System Requirements Statement (SRS) -

BarterBrains

1. Introduction

BarterBrains is a web-based platform enabling users to learn new skills, teach skills they already possess, or swap skills in a fair value-credit system. The platform eliminates monetary exchange and promotes a structured knowledge-sharing environment through technology and real user interactions.

The system introduces two major modes:

1. Skill Swap

2. Teach-to-Learn

The platform stores session details such as date, time, duration, interaction type, and feedback for fair credit distribution.

2. Functional Requirements

The BarterBrain System has four main modules, divided into several processes as described below.

No.	Module	Req. ID
2.1	User Module	
2.1.1	F1	User Registration
2.1.2	F2	User Login
2.1.3	F3	User Profile Management
2.1.4	F4	Skill Selection
2.1.5	F5	Skill Filters
2.1.6	F6	Skill Matching
2.1.7	F7	Chat System
2.1.8	F8	Session Scheduling
2.1.9	F9	Session Tracking
2.1.10	F10	Session Feedback
2.2	Admin Module	
2.2.1	F11	Skill Domain Management
2.2.2	F12	Skill Points Assignment
2.2.3	F13	User Management
2.2.4	F14	Session Logs Monitoring

2.1 User Module

The User Module is responsible for managing all interactions a normal user performs on the BarterBrain platform, including registration, authentication, skill selection, matching, communication, session management, and feedback.

It includes the following components:

2.1.1.User Registration (FR-U1)

Description

This component allows new users to create an account on the platform.

Detailed Functionality

- User enters **Name, Email, Password** during registration.
- The system checks whether the email is **unique**.
- Password is stored securely using encryption .
- After successful registration, an empty profile is created for the user.
- User can proceed to login.

2.1.2. User Login (FR-U2)

Description

Allows existing users to securely access the system.

Detailed Functionality

- User enters email and password.
- System authenticates credentials.
- If correct, user is logged in and given access according to their role (User/Admin).
- Invalid login attempts are rejected with an appropriate message.

2.1.3. User Profile Management (FR-U3)

Description

User can manage all personal and skill-related details.

Detailed Functionality

User can update:

- Name and basic personal details
- Skills they can **teach** (selected from admin-defined list)
- Skills they want to **learn**
- Optional certifications or proof for skills
- Availability times or days
- View and track their credit points

The profile information is used in the matching and filter system.

2.1.4. Skill Selection (FR-U4)

Description

Allows users to select their skills from structured categories.

Detailed Functionality

- Skills are categorized by **Fields** (e.g., Technical, Music, Photography).
- Under each field, multiple **Skills** exist (e.g., Java, Guitar, Cooking).
- User must select:
    - At least one skill they can **teach**
    - At least one skill they want to **learn** (optional for swapping)
- Users can update their skill selection anytime.

Admin manages the field/skill list that users can choose from.

2.1.5. Skill Filters (FR-U5)

Description

Determines the mode in which the user wants to interact with others using filters.

Detailed Functionality

There are **two filters**:

1. **I Want to Learn**
2. **I Can Teach**

Rules:

- Selecting **both** filters → system enters **SWAP MODE**.
- Selecting only **I Want to Learn** → system enters **LEARNING MODE**.
- Selecting only **I Can Teach** → *not allowed* because it does not make sense for learners.
- Filters help the matching engine display the correct set of users.

2.1.6. Skill Matching (FR-U6)

Description

Finds and displays users based on their selected skills and filters.

Detailed Functionality

- In **Learning Mode**:
    - System shows all available teachers who teach that skill.
- In **Swap Mode**:
    - System shows users whose teach and learn skills match with the user's preferences.

Each matched user is displayed with:

- Name
- Skill offered
- Skill required (for swapping)
- Credit requirement
- Availability
- Option to chat

The matching is dynamic and updates based on filters and user profile.

2.1.7. Chat System (FR-U7)

Description

Allows matched users to communicate directly.

Detailed Functionality

- Users send text messages through system chat.
- Chat helps users coordinate:
    - Session timings
    - Session link (Zoom/Meet/Discord)
    - Clarifications about learning
- Chat history remains stored for future reference.
- System does not monitor chat content—only stores metadata.

2.1.8. Session Scheduling (FR-U8)

Description

Records the structured details of a session before it begins.

Detailed Functionality

Users must enter:

- Session Mode: **Swap / Learning**
- Skill being taught
- Skill being learned (in swap)
- Session date
- Start time
- Expected duration
- Number of learners (in teacher mode)

The system stores this information to:

- Track completion time
- Trigger feedback
- Calculate credit points

2.1.9. Session Tracking (FR-U9)

Description

The system monitors the planned session time.

Detailed Functionality

- Once the session is scheduled, the system notes the expected ending time.
- When the duration expires, the system automatically marks the session as Completed According to Time.
- The learner is notified to verify if the session was actually completed.
- Session details (teacher, learner(s), duration) are stored in logs.

2.1.10. Session Feedback & Confirmation (FR-U10)

Description

Final step in the learning process that confirms session legitimacy.

Detailed Functionality

After session end time:

- Learner gets a popup or notification:
  - Was the session completed? (Yes/No)
  - Give rating (optional)
  - Give feedback comment (optional)

Credits are updated only if:

- Learner selects **YES – Session completed**

If learner selects **NO**:

- Session is marked incomplete
- No credits are exchanged
- Admin can review if needed

2.2 Admin Module

The Admin Module provides tools for managing the entire BarterBrain platform, including skill domains, credit values, users, and session oversight. Admins ensure that the platform maintains fairness, structure, and quality of user interactions.

Below are the components of the Admin Module explained in detail:

2.2.1. Skill Domain Management (FR-A1)

Description

This component allows the admin to define the skill structure of the platform, ensuring all skills follow an organized hierarchy.

Detailed Functionality

Admin can manage two layers:

(a) Fields / Categories

Examples:

- Technical
- Music
- Fitness
- Culinary
- Art
- Academics

Admin can:

- Add new fields
- Edit existing fields
- Delete unused fields

(b) Skills under Each Field

Examples under Technical:

- Java
- Python
- Web Development

Admin can:

- Add new skills to a field
- Edit skill names
- Delete skills

Reason for Admin Control:
To avoid users manually entering random skills which break platform structure.

2.2.2 Skill Credit Point Assignment (FR-A2)

Description

Admin defines the credit points assigned to each skill based on complexity, difficulty, and estimated learning effort.

Detailed Functionality

- Admin assigns a **credit value** to every skill (e.g., Guitar – 40 points, Java – 70 points).
- Admin can update credit values anytime.
- System automatically uses these credit values during:
    - Teaching Mode (credit earned per learner)
    - Learning Mode (credit spent by learner)
    - Swap Mode (credit earned based on skill taught)

Why Admin Sets Points?

To ensure:

- Fairness
- No manipulation by users
- Standardized skill economy

2.2.3 User Management (FR-A3)

Description

Admin oversees all platform users and ensures that the learning ecosystem remains safe and functional.

Detailed Functionality

Admin can:

(a) View Users

- List all users
- Search users by name/email
- View user profile details, skills, and credit points

(b) Manage User Access

- Block/Deactivate users engaging in misuse
- Reactivate accounts if necessary

(c) Reset Credits (Rare use)

Admin may adjust credits if:

- Fraud is detected
- Session abuse reported
- Error in credit calculation

(d) Monitor Reports

If learners report a teacher/session, admin can:

- View report details
- Take corrective action

2.2.4 Session Logs Monitoring (FR-A4)

Description

Admin can view all completed or scheduled sessions to maintain transparency and safety.
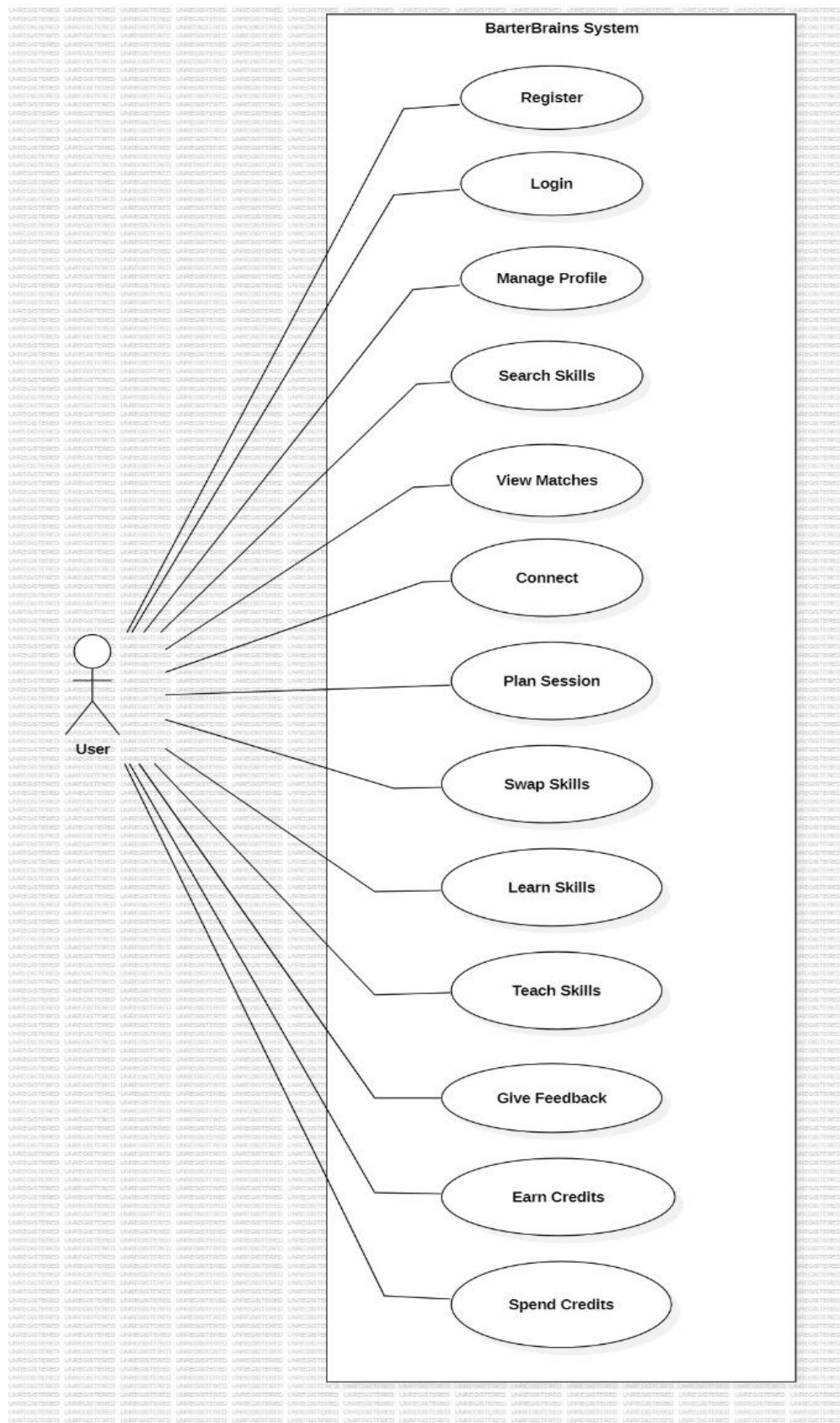
Detailed Functionality

Admin can view:

- Session type (Swap or Learn)
- Teacher name
- Learner(s) name(s)
- Skill taught and learned
- Duration
- Scheduled date and time
- Earned and spent credits
- Learner feedback

Admin also ensures:

- System is not being misused
- Sessions are fairly conducted
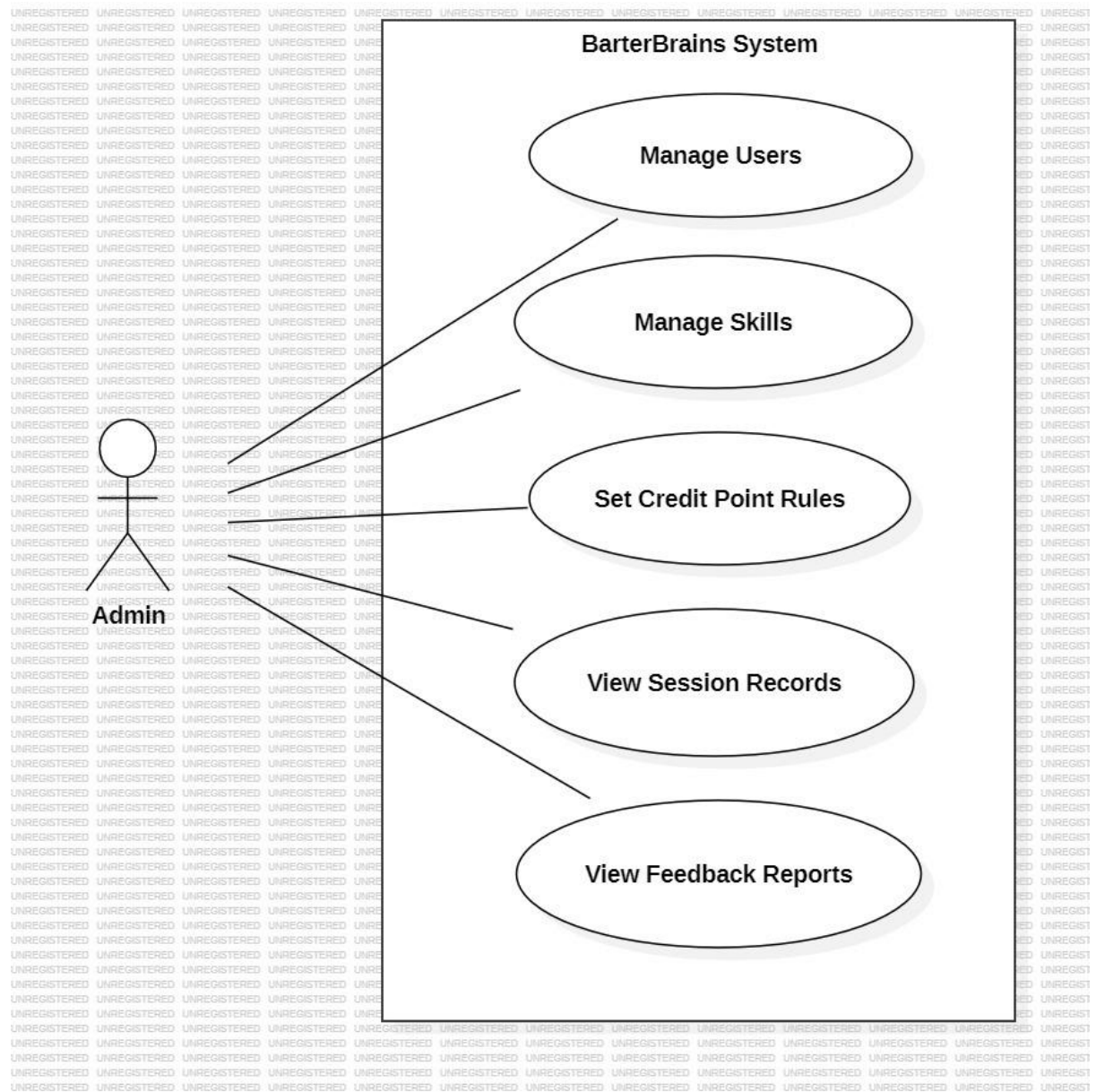- No fake session confirmations

Benefits

- Ensures trust worthiness of platform
- Helps audit disputes
- Maintains record for analytics and system improvement

User**:**

1. In User use case diagram User is the Actor.

2. User can handle following use cases:

    a. Register

    b. Login

    c. Manage Profile

    d. Search Skill

    e. View Matches

    f. Connect

    g. Plan Session

    h. Swap Skills

    i. Learn Skills

    j. Teach Skill

    k. Give Feedback

    l. Earn Credits

    m. Spend Credits

Admin:

1. In Admin use case diagram Admin is the Actor.
2. Admin can handle following use cases:

     a. Manage Users

     b. Manage Skills

     c. Set Credit Point Rules

     d. View Session Records

     e. View Feedback Report