Software Requirements Analysis
Online Social Media Platform
SM02
Grouup 9

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1 Context Diagram

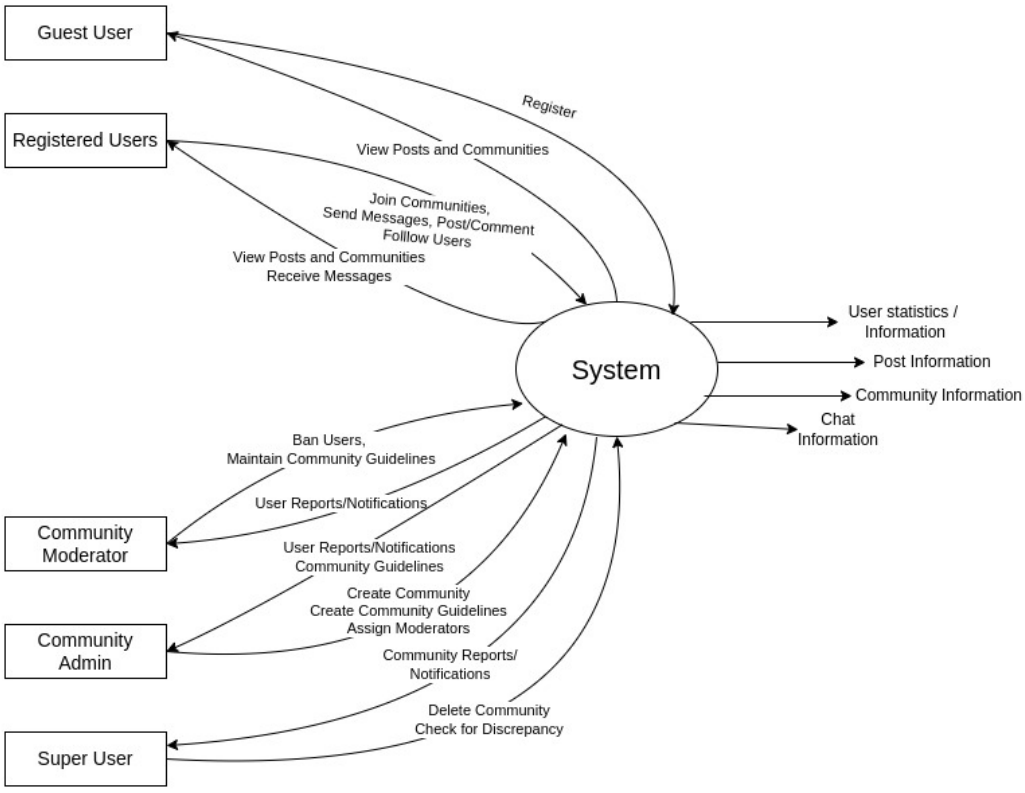

Figure 1: Context Diagram

- **Actors :** There are 5 Roles in this environment.
- **Guest User** interacts with the system by registering and viewing posts and communities
- **Registered User** interacts with the system by joining different communities, sending Messages to other registered users creating posts for communitities, commenting on posts, following users and viewing posts,viewing communities, receiving messages from other users
- **Community Moderators** interact with system by banning users in that community, deleting comments and posts to maintaining community guidelines and receive user reports and notifications
- **Community Admin** interacts with system by creating communities, creating community guidelines, assigning moderators and receives reports and notifications
- **Super User** interacts with the system by Deleting Communities,Checking for Discrepancy and receives community reports and notifications
- **System** provides user statistics, post information, community statistics and chat information

2 Data Flow Diagrams

2.1 DFD Descriptions

Below are two possible DFDs for the system.

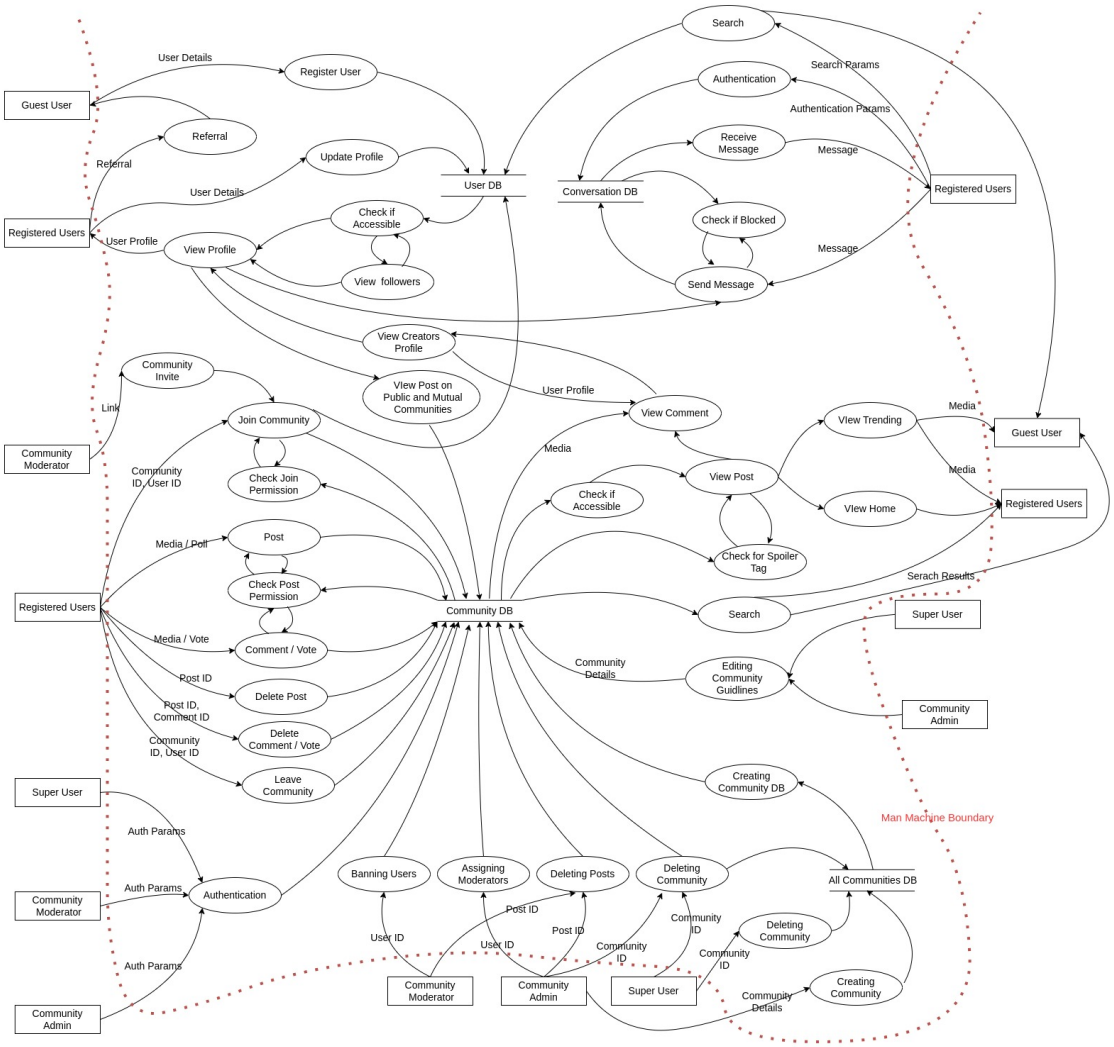

Figure 2: Incorrect DFD

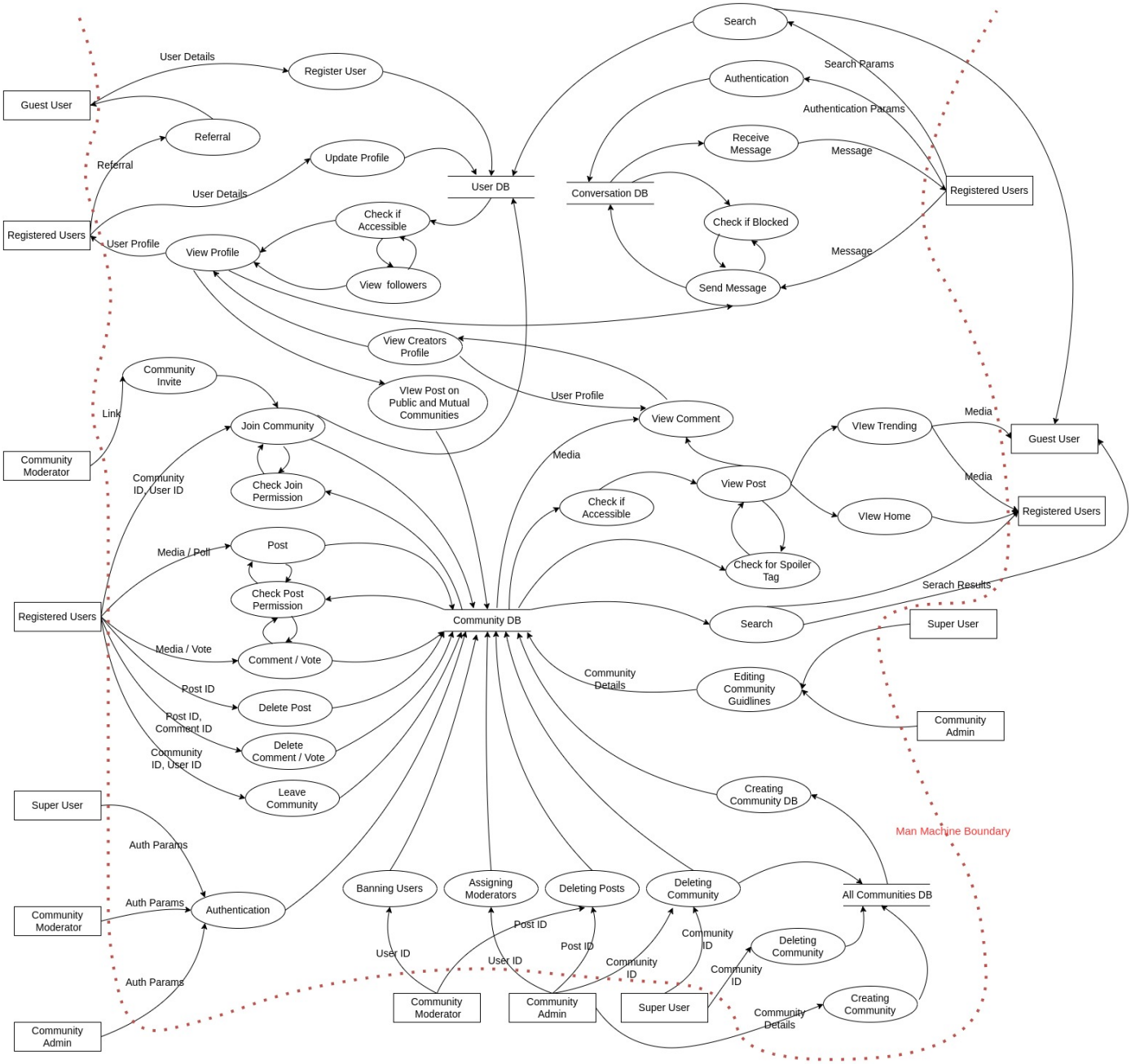

Figure 3: Correct DFD

- The below DFD contains the data flow in the system with a man machine boundary
- The human part DFD contains only the actors in the system and everything else consists in the machine part
- The actors in the system are not exclusive a community moderator is registered user, a community admin is community moderator, a registered user can become a community admin
- The DFD consist of these databases : User Database, Conversation Database and Community Database
- The data flow from registered user occurs in form of authentication, creating posts, commenting, chatting, deleting, viewing the feed with some restriction regarding communities and user profiles
- The data flow from guest user occurs in form registering, viewing trending feed

- The data flow in case of community moderator specifically happens in banning users, inviting people to community, deleting posts and comments
- The data flow from community admin occurs in creating community, assigning moderators, deleting owned community
- The data flow from Super User occurs in deleting communities maintaining community guidelines

2.2 Comparing the two DFDs

- There exist many differences in two DFD discussed earlier and the second DFD is more efficient and reduces redundancy in the system
- The main difference would be that the data flow is not that modular
- Some dataflows are unnecessary or even loopholes in the system like community moderators assgning new community moderators
- The dataflow to check the communites joined by an user requires to search through all the community DB as this is not stored in user database in the first inefficient DFD
- Some functionalities like viewing someones profile by seeing their comment or post is not possible in first inefficient DFD
- Also Functionality like able to view posts on common communities by visiting a user's profile is missing in the first inefficient DFD
- Function for blocking users, viewing community home pages is not available in the first inefficient DFD

3 Function Point Analysis

Function Type	**Simple**	**Medium**	**Complex**
External Input	3	4	6
External Output	4	5	7
External Inquiry	3	4	6
Internal Logical File	7	10	15
External Interface File	5	7	10

Table 1: Function Point Complexity Weights

3.1 UFP Caluculation

- **External Input:** Data or control information that comes from outside the application's boundary.
- **External Output:** Data or control information that is sent to outside the application's boundary.
- **External Inquiry:** Input-output combination, where input causes and immediate output and leaves the data intact.
- **Internal Logical File:** A user identifiable group of logically related data that resides entirely within the application boundary and is maintained through external inputs.

- **External Interface File:** A user identifiable group of logically related data that is used for reference purposes only.

Now we need to count the number of each of these in our system.

- **External Input:**
    1. User Login (Simple)
    2. User Signup (Simple)
    3. Entering Referal Code (Simple)
    4. Create a post (Medium)
    5. Create a comment (Simple)
    6. Create a reply (Simple)
    7. Create a community (Medium)
    8. Edit a post (Medium)
    9. Edit a comment (Simple)
    10. Edit a community settings (Medium)
    11. Assign privileges to a user (Medium)
    12. Assign a moderator to a community (Medium)
    13. Edit user settings (Simple)
    14. Edit user profile (Simple)
    15. Join request to a community (Simple)
    16. Voting in a poll (Simple)
    17. Upvote/Downvote a post/comment (Simple)
    18. Chat request (Simple)
    19. Send a message (Simple)
    20. Revealing a post which has a spoiler tag (Medium)
    21. Accepting reports (Simple)
    22. Accepting unban requests (Simple)
    23. Accepting a join request (Simple)
- **External Output:**
    1. Sending a forgot password email (Simple)
    2. Sending a verification email at the time of signup/change in email id. (Simple)
    3. Sending a referral link. (Simple)
    4. Displaying the user-feed. (Complex)
    5. Displaying the trending page. (Complex)
    6. Displaying a post. (Simple)
    7. Displaying a comment. (Simple)
    8. Displaying reports to admin (Simple)
    9. Displaying unban request to admin (Simple)
- **External Inquiry:**
    1. Displaying the user profile. (Complex)

2. Displaying the community page. (Complex)
3. Displaying search results. (Complex)
4. Displaying the chat page. (Medium)
5. Displaying the user's inbox. (Medium)
6. Displaying all discussions threads. (Complex)
7. Displaying followers/following list. (Medium)
8. Sorting/filtering search results (Complex)
9. Displaying posts in mutual communities (Complex)

- **Internal Logical File:**

1. Generating trending posts (Complex)
2. Generating user feed (Complex)
3. Generating referrals (Simple)
4. Filtering user profiles based on user-privacy settings (Medium)
5. Filtering community posts based on community settings (Complex)
6. Deleting comments when parent post is deleted (Complex)
7. Filtering search results based on community settings. (Medium)
8. Marking posts/comments as deleted when community is deleted (Simple)

- **External Interface File:**

1. Integration with Google OAuth (Complex)
2. Integration with GMail (Medium)

Function Type	**Simple-Count**	**Medium-Count**	**Complex-Count**
External Input	16	7	0
External Output	7	0	2
External Inquiry	0	3	6
Internal Logical File	2	2	4
External Interface File	0	1	1

Table 2: UFP Calculation Table

$$\begin{aligned} \text{UFP} &= 16 \times 3 + 7 \times 4 + 0 \times 6 + 7 \times 4 + 0 \times 5 + 2 \times 7 + 0 \times 3 + 3 \times 4 \quad (1) \\ &\quad + 6 \times 6 + 2 \times 7 + 2 \times 10 + 4 \times 15 + 0 \times 5 + 1 \times 7 + 1 \times 10 \\ &= 277 \quad (2) \end{aligned}$$

3.2 VAF

SR.	General System Characteristics (GSCs)	Degree of Influence
1	Data Communications	4
2	Distributed Data Processing	1
3	Performance	4
4	Heavily Used Configuration	0
5	Transaction Rate	4
6	Online Data Entry	2
7	End-User Efficiency	4
8	Online Update	1
9	Complex Processing	3
10	Reusability	4
11	Installation Ease	0
12	Operational Ease	3
13	Multiple Sites	0
14	Facilitate Change	3

Table 3: Degree of Influence Table

$$\begin{aligned} \text{VAF} &= 0.65 + 0.01 \times \Sigma_{i=1}^{14}(\text{Degree of Influece})_i && (3)\\ &= 0.65 + 0.01 \times (4+1+4+0+4+2+4+1+3+4+0+3+0+3) && (4)\\ &= .99 && (5) \end{aligned}$$

3.3 FP Caluculation

$$\begin{aligned} \text{FP} &= \text{UFP} \times \text{VAF} && (6)\\ &= 277 \times 0.99 && (7)\\ &= 274.23 && (8) \end{aligned}$$

Considering that 1 FP corresponds to 50-60 LOC (Lines of Code), we can estimate the total LOC to be around **14 KLOC to 17 KLOC**.