

Final Report for the "Desire" Application

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1. Introduction

The "Desire" application is an innovative idea **inspired by Black Mirror S03E01**. It has **been** reimagined as a **social rating-based platform** rather than a traditional "like"-driven network. Instead of focusing on likes or follower counts, Desire emphasizes **user interactions through ratings and curated feeds**.

The app introduces a unique way of engaging with content, where users rate posts instead of liking them. The core concept revolves around **social scoring and selective content curation**, allowing users to determine which posts appear in their feed through an **adjustable interaction threshold**. Unlike traditional social platforms, users can also categorize others into **SameDesire** (preferred users) or **Blacklist** (hidden users) to personalize their experience further.

Throughout development, we tackled multiple technical and design challenges, particularly those related to **Firestore integration, user activity tracking, dynamic data handling (such as comments and ratings), and feed customization**. This report provides a **comprehensive overview** of the app's features, encountered problems, and implemented solutions.

2. Core Functionalities

2.1 User Authentication

Users can **sign up and log in** using **Firebase Authentication**. The system ensures security while allowing each user to manage their account seamlessly. The authentication process is designed to be simple and secure, leveraging **email and password-based authentication** with the potential for social login integration in the future.

2.2 Profile Customization

Users can personalize their profiles by:

- **Uploading and changing their profile picture.**
- **Editing their bio to provide more context about themselves.**
- **Viewing their own posts, ratings, and interactions.**
- **Adjusting who appears in their feed through SameDesire and Blacklist settings.**

The profile section is designed to give users control over how they present themselves on the platform and provides an overview of their engagement history.

2.3 Posting System

Users can create posts with the following attributes:

- **An image.**
- **A detailed description.**
- **A desire category (context for the post).**

All posts appear in the **Explore Feed**, ensuring visibility before being categorized based on interactions.

2.4 User Categorization (SameDesire & Blacklist)

Instead of relying on **algorithmic categorization**, users have the ability to **manually categorize other users**, ensuring that their feed aligns with their preferences.

2.4.1 SameDesire Users

Users can add others to their **SameDesire list**, prioritizing posts from these users in their **Home Feed**. This feature allows users to tailor their feed towards content they find more engaging.

2.4.2 Blacklisted Users

Users can **blacklist other users**, meaning their posts will **no longer appear in the Home Feed**. Blacklisting ensures that unwanted content is hidden, enhancing the overall browsing experience.

2.5 Rating System (Instead of Liking)

Posts are evaluated using a **rating system** rather than a traditional "like" function. Ratings determine:

- **How posts rank in the Home Feed.**
- **Whether posts continue appearing in the Explore Feed for a given user.**
- **When a post is categorized as "Rated Desire" (posts the user has already interacted with).**

Once a user **rates a post**, it **moves to the Rated Posts section**, preventing duplicate content from appearing in the feed.

2.6 Home and Explore Feed

- **Home Feed:** Displays posts from **SameDesire users** while hiding blacklisted users' posts. The posts shown depend on previous engagement and rating scores.
- **Explore Feed:** Displays **all available posts** regardless of user categorization.
- **Users must interact with posts to see new ones in the Home and Explore sections.**

2.7 Rated Posts Section

Once a user **rates a post**, it is **removed from the Home and Explore Feeds** and added to the **Rated Posts section**, ensuring a **fresh browsing experience** and preventing redundant interactions.

2.8 Commenting System

Users can comment on posts, and each comment is displayed with the **commenter's profile picture and username**, dynamically fetched based on the user ID.

2.9 Adjusting the Home Feed in Settings

Users can **control which posts appear in their Home Feed** by adjusting the **minimum average interaction rate** in the settings. This feature allows users to **filter out posts with lower engagement** and tailor their feed based on their preferences.

2.10 Settings

Users can:

- **Change their password securely.**
 - **Adjust interaction rate settings to control Home Feed visibility.**
 - **Manage their SameDesire and Blacklist settings for personalized browsing.**
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3. Challenges & Solutions

3.1 Connecting to Firebase

- **Problem:** Initial integration of Firebase for authentication and data storage posed difficulties due to real-time data handling.
- **Solution:** Optimized Firebase queries and structured the database for **efficient real-time updates**.

3.2 Storing Multi-Value Attributes in Firebase

- **Problem:** Firebase does not allow direct storage of arrays, causing issues with comments, ratings, and user lists.
- **Solution:** Introduced a **placeholder null value** to enable seamless list creation.

3.3 Managing User Interactions (One-to-One Relationships)

- **Problem:** Ensuring that a post was rated only once required complex data structures.
- **Solution:** A dedicated **Ratings node** was introduced, tracking ratings by user ID.

3.4 Tracking User Activity & Home Feed Customization

- **Problem:** Users needed a way to influence which posts appeared in their feed.
- **Solution:** Implemented **SameDesire and Blacklist**, allowing users to personalize content visibility.

3.5 Displaying Comments with User Details

- **Problem:** Comments are displayed as "Unknown User" due to missing profile retrieval.
- **Solution:** Fetched usernames and profile pictures based on **stored user IDs**.

3.6 Post Visibility Control

- **Problem:** Posts were shown repeatedly in Home/Explore feeds.
- **Solution:** Users must **interact with a post before seeing a new one**, preventing content overload.

3.7 Counting Comments Correctly

- **Problem:** The Comment count did not update dynamically.
- **Solution:** Introduced **commentsCount** field, ensuring accurate tracking.

3.8 NFC Implementation (Not Completed)

- **Problem:** NFC integration was planned but not finished.
 - **Solution:** The framework exists but requires additional development.
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4. Running the App in Android Studio

1. **Open the Project in Android Studio** and sync dependencies.
 2. **Run the app** on an emulator or connected device.
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5. Conclusion

The "Desire" app presents a **unique social interaction model**, emphasizing **ratings over likes** and allowing **customized content curation** through user-defined categories. The development journey involved overcoming significant Firebase integration challenges, ensuring **seamless real-time updates**, and refining user experience controls. Future enhancements may include **notification systems, NFC sharing, and privacy settings** to further elevate user engagement.