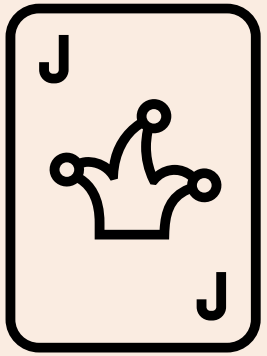
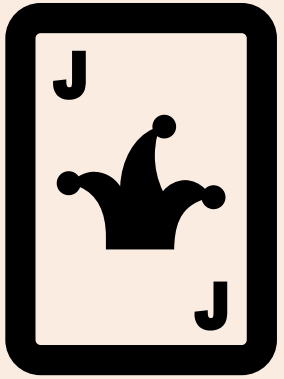


Digital Repository and Auction for Cards (DRAC)

By: Austin Hunt, Ibad Momin, Nikita Ramachandran, Gaby Salazar, Derek Zhou, Nabil Khan, Joel Varghese



OBJECTIVE

- We will be creating “Drac” a card management software for trading card games such as MTG or PTCG, which has trading functionality and market functionality, as well as database lookup and deckbuilding.

COST ESTIMATION

- We are using the Function point method to estimate costs.

- From our estimations:
  User Input: 12 simple, 2 avg, 2 high = **56 total FP**
  User Output: 3 simple, 1 avg, 2 high = **31 total FP**
  User Queries: 2 low, 1 avg, 3 high = **28 total FP**
  Data Files: 3 simple, 5 avg, 2 high = **101 total FP**
  External Interfaces: 1 simple, 1 avg, 2 high = **22 total FP**

- **Gross Function Points:**
  56 + 31 + 28 + 101 + 22 = 238

COST ESTIMATION

1. Reliable Backup/Recovery:	**3**	8. Online Master File Updates:	**4**
2. Data Communications:	**4**	9. Complex Inputs/Outputs/Queries:	**1**
3. Distributed Processing:	**1**	10. Complex Internal Processing:	**2**
4. Performance Criticality:	**2**	11. Reusable Code:	**0**
5. Use in Existing Environments:	**5**	12. Design Includes Installation:	**0**
6. Online Data Entry:	**5**	13. Use by Multiple Organizations:	**0**
7. Multi-Operation Data Entry:	**3**	14. Ease of Use:	**5**

Total Program Complexity Score: 35

Final function points

FP = GFP * (0.65 + 0.01 * PCS) = 238 * (0.65 + 0.01 * 35) = 238 * 1 = **238**

COST ESTIMATION

- Assuming our team is capable of a functionality of 60 function points per person week (working 40 hours a week, no weekends), the expected duration of effort would be 238 / 60 = 3.967 person weeks.
- With a team of 7 developers, the total project time would be around 4 days.
- To allow for leeway, with potential mistakes or further market research, we will double this time to 8 days.
- Without our estimation of $8,101.28 per month per person, this would amount to around $15,122.38 in personnel costs.

COST ESTIMATION

- There are no licensing costs – each game has a free to use policy!
- Hardware costs have estimated maximum of $9,600 per year, but these do not have to be factored in during development.

- Final cost during development: $15,122.38

PROJECT TIMELINE

- The start date of the project would be November 20th 2023 and the end date would be November 23, with the extended end date from the 8 day estimation being November 29.

- Weekends will not be counted in our schedule and our group members will be working at least 8 hours a day.

FUNCTIONAL REQUIREMENTS

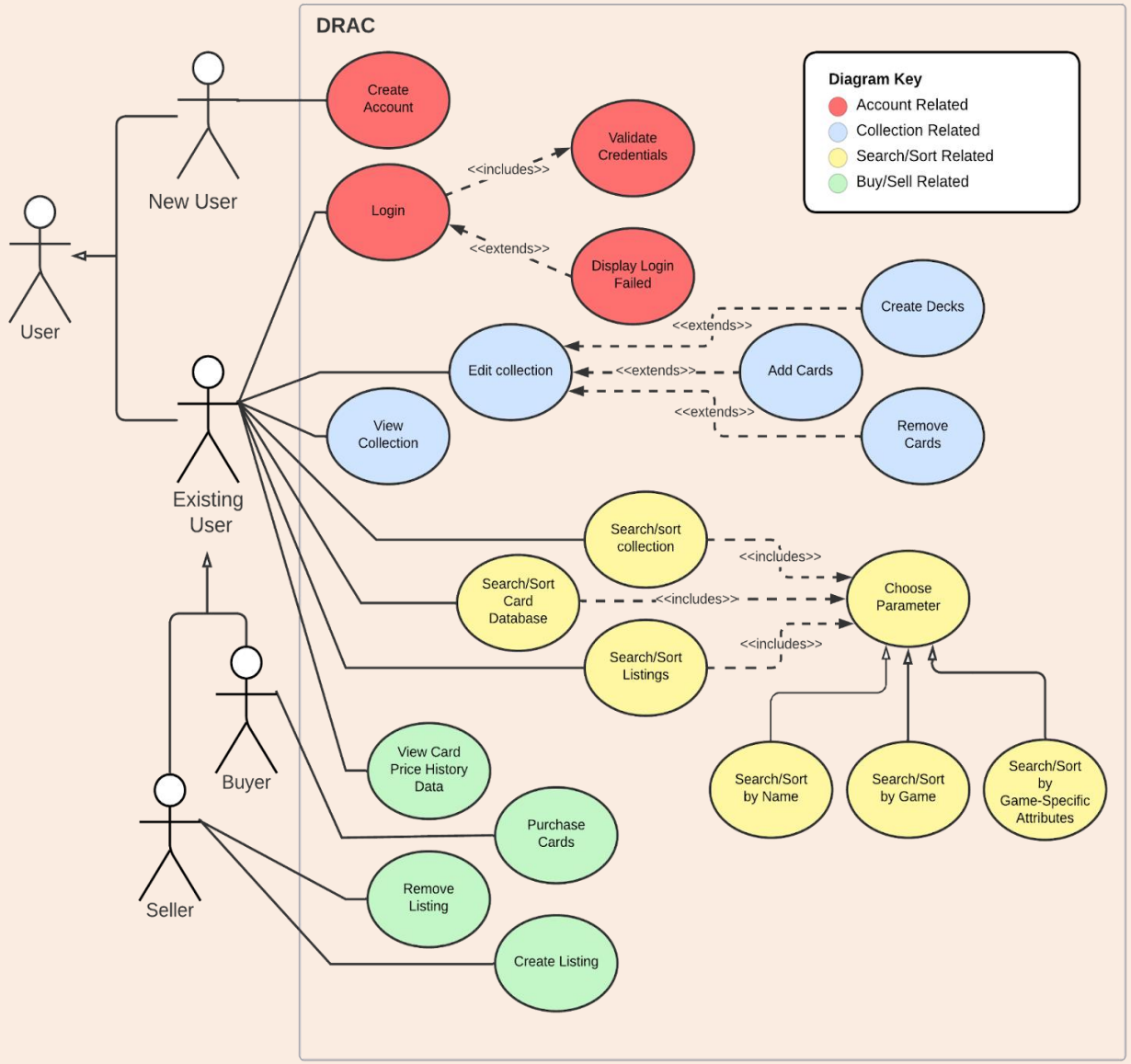
FUNCTIONAL
• User should be able to login using their credentials and access their account.
• User should be able to view and organize their collections and decks.
• System should update each card's current market price based on the current asks and bids.
• User should be able to buy and sell cards in the cards marketplace.
• After each trade, the system should update the inventory of the user.

NON-FUNCTIONAL REQUIREMENTS

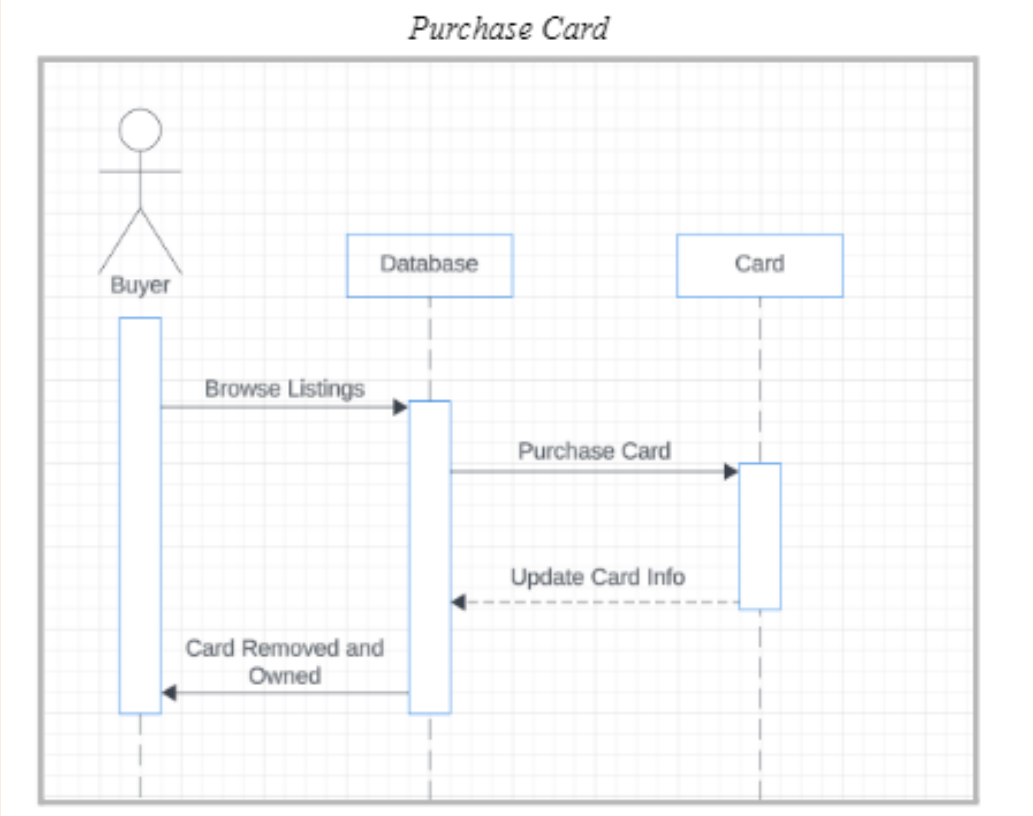
NON-FUNCTIONAL
• Usability Requirements: *User Interface (UI) Efficiency:*
• Performance Requirements: *Response Time and Scalability*
• Space Requirements: *Data Storage*
• Dependability Requirements: *Availability and Fault Tolerance*
• Security Requirements: *Data Encryption, Authentication and Authorization, and Data Privacy*
• Environmental Requirements: *Energy Efficiency*

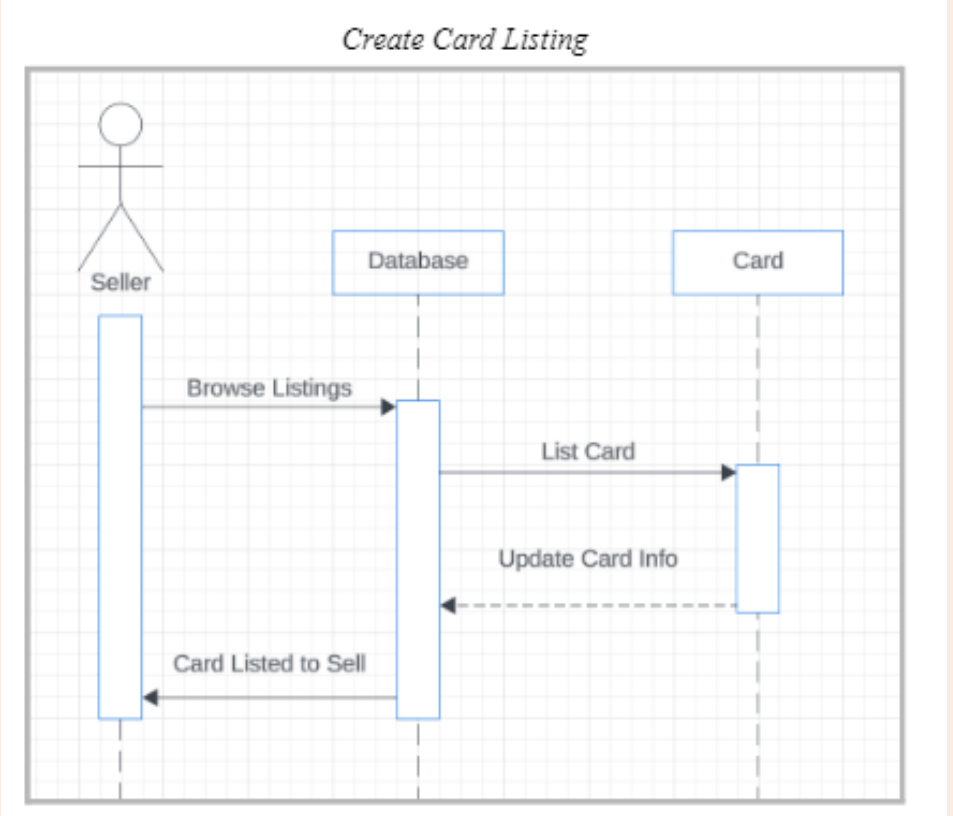
NON-FUNCTIONAL
• Operational Requirements: *Maintenance and Support and Backup and Recovery*
• Developmental Requirements: *Code Quality and Testing*
• Regulatory Requirements: *Compliance*
• Ethical Requirements: *User Data Ethics*
• Accounting Requirements: *Financial Reporting*
• Safety/Security Requirements: *User Safety*

CASE DIAGRAM

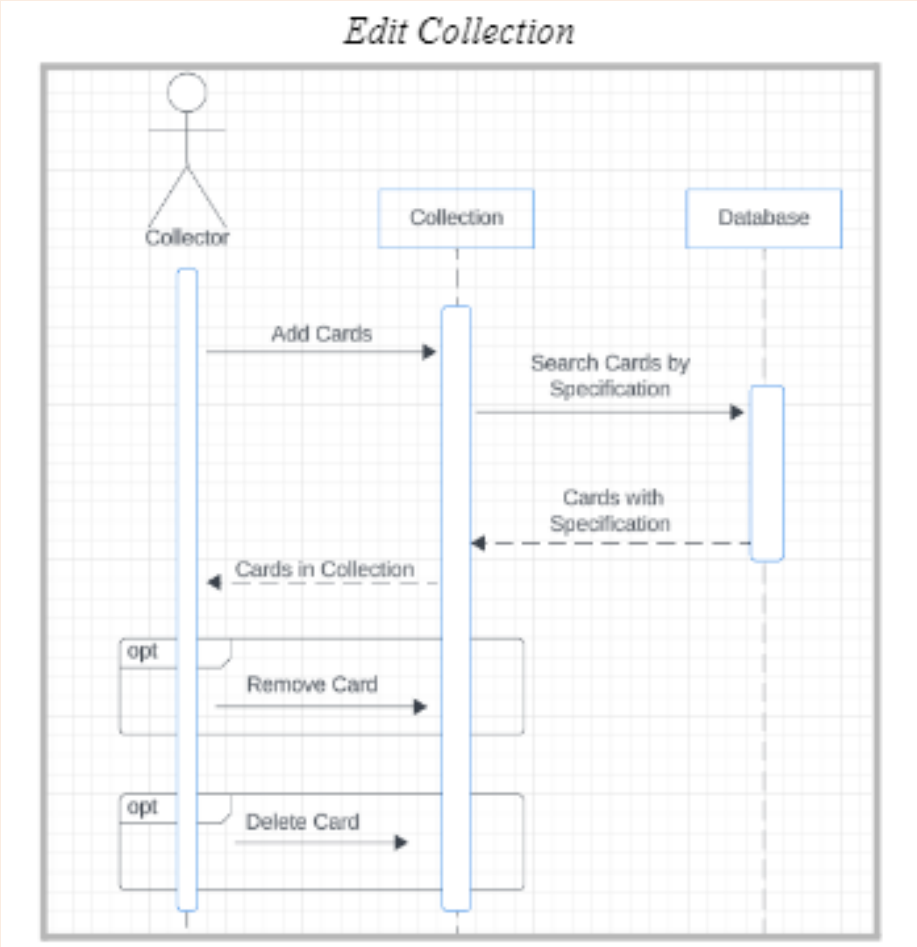


SEQUENCE DIAGRAMS (I)

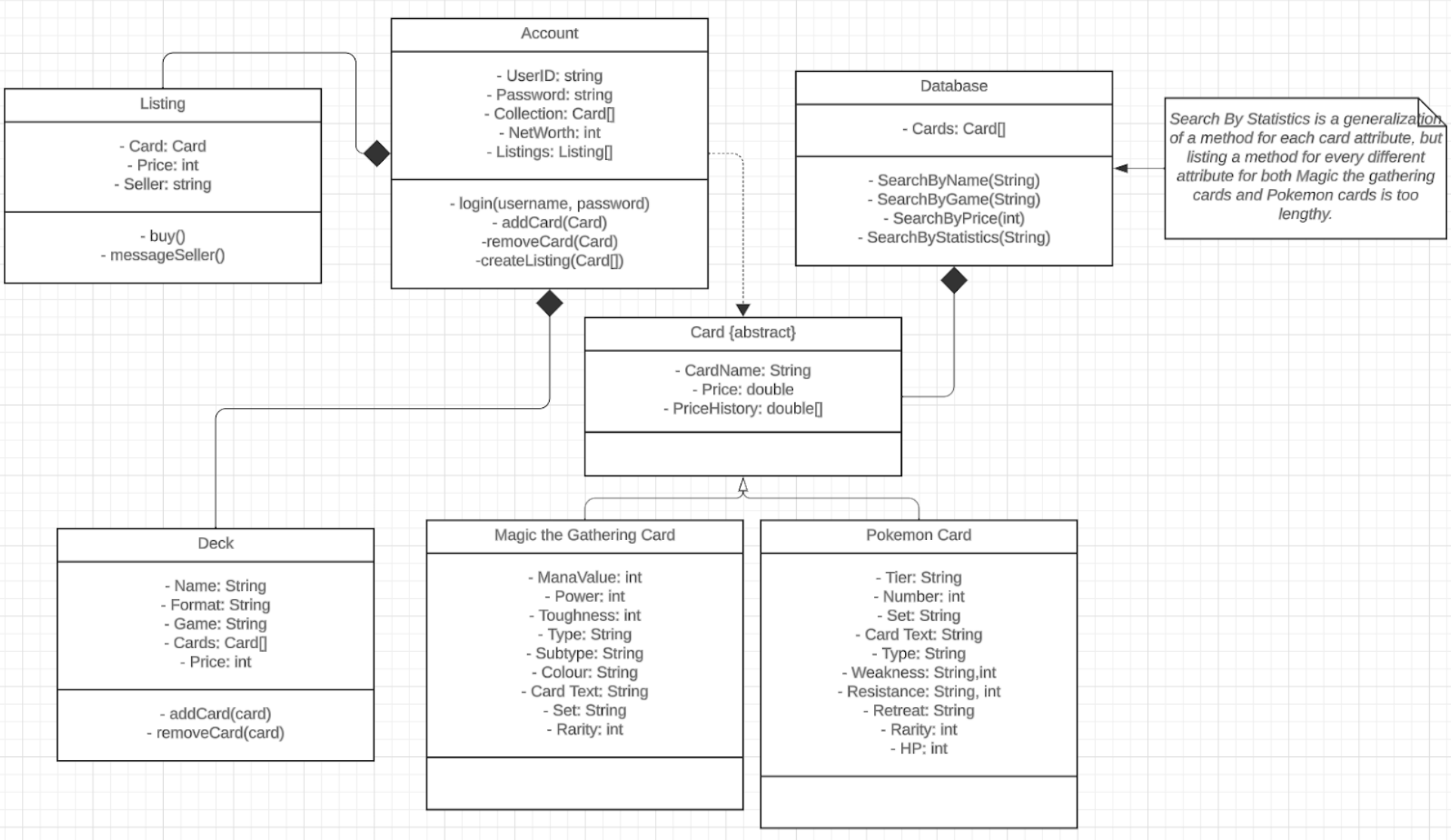




SEQUENCE DIAGRAMS (II)



CLASS DIAGRAM



MVC MODEL COMPONENT

CARD MODEL
Card name
Card ID
Card Type
Card Statistics

COLLECTION MODEL
Cards i. owned card list
Decks i. deck name

USER MODEL
User Information i. User ID ii. Login Credentials

TRADE MODEL
Trade Transaction i. Trade ID ii, Initiator iii. Cards Traded

MARKET MODEL
Card ID
Price of Card
Listing Date
Seller Information
Quantity

MVC VIEW COMPONENT

CARD VIEW
View list of cards owned
View details of cards

INVENTORY VIEW
View decks
Manage deck-related actions (add/delete)
Put cards on market

USER PROFILE VIEW
View user details
Display owned cards

TRADE VIEW
View trade requests
View trade history
Interact with trade options

MARKETPLACE VIEW
Search for cards
View available cards for purchase
View cards listed by user

MVC CONTROLLER COMPONENT

CARD CONTROLLER

Handle interactions with card management

INVENTORY CONTROLLER

Manage actions related to decks

i. Creation
ii. Deletion
iii. Modification

USER CONTROLLER

Handle User Data

i. Registration
ii. Updates
iii. Deletion
iv. Authentication

TRADE CONTROLLER

Manage Trade Actions

i. Initiate Trade
ii. Accept Trade
iii. Reject Trade
iv. Register Trade

MARKETPLACE CONTROLLER

Manage Listings

i. Buying Cards
ii. Selling Cards
iii. Editing Listing

THANK YOU!