Software Requirement Analysis (SRA)

Project Title:

Online social networking system

TEAM MEMBERS:

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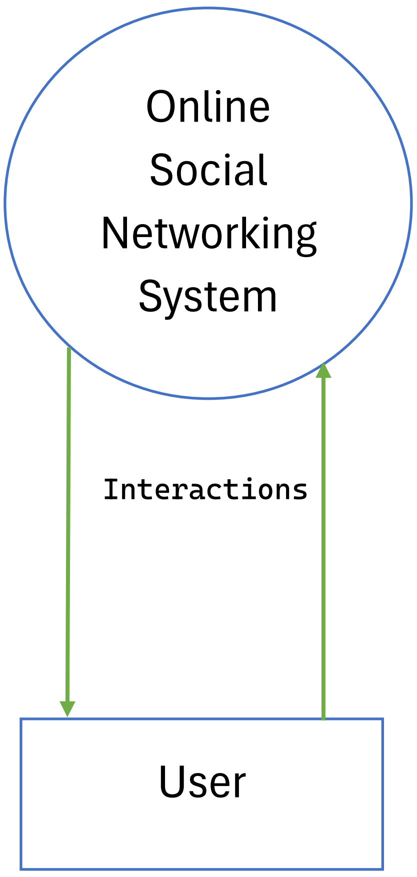
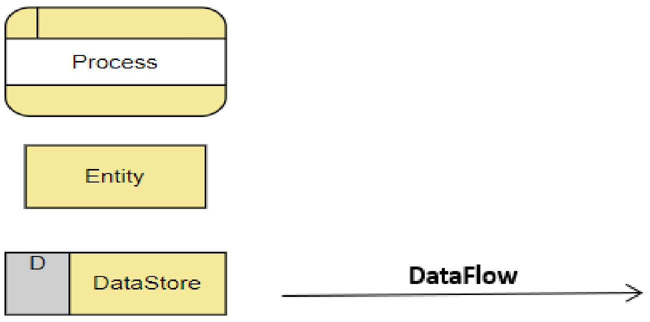
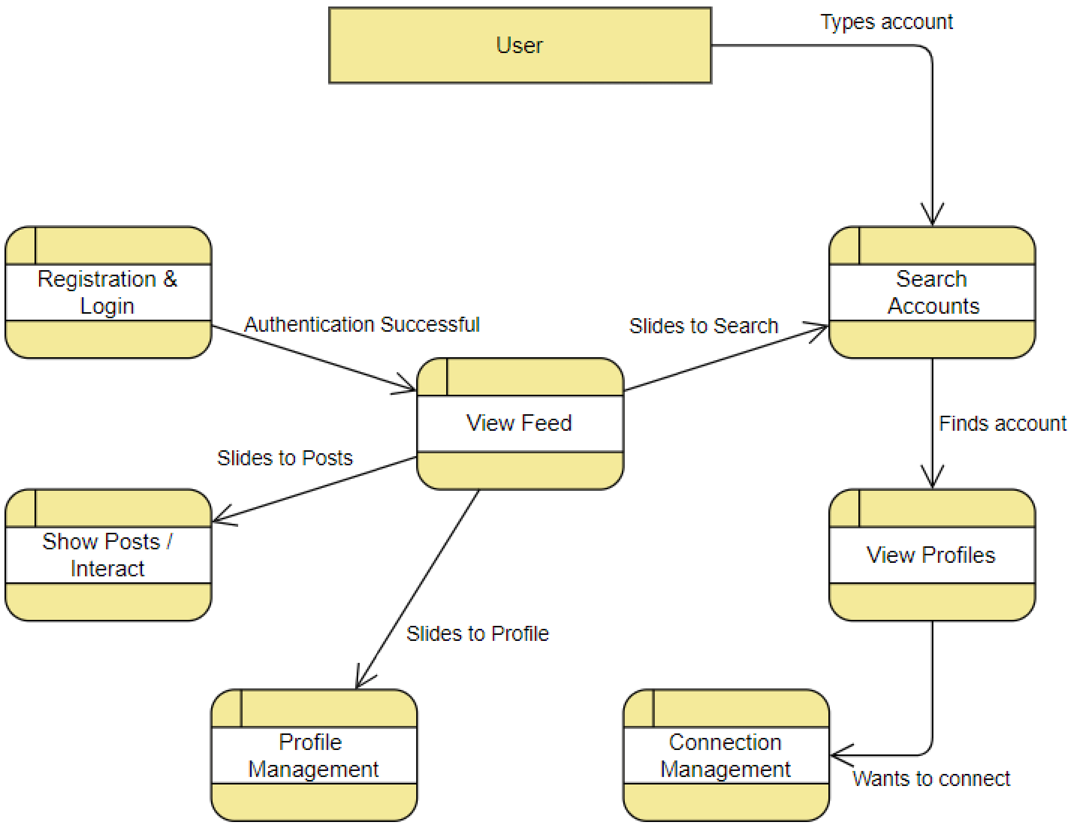
a) Context Diagram:



b) Data Flow Diagrams:

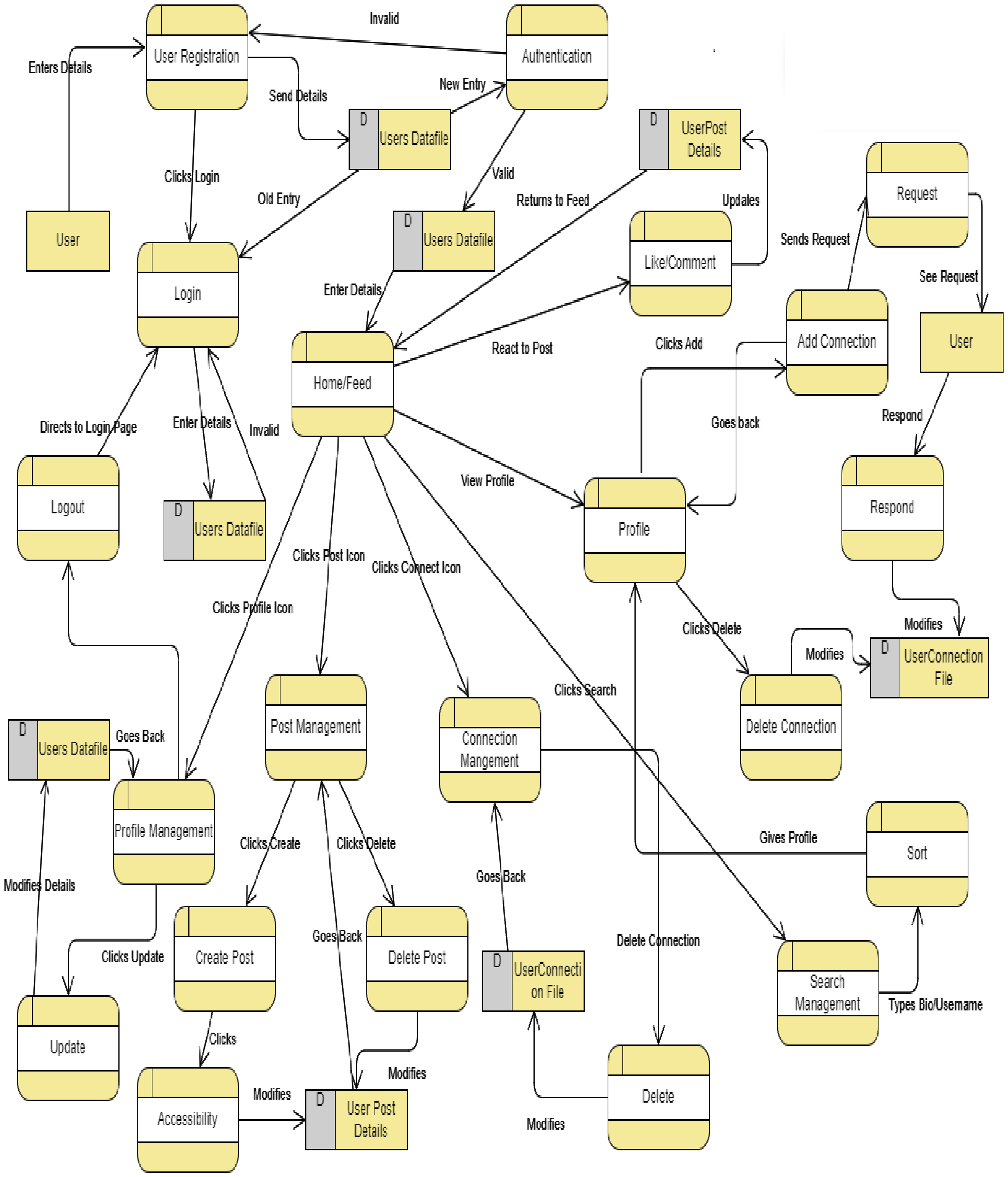


<u>DFD – 1:</u>



- This is a Level – 1 DFD.

DFD – 2:


Invalid
User Registration
Authentication
Enters Details
Send Details
New Entry
Users Datafile
UserPost Details
Clicks Login
Old Entry
Valid
Returns to Feed
Updates
Request
User
Users Datafile
Like/Comment
Sends Request
See Request
Login
Enter Details
Add Connection
User
Home/Feed
React to Post
Clicks Add
Goes back
Respond
Directs to Login Page
Enter Details
Invalid
Logout
Users Datafile
View Profile
Profile
Respond
Clicks Post Icon
Clicks Connect Icon
Clicks Profile Icon
Clicks Delete
Modifies
Modifies
UserConnection File
Clicks Search
Users Datafile
Goes Back
Post Management
Connection Mangement
Delete Connection
Profile Management
Clicks Create
Clicks Delete
Gives Profile
Sort
Modifies Details
Goes Back
Goes Back
Create Post
Delete Post
Delete Connection
Clicks Update
UserConnection File
Search Management
Types Bio/Username
Update
Clicks
Modifies
Accessibility
Modifies
User Post Details
Delete
Modifies

- This is a Level – 2 DFD. Every key process mentioned in Level-1 would be examined in further detail in a Level-2 DFD. For example, within the "post management" process, we can describe the subprocesses of creating a post, deleting a post, manage accessibility, and the flow of data between these sub-processes.

Reasons for selecting DFD - 2:

- Level-2 DFD gives detailed insights into processes in social networking.
- Explicitly shows data flows and transformations in each sub-process.
- Crucial for understanding how user data is processed, stored, and shared.
- Enables identification of areas for optimization, process refinement, and enhancing data security.
- Better choice for a thorough understanding of the online social networking system.

c) Function Point Analysis:

1. Identify and Count Function Types:

Identify and count the different types of functions in the software. The five function types are:

External Inputs (EI): 11

- User Registration
- User Login
- Create Post
- Like/Comment on Post
- Add Connection
- Respond to Connection Request
- Update Profile
- Delete Connection
- Create Post
- Delete Post
- Update Post

External Outputs (EO): 5

- View Profile
- View Feed

- View Connections
- View Post Details
- View Search Results

External Inquiries (EQ): 1

- Search

Internal Logical Files (ILF): 3

- User Database
- Post Database
- Connection Database

External Interfaces (EIF): 1

- Authentication System

2. Assign Weights:

Assign weights to each function type based on its complexity. The weights typically being classified as low, average, and high complexity. The complexity is determined by factors such as data validation, processing logic and user interactions.

Functional Units	**Weighting Factor**		
	Low	Average	High
External Input (EI)	3	4	6
External Output (EO)	4	5	7
External Inquiry (EQ)	3	4	6
Internal Logical File (ILF)	7	10	15
External Interface File (EIF)	5	7	10

3. Unadjusted Function Point (UFP):

$$UFP_{type} = Count \times Adjusted\ Weight$$

$$UFP_{total} = UFP_{EI} + UFP_{EO} + UFP_{EQ} + UFP_{ILF} + UFP_{EIF}$$

Let us assume that EI are of low complexity, EO are of high complexity, EQ is of average complexity, ILF are of high complexity and EIF is of low complexity.

$$UFP_{total} = (11 \times 3) + (5 \times 7) + (1 \times 4) + (3 \times 15) + (1 \times 5) = 122$$

4. Value Adjusted Factor (VAF):

- Assess the system based on 14 general system characteristics such as data communications, performance, heavily used configuration etc.
- Assign a score from 0 to 5 for each characteristic based on its level of influence.
- Now we need to score the 14 general system characteristics:
  1. Data communications - 3
  2. Distributed data processing - 1
  3. Performance - 4
  4. Heavily used configuration - 2
  5. Transaction rate - 4
  6. Online data entry - 5
  7. End-user efficiency - 3
  8. Online update - 5
  9. Complex processing - 4
  10. Reusability - 2
  11. Installation ease - 1
  12. Operational ease - 3
  13. Multiple sites - 2
  14. Facilitate change - 4.

- Calculate Total Score:
  $Total\ Score = 3 + 1 + 4 + 2 + 4 + 5 + 3 + 5 + 4 + 2 + 1 + 3 + 2 + 4 = 43$

- Calculate Value Adjusted Factor:
$$VAF = 0.65 + (0.01 \times Total\ Score)$$
$$VAF = 0.65 + (0.01 \times 43) = 1.08$$

- The VAF usually ranges from 0.65 to 1.35.

5. Adjusted Function Point (AFP):

$$AFP = UFP \times VAF$$

$$AFP = 122 \times 1.08 = 131.76 \approx 131$$

6. Size of Code:

For JavaScript, based on industry data, the average (LOC/AFP ratio) is 64 LOC/AFP

So, the estimated size of code in JavaScript would be:

Size of Code = AFP * (LOC/AFP ratio)

= 131 * 64

= 8,384 lines of JavaScript code

In summary, for a system with 131 Adjusted Function Points, we would expect the size of the JavaScript code to be approximately 8,384 lines.