TERRARIA EQUIPMENT DATABASE

IT&C 350 DATABASE DESIGN PROJECT

WINTER 2024

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PROJECT OVERVIEW

PROJECT OBJECTIVE STATEMENT

Create an equipment preparation system for Terraria players that enables users to discover and create the best combination of equipment for their current in-game situation.

PROJECT STAKEHOLDERS

Who are the Stakeholders?

- Terraria players.
- Our creation team.

Who is going to be maintaining the site?

- We, the aforementioned four horsemen of this project, are the maintainers of the site.

A shortened interview with Mr. Sam, a Terraria expert.

Q: Why do you like Terraria?

A: There's lots of bosses and lot of fun equipment. You can kill things with yo-yo's!

Q: What is the hardest thing about Terraria?

A: Acquiring stuff and getting ready for fights. Need to understand how to get ready.

Q: What would you envision an app of this type could do for you?

A: It could help me understand my options at where I am in the game.

Q: Limitations of current systems?

A: Terraria wiki exists, but you have to browse the wiki. Stats aren't shown in a concise form.

Q: What features would you like to see?

A: Understand boss difficulties, and crafting trees.

APP REQUIREMENTS

FUNCTIONAL REQUIREMENTS

Home Page Functionality

- After login, users can see a list of all Terraria items available for them to acquire and use.
- The list of available items changes based on filters specified by the user. With these filters:
  - Users can record what bosses their character has defeated so far.
  - Users can record whether they have entered hard-mode or not.
- Users can view individual items with statistics about each item.
- Users can select an item to add to their list of equipped items.
- Users can view items by the categories they belong to.

Character Page Functionality

- Users can see the current character statistics with the items they have equipped.
- Users can unequip items that were equipped from the Home Page.

User page Functionality

- Users can create, select, and delete Terraria characters.
- Users can change their password.
- Users can logout.

NON-FUNCTIONAL REQUIREMENTS

Security

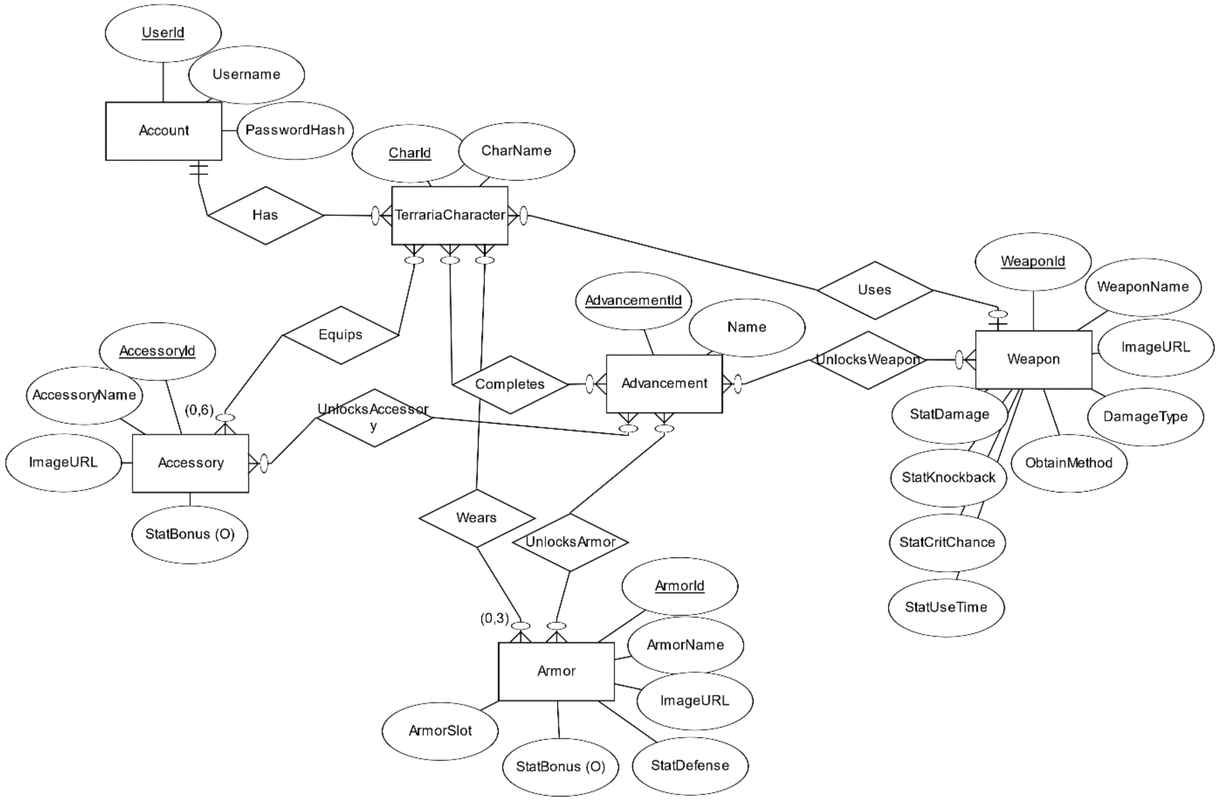
- Website protects against XSS.
- Website inputs will protect against SQL injections.

Availability

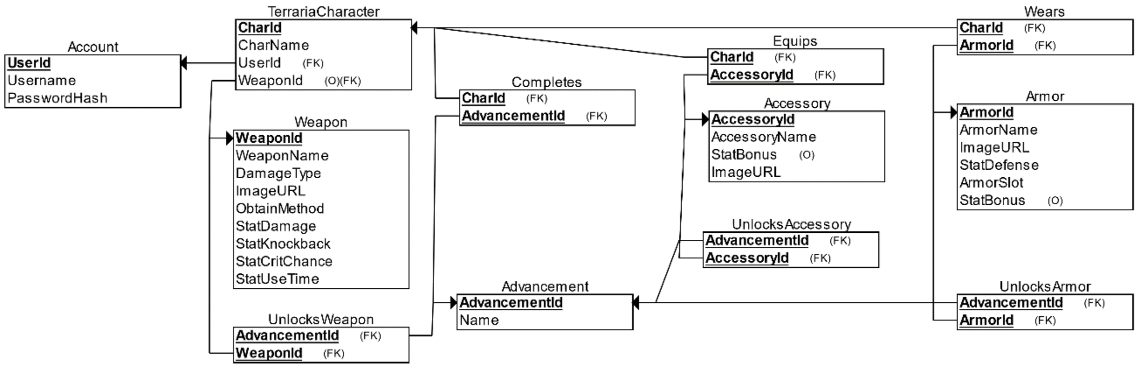
- 95% uptime and availability.

DATABASE REQUIREMENTS

ER DIAGRAM IMAGES



SCHEMA DIAGRAM



BUSINESS RULES

- Users can create up to 25 characters.
- Newly created characters have no items assigned to them.
- Characters can equip, at maximum, 1 weapon, 3 armor pieces (head, chest plate, boots), and 6 pieces of equipment.
- Users can have zero or one characters selected for viewing relevant and equipped items.
- The list of items cannot be changed from the front end and will be managed directly in the database by site administrators when needed.
- Usernames can only contain letters and numbers (no special characters).
- Attempts to equip more items than is permitted will not replace prior equipped items (operation will produce an error instead).
- If a user has no character selected, they are unable to equip any items.
- Users can have zero or more advancements selected when filtering data output.

RELATIONAL SCHEMA TYPES

Account:

Username (varchar)

PasswordHash (varchar)

UserID (serial)

TerrariaCharacter:

CharID (serial)

CharName (varchar)

UserId (bigint)

WeaponId (bigint)

Weapon:

WeaponID (serial)

WeaponName (varchar)

ImageURL (varchar)

StatDamage (varchar)

DamageType (varchar)

StatKnockback (varchar)

StatCritChance (varchar)

StatUseTime(varchar)

Armor:

ArmorID (serial)

ArmorName (varchar)

ImageURL (varchar)

StatDefense (int)

StatBonus (varchar)

ArmorSlot (int)

Accessory:

AccessoryId (serial)

AccesoryName (varchar)

StatBonus (varchar)

ImageURL (varchar)

Advancement:

Name (varchar)

AdvancementID (serial)

UnlocksWeapon

AdvancementId (bigint)

AccessoryId (bigint)

UnlocksAccessory

AdvancementId (bigint)

AccessoryId (bigint)

UnlocksArmor

AdvancementId (bigint)

ArmorId (bigint)

Completes

CharId (bigint)

AdvancementId (bigint)

Equips

CharId (bigint)

AccessoryId (bigint)

Wears

Charid (bigint)

ArmorId (bigint)

DATABASE DOCUMENTATION

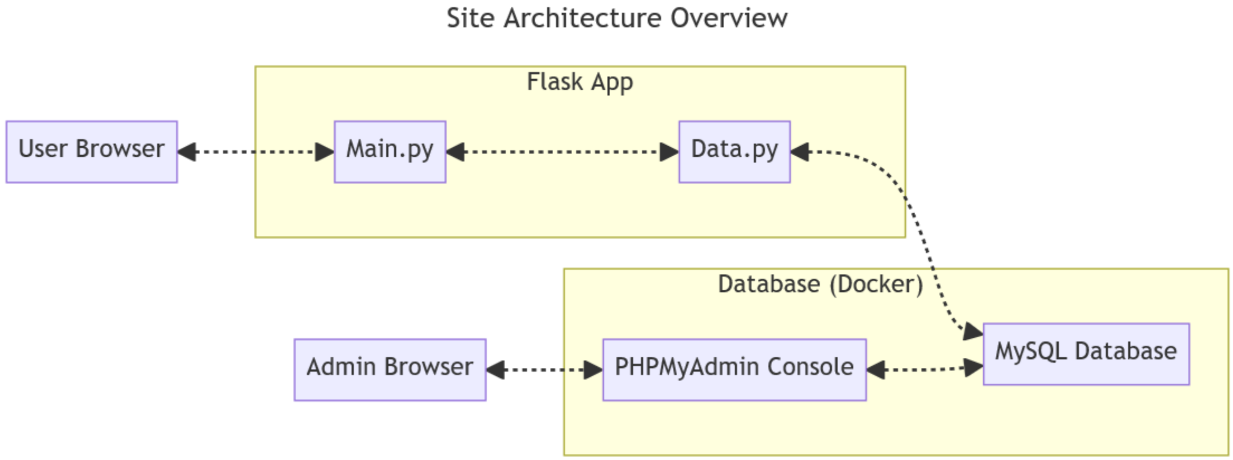


Figure 1 – Site Architecture Diagram

GITHUB ACCESS

Scripts for creating, populating, and clearing the database are found on the GitHub repository under the Milestone 3 folder. The GitHub repository is accessible at https://github.com/suspenceb/TerrariaCraftingRepo.

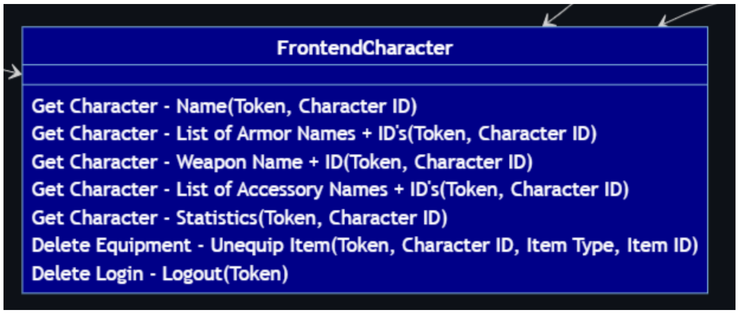
ACCESSING THE DATABASE

1. Connect to the IT&C VPN
2. Open a command prompt and SSH into the server with:
3. ssh username@172.16.32.12
4. Navigate to our Docker folder in /docker.
5. Turn on the Database and PHPMyAdmin with docker compose up -d (It can be turned off with docker compose down) (Information about the current images can be seen with docker ps)
6. Connect to PHPMyAdmin with http://172.16.32.12:8000 in your browser.

Note: For convenience, the domain db.beerefamily.org has been registered to point to 172.16.32.12 and can be used in place of the IP address.

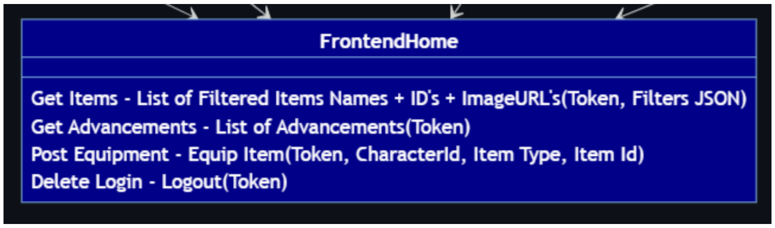
"DATA FOR PAGES OR SOMETHING" (JORDAN)

The following screenshots will display what data is needed in each screen taken from a mermaid diagram. All view statements are included on the github.



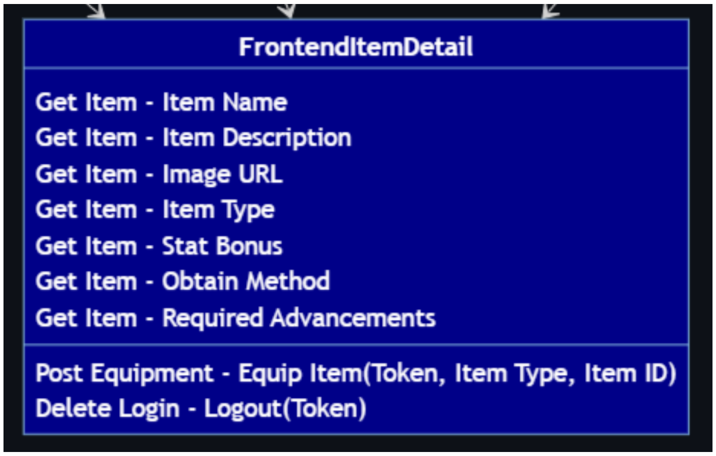
FrontendCharacter

Get Character - Name(Token, Character ID)
Get Character - List of Armor Names + ID's(Token, Character ID)
Get Character - Weapon Name + ID(Token, Character ID)
Get Character - List of Accessory Names + ID's(Token, Character ID)
Get Character - Statistics(Token, Character ID)
Delete Equipment - Unequip Item(Token, Character ID, Item Type, Item ID)
Delete Login - Logout(Token)



FrontendHome

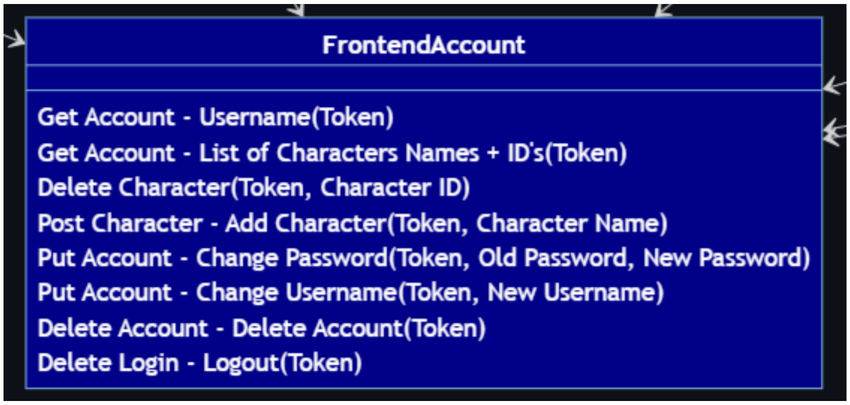
Get Items - List of Filtered Items Names + ID's + ImageURL's(Token, Filters JSON)
Get Advancements - List of Advancements(Token)
Post Equipment - Equip Item(Token, CharacterId, Item Type, Item Id)
Delete Login - Logout(Token)



FrontendItemDetail

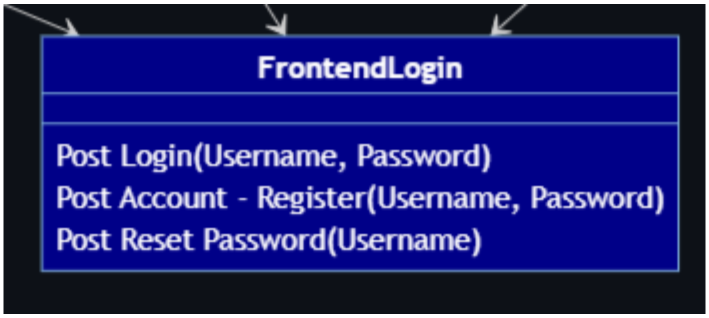
Get Item - Item Name
Get Item - Item Description
Get Item - Image URL
Get Item - Item Type
Get Item - Stat Bonus
Get Item - Obtain Method
Get Item - Required Advancements

Post Equipment - Equip Item(Token, Item Type, Item ID)
Delete Login - Logout(Token)



FrontendAccount

Get Account - Username(Token)
Get Account - List of Characters Names + ID's(Token)
Delete Character(Token, Character ID)
Post Character - Add Character(Token, Character Name)
Put Account - Change Password(Token, Old Password, New Password)
Put Account - Change Username(Token, New Username)
Delete Account - Delete Account(Token)
Delete Login - Logout(Token)



FrontendLogin

Post Login(Username, Password)
Post Account - Register(Username, Password)
Post Reset Password(Username)

API DOCUMENTATION

As depicted in Figure 1 – Site Architecture Diagram, our design's API uses a file titled "data.py" to provide a programming interface for communicating with the database. This interface is primarily utilized by "main.py" to satisfy the requests of the user.

Here is a list of application endpoints with brief descriptions for each endpoint. Additional details can be found by examining the comments provided in "data.py" itself.

App Endpoint	**Description**
post_login	Given a username and password, logs in a user, returning a session token or 'None' if no user is found.
delete_login	Given a session token, removes user from active sessions.
get_loggedin_user	Given a session token, gets the corresponding UserId and Username.
update_password	Hashes the provided password and stores it for the given UserId.
get_user_characters	Given a UserId, gets a list of characters associated with that user.
add_character	Creates a new TerrariaCharacter with provided UserId and charName
delete_character	Deletes the TerrariaCharacter corresponding to the provided charId
get_items	Gets a list of items based on a provided list of advancements.
get_advancements	Gets a list of all the advancements in the database
post_equipment	Equips a given item to a given character
get_character	Given a charId, gets the corresponding character
get_characters	Same as "get_user_characters"
get_armor	Given an armorId, gets the corresponding armor item
get_character_armor	Gets all armorId's associated with a characterId
get_equips	Gets all the accessoryId's associated with a characterId
get_accessories	Given an accessoryId, gets the corresponding accessory item
remove_armor	Unequips an armor piece from a given character
remove_accessory	Unequips an accessory from a given character
get_weapon	Given a weaponId, gets the corresponding weapon item
get_character_weapon	Gets the weaponId of the weapon currently equipped to a given character
remove_weapon	Uniquips a weapon from a given character
post_register	Registers a new user in the database, storing username and password

FRONT-END DOCUMENTATION

As depicted in Figure 1 – Site Architecture Diagram, our design's Front-end primarily uses a file titled "main.py" to prepare the site pages requested by a user. This file receives requests from the user and satisfies them by using internal logic and making calls to endpoints in "data.py".

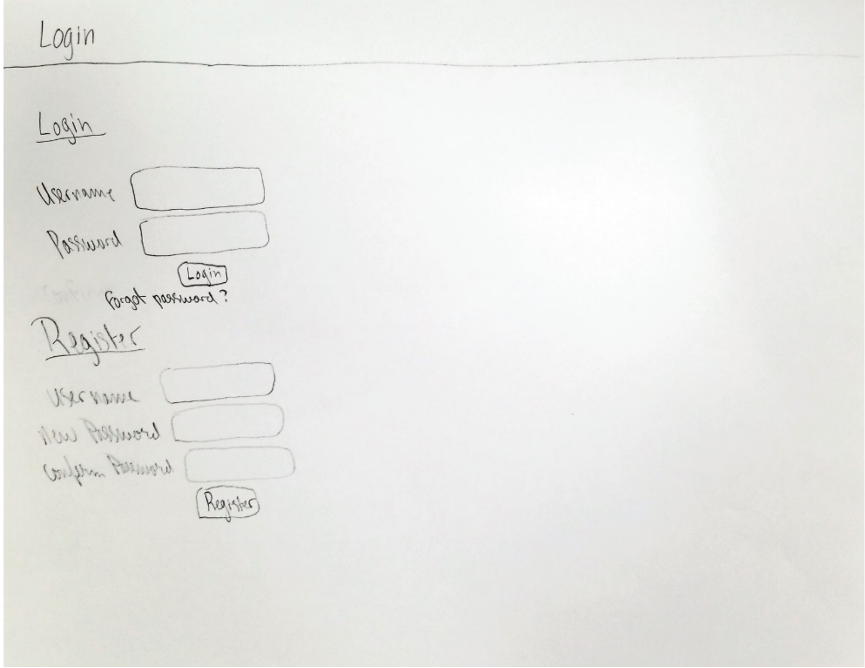
Here is a list of user-facing endpoints with brief descriptions for each endpoint:

User Endpoint	Description
"/favicon.ico"	Provides the site icon.
"/login"	Renders login screen and handles login attempts.
"/"	Renders Home screen, showing items based on user-selected filters
"/equipItem"	Handles requests from the Home screen to equip items
"/account"	Renders Account screen and handles requests to modify characters and the user's account
"/logout"	Logs the user out of the site
"/character"	Renders the Character screen, computes statistics, and handles requests to remove items
"/register"	Renders the user registration screen and handles registration requests

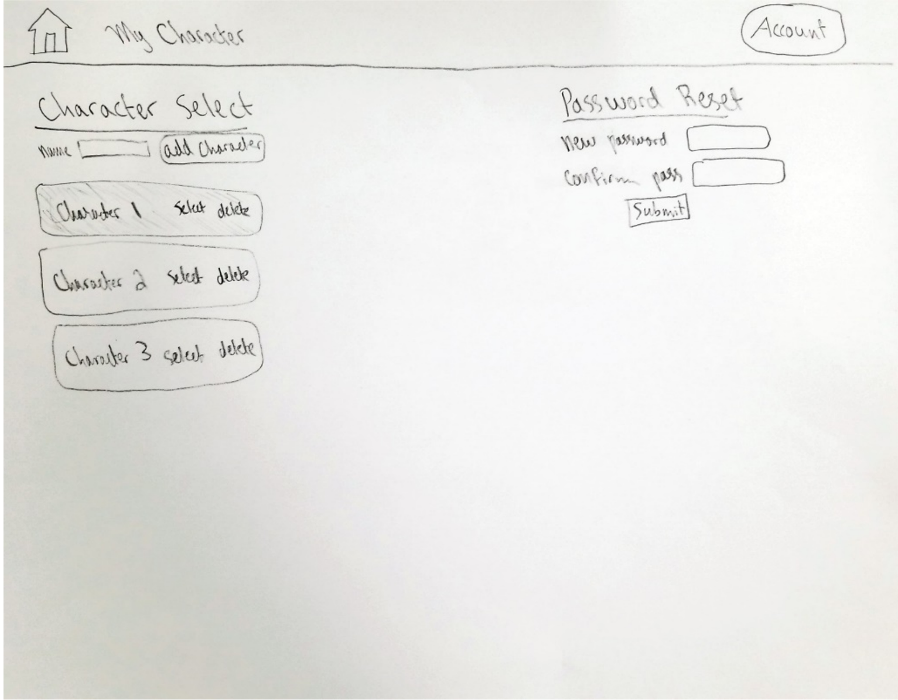
INSTRUCTIONS FOR DEPLOYING COMPLETED PROJECT

The code for our completed project can be accessed on the GitHub. Instructions for deploying our project can be found in Website>README.md.

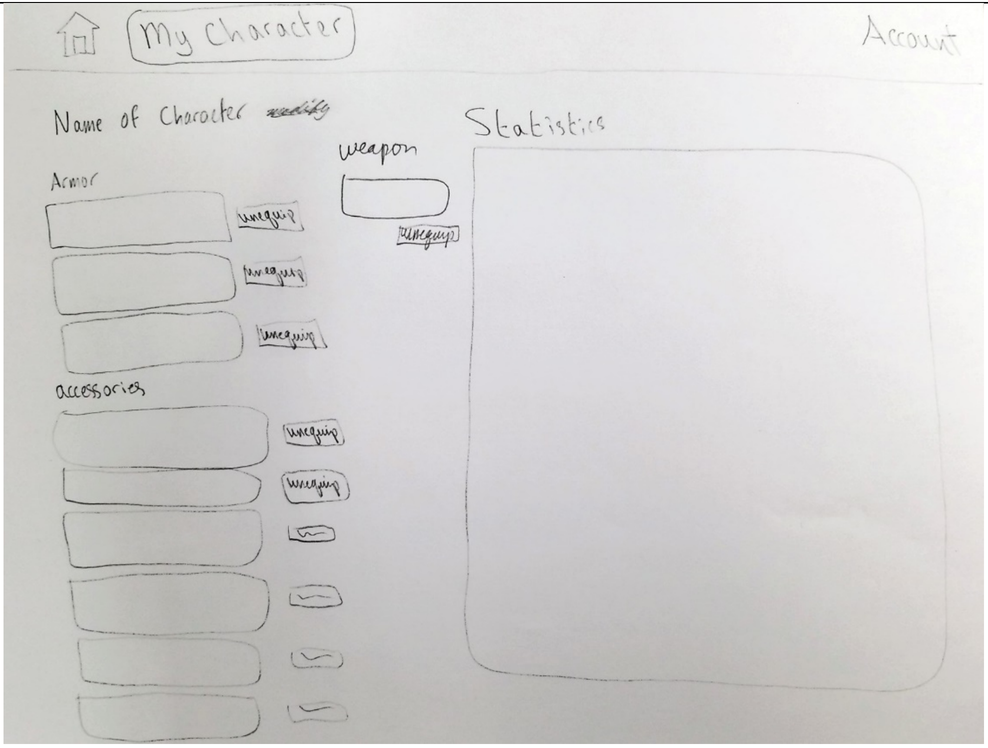
APPENDIX 1: LOW-FIDELITY PAPER PROTOTYPES



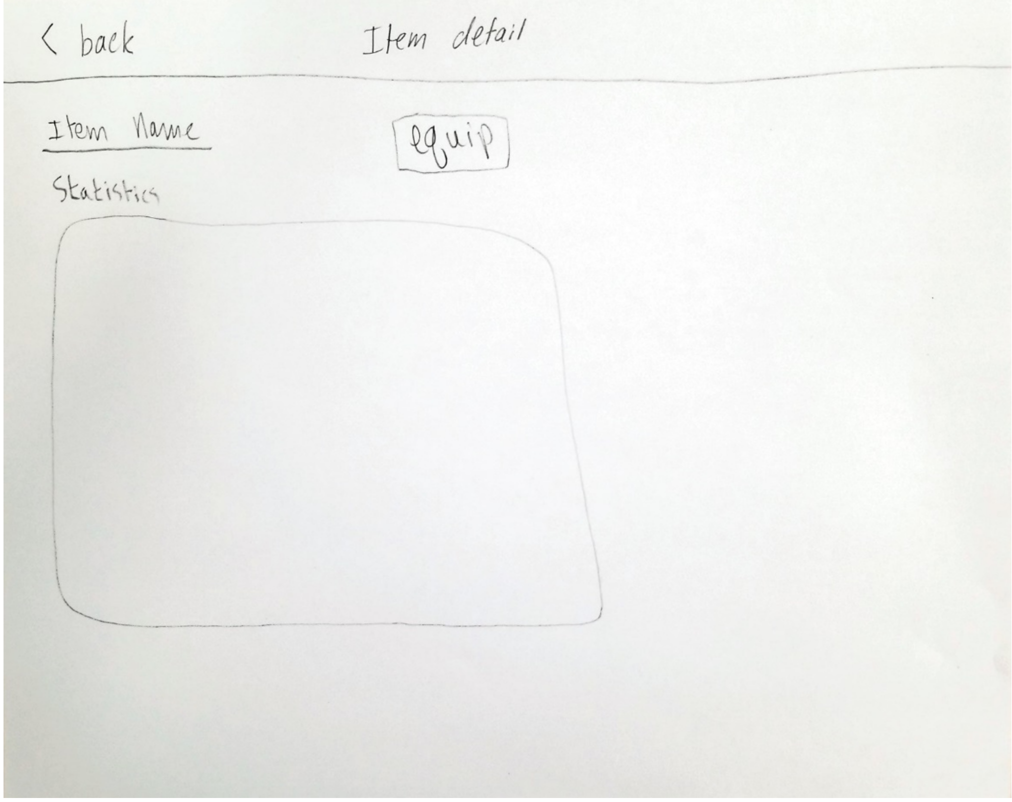
Login Screen



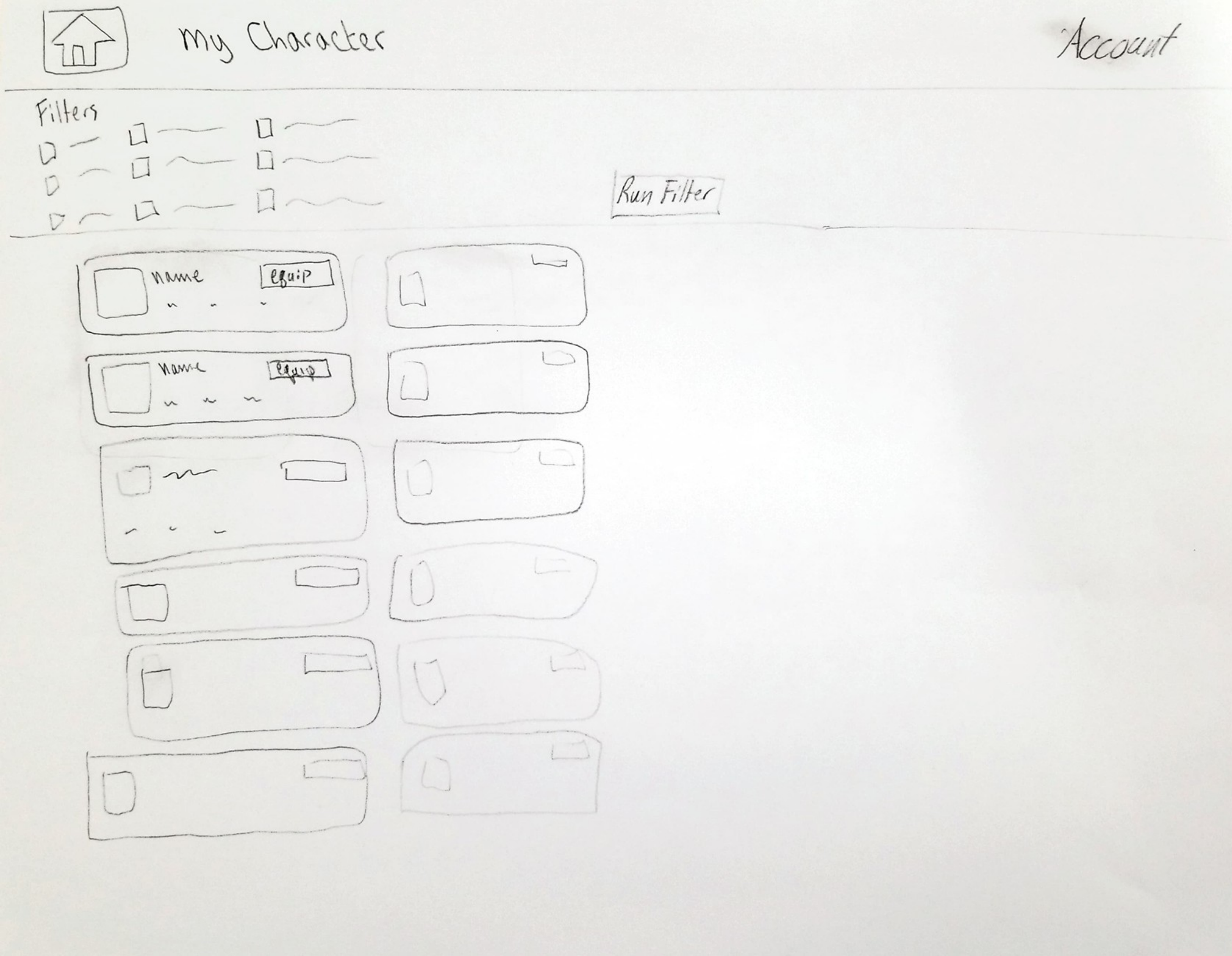
Account controls screen



Character Information Screen



Item Details Screen



Home page showing available items