

Date (Old to New)

Tags

Selected Tags:

Q Search

Category Tags

Sale Item

Lost & Found

Borrowal Item

Donation

Item Type Tags

Book

Furniture

Clothing

Course Material (CM)

Price

min TL

max TL

Publish Date

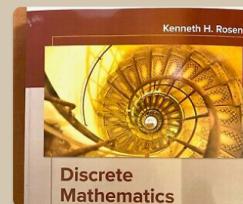
min

max

Status

 Available Found All Lost

Find Listings



Discrete Maths Book

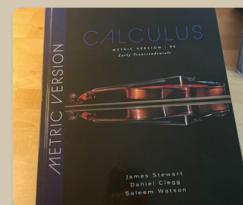
Used

Discrete Mathematics and Its Applications book needed

AVAILABLE

View

€649,99



Calculus 101-102 Book

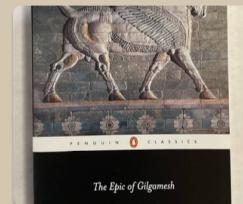
Used

Calculus Metric Version 9th Edition Book needed for Math101-Math102

AVAILABLE

View

€750



HUM111 The Epic of Gilgamesh

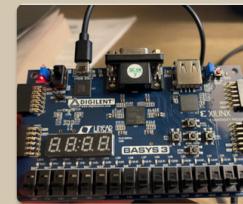
Brand New

Brand new epic of gilgamesh book required for some HUM111 sections

AVAILABLE

View

€200



BASYS3 FPGA Board (BEST PRICE!!!)

Used

BASYS3 FPGA board used in CS223-CS224 labs and EEE labs

AVAILABLE

View

€2.649,99



16 Inch MacBook Pro M2 Chip /Slightly used/

Used

MacBook that I don't use as I graduated.
Has brand new quality

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€81.999,90

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16 Inch MacBook Pro M2 Chip (has brand new quality)

Post Date: 8.11.2023



Mert Fidan
Third Year Student

5 stars

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Condition: AVAILABLE Tags: [Electronics](#) [Laptop](#)

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Description

Selling second-hand 16-inch MacBook Pro featuring the M2 chip, a powerhouse for productivity and creativity. Boasting a 16-inch Liquid Retina XDR display, 12-19 core GPU, and 512GB SSD storage, it's ideal for high-performance tasks. Certified by Apple with warranty.

The image shows the BilMart website homepage. The top navigation bar includes links for About, Home, Wishlist, Notifications, Settings, and Profile. The main search bar has a placeholder "Search for anything" and a "Search" button. On the left, there's a sidebar with sections for Tags, Selected Tags (Book, CM, Clothing, MATH), Category Tags (Sale Item, Lost & Found, Borrowal Item, Donation), Item Type Tags (Book, Furniture, Clothing, Course Material (CM)), Price (min TL, max TL), Publish Date (min, max), and Status (Available, Found, Lost, All). A large "Find Listings" button is at the bottom of the sidebar. The main content area displays a grid of items. Top items include a Discrete Mathematics book, a Calculus 101-102 book, and The Epic of Gilgamesh. Below these are a BASYS3 FPGA board, a 16-inch MacBook Pro, a vintage jacket, a ZARA Knitwear dress, a lost wallet, and a Philips Airfryer. Each item listing includes a thumbnail image, the item name, a brief description, availability status, price, and a "View" button.