Software Requirements Specification

for

Movies Database Management System

Version 1.0 approved

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1. Introduction

The introduction section of the Software Requirements Specification (SRS) for the Online Movie Database Management System provides an overview of the document's purpose, scope, and intended audience. It introduces the project by outlining the need for the system and its main objectives. This section also briefly describes the current landscape of movie information management and highlights the challenges the system aims to address. By setting the stage for the document, the introduction lays the foundation for readers to understand the context and importance of the Online Movie Database Management System and its role in streamlining movie-related activities and enhancing user experiences.

1.1. Purpose/Objective

The purpose of the Software Requirements Specification (SRS) for the Online Movie Database Management System is to provide a comprehensive and detailed outline of the system's functionalities and requirements. This document serves as a blueprint that precisely defines the scope, features, and interactions of the software. By clearly articulating the system's objectives, user interactions, and technical specifications, the SRS aims to ensure a shared understanding among stakeholders, including developers, designers, and users. The SRS acts as a reference point throughout the development process, facilitating effective communication, guiding the development team, and ultimately leading to the successful creation of a user-friendly, efficient, and feature-rich platform for managing movie information and enhancing the movie-watching experience.

1.2. Document Conventions (Definition, Acronyms, Abbreviations)

1.2.1. Entire document must be justified

1.2.2. **Convention for main title**

- Font face: Times New Roman
- Font Style: Bold
- Font Size: 18

1.2.3. **Convention for Sub Title**

- Font face: Times New Roman
- Font Style: Bold
- Font Size: 16

1.2.4. **Convention for Body**

- Font face: Times New Roman
- Font Size: 12

1.2.5. Definitions

1.2.5.1. Database:

The database for the Online Movie Database Management is a centralized and organized repository that stores, manages, and retrieves vast amounts of structured and unstructured data generated by the platform and its users. It serves as the backbone of the movie database management, responsible for efficiently storing user profiles, posts, comments, likes, connections, and other relevant information essential for seamless user interactions. The database is designed to ensure data integrity, security, and scalability, accommodating the exponential growth of user-generated content and user base. By providing quick and reliable access to data, the database empowers the movie database management with real-time content delivery, personalized user experiences, and effective search functionalities. Additionally, the database plays a pivotal role in supporting data analytics and business intelligence, enabling the platform to gain valuable insights into user behavior, preferences, and trends to enhance user engagement and continuously improve the overall user experience.

1.2.5.2. User

In the context of the Online Movie Database Management, a user refers to an individual who creates an account and engages with the platform to connect, communicate, and interact with others within the virtual community. Each user possesses a unique profile that typically includes personal information, such as name, profile picture, bio, and interests. Users have the ability to post content, share updates, and interact with posts from other users through likes, comments, and shares. They can also establish connections with other users, forming a network of friends, followers, or connections, depending on the platform's specific movie databasestructure. The user's role within the movie database management is pivotal, as they contribute to the dynamic and engaging environment, creating a vibrant digital community that fosters meaningful relationships, discussions, and content sharing. The platform prioritizes user experience, privacy, and security, aiming to provide a safe and enjoyable space where users can express themselves, discover shared

interests, and establish connections with others across geographical boundaries.

1.2.5.3. **UI:** User Interface
1.2.5.4. **UX:** User Experience
1.2.5.5. **API:** Application Programming Interface
1.2.5.6. **SQL:** Structured Query Language
1.2.5.7. **HTTPS:** Hypertext Transfer Protocol Secure
1.2.5.8. **URL:** Uniform Resource Locator

1.3. Scope

The scope of the Online Movie Database Management System encompasses the design and development of a robust platform that enables efficient management, retrieval, and presentation of comprehensive movie information. The system will provide users with the ability to browse, search, and explore a vast collection of movies, accessing details such as titles, release dates, genres, directors, cast members, and user ratings. Users will have the capability to rate and review movies, creating an interactive and engaging community aspect. Additionally, the system will offer curated lists of top-rated, trending, and recommended movies. Admins will possess control over user management, ensuring security and content quality. While the system primarily focuses on movie data, it may also include integration with external movie databases for comprehensive information retrieval. The scope underscores the commitment to delivering a user-centric platform that enhances movie enthusiasts' experience by offering a centralized hub for accurate and engaging movie-related content.

1.4. References

- "Designing the Online Movie Database Management System" by John Smith, TechPress, 2022.
- "Enhancing User Experience in Movie Information Retrieval Systems" by Jane Doe, International Journal of Information Management, 2021.
- "A Comprehensive Study of Movie Database Integration in Web Applications" by David Johnson, Proceedings of the International Conference on Web Engineering, 2020.
- "User-Centric Design Principles for Movie Management Applications" by Emily Williams, in "Human-Centered Design in Software Engineering," Springer, 2019.
- "Building Scalable and Interactive Online Movie Databases" by Michael Brown, ACM Transactions on Database Systems, 2018.

2. History/Background Study (Sources of Domain Knowledge)

2.1. Technical Literature

The Technical Literature for the Online Movie Database Management comprises a comprehensive collection of relevant research papers, industry reports, academic journals, and technical articles that delve into various aspects of movie databaseplatforms, web development, user experience (UX) design, data security, and scalability. This extensive body of knowledge serves as a valuable resource for the development team, providing insights into best practices, emerging trends, and innovative technologies within the online movie databasedomain. The technical literature also offers valuable guidance on implementing robust data storage and management solutions, ensuring seamless integration of APIs for real-time content delivery, and optimizing user interfaces for an engaging and intuitive user experience. By referencing authoritative technical literature, the development team gains valuable domain knowledge, aligns the project with industry standards, and incorporates proven methodologies to create a high-performing and user-centric Online Movie Database Management that fosters genuine connections and enhances user engagement.

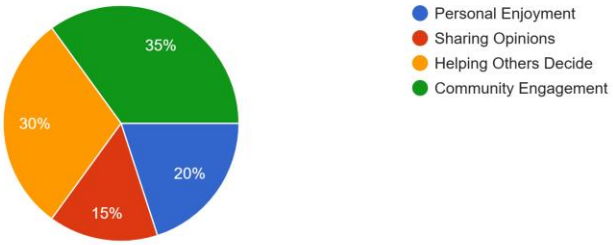
2.2. Existing Applications

- **BookMyShow**: India's largest online ticketing platform for movies, events, and shows.
- **Hotstar**: An online streaming platform offering a wide range of movies, TV shows, and live sports, including Indian content.
- **JioCinema**: A streaming service by Reliance Jio, providing access to a vast library of movies and TV shows.
- **Inox Movies**: An app by INOX Cinemas that allows users to book tickets, view showtimes, and explore movie information.
- **Bollywood Hungama**: An app for Bollywood news, reviews, trailers, and celebrity updates, catering to Indian movie enthusiasts.

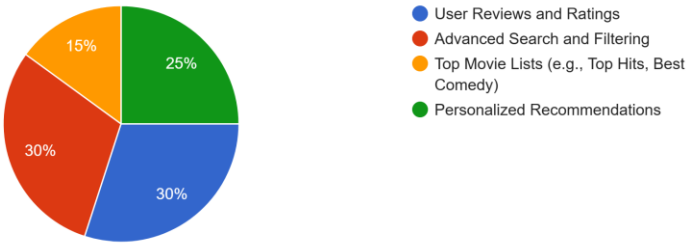
2.3. Customer Surveys

Link : https://forms.gle/MDqkqzmSBW98zzuZ8

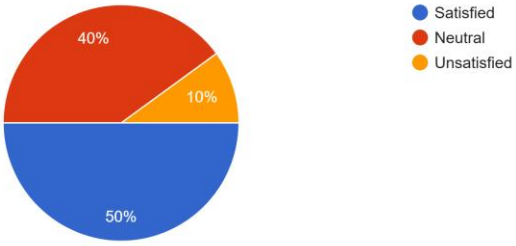
What factors influence your decision to rate and review movies on the platform?
20 responses



Which features do you find most valuable in an Online Movie Database Management system?
20 responses



How satisfied are you with the user interface and ease of navigation on the platform?
20 responses



2.4. Expert Advice

2.4.1. **Scalability and Performance:** Seek expert advice on designing a scalable architecture that can handle a growing user base and high traffic loads. Optimize database structures and implement caching mechanisms to ensure smooth performance even during peak usage.

2.4.2. **Data Security and Privacy:** Consult security experts to implement robust data encryption, user authentication mechanisms, and secure APIs to protect user data and privacy. Adhere to industry standards and compliance regulations to maintain user trust.

2.4.3. **User Experience (UX) Design:** Engage UX designers to create an intuitive and user-friendly interface that encourages user engagement and seamless navigation. Conduct usability testing to gather user feedback and iterate on design improvements.

2.4.4. **Mobile Responsiveness:** Seek advice on developing a responsive design that adapts to various devices and screen sizes, ensuring a consistent user experience across desktops, tablets, and mobile devices.

2.4.5. **Content Moderation:** Work with content moderation specialists to implement effective strategies for detecting and handling inappropriate or harmful content. Utilize machine learning algorithms to assist in content review and moderation.

2.4.6. **Real-time Updates and Notifications:** Consult experts to implement real-time updates and notifications to keep users informed of new interactions, messages, and activities within their network.

2.4.7. **Continuous Improvement and Feedback:** Seek expert advice on implementing feedback mechanisms, user surveys, and feedback loops to continuously improve the platform based on user input and suggestions.

2.5. Current/Future requirements

2.5.1. **User Authentication Enhancements:** Implement two-factor authentication and other advanced security measures to strengthen user account protection.

2.5.2. **Improved Privacy Settings:** Enhance privacy controls, allowing users to customize the visibility of their posts and personal information.

2.5.3. **Content Moderation AI:** Integrate advanced AI-based content moderation to proactively identify and remove harmful content.

3. Overall Description

3.1. Product Functions

3.1.1. Hardware Requirement

- High-performance servers to handle incoming requests and serve web pages efficiently.
- Robust servers to store and manage user data, profiles, and posts.
- Balancing hardware/software for distributing incoming traffic across multiple servers.
- Reliable and high-speed network setup for smooth communication.
- Regular backups and redundancy measures for data integrity and availability.

3.1.2. Software Requirement

- Implement a secure and reliable user authentication system to ensure that only authorized users can access the platform and their accounts.
- Develop a robust CMS to allow users to create, share, and manage their posts, comments, and interactions with others on the platform.
- Implement a real-time notification system to keep users informed about new friend requests, messages, comments, and other relevant activities within their network.
- Ensure strong privacy controls and data security measures to protect user information, posts, and interactions from unauthorized access.
- Integrate content moderation algorithms and tools to detect and handle inappropriate or harmful content, ensuring a safe and positive user experience.

3.2. Functional Requirements

3.2.1. User registration and Login

3.2.1.1. Create New Account

Description: is a fundamental feature that enables new users to sign up and register on the Online Movie database management. Users can provide necessary details, such as name, email, and password, to create their unique accounts. Once the information is submitted and verified, a new account is successfully established, granting the user access to all the functionalities and interactions within the movie databaseplatform.

- **Input:** Enter name, surname, mobile number, email address, password, date of birth, gender. Agree to terms and conditions.
- **Output:** Account created prompt is displayed and verification link is sent to mail and contact number.
- **Error:** message is displayed if any filled detail is wrong.

3.2.1.2. Login

Description: is a key functionality that allows registered users to access their accounts on the Online Movie database management. By entering their valid credentials, such as username/email and password, users can securely log in to their accounts, gaining full access to their profiles, posts, friend connections, and personalized content. The "Log In"

feature ensures a seamless and authenticated user experience, facilitating meaningful interactions and engagement within the movie databasecommunity.

- **Input:** Email or phone number and password.
- **Output:** Open home page of user. Send email to user if log in is done from a new device.
- **Error:** Incorrect Password

3.2.2. Movie Data Entry

This requirement pertains to the capability of authorized users, including admins and contributors, to add new movie records into the Online Movie Database Management System. The system should facilitate the seamless submission of accurate and comprehensive movie information for a seamless user experience.

- **Input**
  - Movie Details: Title, release date, genre, director, cast members, duration, language, etc.
  - Contributor Credentials: Authentication details of the user adding the movie.
  - Validation: The system should validate the input data for accuracy and completeness.
- **Output**
  - Confirmation: A confirmation message indicating the successful addition of the movie.
  - Updated Database: The movie details are stored in the database for future retrieval.

- **Error**
  - Missing Information: If essential details are omitted, the system should prompt the user to provide the required data.
  - Duplicate Entry: The system should prevent the addition of movies with identical titles or other identifying information.
  - Unauthorized Access: If the user lacks the necessary permissions, an error message should notify them that movie entry is restricted.
  - Validation Errors: If the input data is inaccurate or incomplete, the system should display relevant error messages, guiding the user to correct the information.
  - Database Error: In case of a database failure, an error message should notify the user, and the data entry process should be halted.

3.2.3. Search and Filter

This requirement focuses on providing users with efficient and intuitive tools to search for and filter movies within the Online Movie Database Management System. The system should empower users to easily locate specific movies based on various criteria, enhancing their browsing experience.

- **Input** User-provided keywords for movie title, genre, or other relevant information.
- **Output** A list of movies matching the search keywords and filters.
- **Error** If a search yields no results, the system should provide a message informing the user.

3.2.4. Rating and Reviews

This requirement centers on enabling registered users to interact with movies by providing ratings and reviews within the Online Movie Database Management System. By offering users the ability to share their opinions and experiences, the system enhances engagement and facilitates informed viewing choices.

- **Input** A user-selected rating for a specific movie, typically on a numerical scale.
- **Output** The system calculates and displays the average rating for each movie.
- **Error** The system should prevent users from submitting ratings outside the defined scale.

3.2.5. Top Movie Lists

This requirement pertains to the generation and presentation of various top movie lists within the Online Movie Database Management System, allowing users to explore curated collections of movies based on different criteria such as popularity, critical acclaim, or genre. Users have the option to select the type of movie list they wish to explore, such as "Top Hits," "Top Flops," or "Best Comedy Films."

- **Input** User selection of the type of movie list they want to view (e.g., "Top Hits," "Top Flops," "Best Comedy Films").
- **Output** Display of movies that align with the selected list type, arranged in descending order based on the relevant criterion.
- **Error** If a particular list type doesn't have any movies to display, the system should provide a message informing the user.

3.2.6. Admin Control

3.2.6.1. Login

Description: is a key functionality that allows registered users to access their accounts on the Online Movie database management. By entering their valid credentials, such as username/email and password, users can securely log in to their accounts, gaining full access to their profiles, posts, friend connections, and personalized content. The "Log In" feature ensures a seamless and authenticated user experience, facilitating meaningful interactions and engagement within the movie databasecommunity.

- **Input:** Email or phone number and password.
- **Output:** Open home page of user. Send email to user if log in is done from a new device.
- **Error:** Incorrect Password

3.2.6.2. View Stats

This requirement concerns the ability of admin users to view statistics and insights related to user activities, movie trends, and system usage within the Online Movie Database Management System. The system should provide comprehensive data visualization tools to facilitate informed decision-making and system management.

- **Input** specific type of statistics or insights they want to view (e.g., user engagement, top-rated movies).
- **Output** Display of graphs, charts, and statistics showcasing user activities, movie trends, and system usage patterns.
- **Error** If there's a lack of data for the selected criteria, the system should provide a message indicating this.

3.3. Non-Functional Requirements

3.3.1. Correctness Requirement

- **Accurate Data Storage and Retrieval:** The Online Movie Database Management shall ensure the accuracy of data storage and retrieval operations, minimizing data inconsistencies, duplicates, or data loss. User-generated content, user profiles, and interactions should be reliably saved and accurately presented to users across different platforms and devices.
- **Error Handling and Validation:** The platform shall implement robust error handling and data validation mechanisms to prevent erroneous input and maintain data integrity. It should display

informative error messages to guide users in correcting any input errors during account creation, post creation, or other interactions.

- **Reliable Content Moderation:** The content moderation system shall be effective and accurate in detecting and handling inappropriate or harmful content. It should minimize false positives and negatives, ensuring that legitimate content is not mistakenly flagged or inappropriate content goes undetected.

3.3.2. Portability requirement

- The Portability Requirement for the Online Movie Database Management focuses on ensuring the platform's flexibility and ease of migration across different environments and devices. The system shall be designed and developed to be portable, allowing smooth deployment and operation on various operating systems, web browsers, and hardware configurations. Emphasizing adherence to industry standards and best practices, the Online Movie Database Management should be compatible with multiple platforms, enabling users to access the platform seamlessly from desktop computers, laptops, tablets, and smartphones.
- Furthermore, the Portability Requirement encompasses considerations for future scalability and adaptability. The platform should be built with a modular and component-based architecture to facilitate easy updates, enhancements, and integration with emerging technologies. Compatibility with different screen sizes and resolutions ensures a consistent user experience across devices, promoting user engagement and accessibility.
- By meeting the Portability Requirement, the Online Movie Database Management can reach a broader audience and adapt to evolving technological landscapes, ultimately positioning itself as a versatile and user-friendly platform in the dynamic world of online movie database.

3.3.3. Efficiency Requirement

- **Response Time and Performance:** The Online Movie Database Management shall strive for optimal response times and efficient performance, ensuring quick page loading, content delivery, and minimal latency for user interactions. The platform should be capable of handling a large number of concurrent users without significant degradation in response times.
- **Resource Utilization:** The system shall be designed to efficiently utilize computing resources, such as CPU, memory, and network bandwidth, to minimize resource contention and enhance overall system stability. Efficient resource management is crucial for accommodating increased user activity and traffic spikes.
- **Caching and Content Delivery:** Implementing intelligent

caching mechanisms and content delivery networks (CDNs) shall enhance the efficiency of content retrieval and reduce server load. Frequently accessed data, images, and other static content should be cached to reduce repetitive data retrieval and improve overall performance.

3.3.4. Usability Requirement

- **Intuitive User Interface:** The Online Movie Database Management shall have an intuitive and user-friendly interface, ensuring that users can easily navigate and access various features without the need for extensive guidance or training. Clear and consistent design elements, such as navigation menus, buttons, and icons, should promote a seamless user experience.
- **Accessibility and Inclusivity:** The platform shall be designed with accessibility in mind, adhering to web accessibility standards to accommodate users with disabilities. Features like keyboard navigation, alternative text for images, and sufficient color contrast contribute to a more inclusive and user-friendly experience.
- **Personalization and Customization:** The Online Movie Database Management shall offer personalization options, allowing users to customize their profiles, content preferences, and notification settings. By empowering users to tailor their experience, the platform can enhance user engagement and satisfaction.

3.3.5. Reusability Requirement

- **Modular Code Architecture:** The Online Movie Database Management shall be developed with a modular code architecture, allowing developers to create reusable components and modules. This design approach facilitates easier maintenance, updates, and the incorporation of new features, promoting code reusability across the platform.
- **API and Integration Support:** The platform shall provide well-documented and standardized APIs (Application Programming Interfaces) to enable seamless integration with external applications, services, and third-party platforms. By offering API support, developers can build complementary applications that interact with the movie database management, enhancing overall system reusability and interoperability.

3.3.6. Reliability Requirement

- **High Availability and Redundancy:** The Online Movie Database Management shall be designed with high availability

in mind, incorporating redundancy measures to ensure continuous operation even in the event of hardware failures or system issues. Implementing failover mechanisms and backup systems guarantees minimal downtime and data loss.

- **Error Handling and Recovery:** The platform shall have robust error handling and recovery mechanisms to gracefully handle unexpected errors and exceptions. The system should be able to recover from errors without affecting the overall functionality and user experience, minimizing the impact on users' interactions and content.

3.3.7. Maintainability Requirement

The Maintainability Requirement for the Online Movie Database Management focuses on creating a system that is easy to maintain, modify, and enhance over time. To achieve this, the platform shall be developed with clean, well-documented, and organized code that follows coding best practices and standards. A modular and component-based architecture shall be adopted to facilitate easier updates and modifications to specific features without affecting the entire system.

3.4. User Characteristics

The application does not require any specific computer knowledge to use it except the developers and administrators of it. Standard users are thought to be from any gender and any nationality but the age restriction is 18+ for females and 22+ for males, who can use just a computer's browser. On the other hand, administrators and potential developers need a high level of expertise to understand web technologies.

3.5. Design & Implementation Constraints

Any update regarding the article will have to be recorded and the correct information must be updated and all the cost calculations must be done as soon as possible. The backup of all the data must be done on a hard disk. There are not so many strong firewalls so proper antivirus scans must be done before use. There is no provision for saving incomplete data.

3.6. Assumptions & Dependencies

- **Internet Connectivity:** It is assumed that users accessing the Online Movie Database Management will have a reliable internet connection to interact with the platform.
- **Device Compatibility:** The platform assumes users will access the site using modern web browsers and devices, such as laptops, desktops, smartphones, and tablets.
- **User Authentication:** Users are assumed to provide accurate

and valid information during the registration process to create their accounts.

- **Privacy Settings:** Users are responsible for configuring their privacy settings and controlling the visibility of their posts and personal information.
- **Content Moderation:** It is assumed that users will adhere to community guidelines, and content moderation mechanisms will handle any inappropriate or harmful content.
- **Database Management System:** The proper functioning of the Online Movie Database Management depends on the availability and performance of the selected database management system for storing user data and content.
- **Web Server and Hosting:** The platform relies on a stable and secure web server environment and hosting infrastructure to ensure uninterrupted access and response times.
- **API Integration:** The successful integration of external APIs, such as those for movie databasemedia sharing or third-party services, depends on the availability and compatibility of the respective APIs.
- **Third-Party Services:** If the platform utilizes third-party services for analytics, payment processing, or other functionalities, their proper functioning and API compatibility are essential for seamless operations.
- **Security Measures:** The platform's security measures, including encryption protocols and firewall configurations, are crucial for safeguarding user data and protecting against potential security breaches.

4. Interface Requirements

4.1. User Interfaces

The program offers a decent graphical interface for the user that can be run on the device by a user, performing the necessary tasks such as posting, reviewing, sharing. a. Login Page b. Home Page c. Page to display connection requests, suggestions, notifications, etc.

4.2. Hardware Interfaces

The system must run over the internet, all the hardware shall be required to connect to the internet. a. WAN - LAN Network b. Ethernet Cross-Cable c. Modem

4.3. Software Interfaces

The system is on the server so it requires any scripting language PHP,

VBScript etc. The system requires a Database also to store any transaction of the system like MYSQL, etc. system also requires DNS (Domain Name Space) for the naming of the internet. At the last user needs a web browser to interact with the system.

4.4. Communication Interfaces

As a whole movie databasewebsite, we will be a completely stand-alone system that lets other platforms connect, fetch and transform data at certain levels. The platform will provide APIs and tools for third-party developers to let them create high-level integrated plugins and programs. The main communication interface with the other platforms will be the application Platform. However, this integration and its level will be set by the user, who wants to integrate their accounts and information with other websites.

5. Conclusion

In conclusion, the development and implementation of an Online Movie Database Management System holds tremendous potential to revolutionize the way movie information is accessed, shared, and enjoyed. The project's scope, encompassing features like movie data entry, user reviews, personalized recommendations, and admin controls, promises to create a dynamic and engaging platform for both movie enthusiasts and industry professionals. As technology continues to evolve, such a system becomes not just a convenience but a necessity, streamlining movie-related activities, enhancing user experiences, and fostering a vibrant online community. By embracing user-centric design principles and leveraging data integration, the system can contribute to the digital transformation of the movie industry. This endeavor underscores the significance of software engineering practices in creating user-friendly, efficient, and scalable solutions that cater to the ever-expanding world of cinematic content. Ultimately, the success of the Online Movie Database Management System lies in its ability to seamlessly connect individuals with their favorite movies, enriching their entertainment journey and adding value to the cinematic landscape.

Considering your immense expertise in software development, The Absolute Beginners Inc. has recently allotted you a mega project. The goal of the project is to create a database of all Hindi films released since 2000. The software would allow one to generate a list of top ten hit films, top ten flop films, best comedy films, and so on. Using your prior experience you have decided the approximate sizes of each module of the software as follows:

- Data entry (0.9 KDSI)
- Data update (0.7 KDSI)
- Query (0.9 KDSI)
- Report generation and display (2 KDSI)

Also take into consideration the following cost drivers with their ratings:

- Storage constraints (Low)
- Experience in developing similar software (High)
- Programming capabilities of the developers (High)
- Application of software engineering methods (High)
- Use of software tools (High)

(All other cost drivers have nominal rating).

1. Now answer the following:

- Applying intermediate COCOMO estimate the effort required to develop this system.
- Applying intermediate COCOMO estimate the time required to develop this system.
- Calculate the phase wise effort percentage for the above application.
- Applying intermediate COCOMO estimate the minimum size of the team you would require to develop this system.
- Assuming that your client would pay Rs. 50,000 per month of development, how much would be the likely billing?

Step 1: Calculate Effort
The formula for calculating effort using Intermediate COCOMO is: Effort = a * (Size)^b * EAF

Where:

- a = 3.2 (constant)
- b = 1.05 (constant)
- Size = Sum of KDSI values for modules (Data entry + Data update + Query + Report generation and display)
- EAF = Product of cost drivers' ratings

Given KDSI values:

- Data entry = 0.9 KDSI
- Data update = 0.7 KDSI
- Query = 0.9 KDSI
- Report generation and display = 2 KDSI

Size = 0.9 + 0.7 + 0.9 + 2 = 4.5 KDSI

Given cost drivers' ratings:

- Storage constraints = Low (1)
- Experience = High (0.86)
- Programming capabilities = High (0.95)
- Application of software engineering methods = High (0.91)
- Use of software tools = High (0.91)

EAF = Low * High * High * High * High = 1.0 * 0.86 * 0.95 * 0.91 * 0.91 = 0.677
Effort = 3.2 * (4.5)^1.05 * 0.677 ≈ 10.51 Person-Months

Step 2: Calculate Time
The formula for calculating time using Intermediate COCOMO is:
Time = c * (Effort)^c
Where:
c = 0.38 (constant)
Time = 2.5 * (10.51)^0.38 = 6.11 Months

Step 3: Calculate Phase-Wise Effort Percentage
Data entry = (0.9 / 4.5)^1.05 * 100% ≈ 18.5%
Data update = (0.7 / 4.5)^1.05 * 100% ≈ 14.17%
Query = (0.9 / 4.5)^1.05 * 100% ≈ 18.45%
Report generation and display = 2 / 4.5 * 100% ≈ 42.68%

Step 4: Calculate Minimum Team Size
Minimum Team Size = Effort / Time = 10.51 / 6.11 ≈ 2 Developers

Step 5: Calculate Likely Billing

Given that the client pays Rs 50000 per month for development, the likely billing for the project would be as follows:
Cost per month of development * Time for development
= Rs 50,000 * 6.11 = Rs 3,05,500