Assignment # 1

Software Engineering

V-20

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### **1. Stakeholders**

#### **Primary Stakeholders**

* **Gym Owners**: Decision-makers who oversee operations and set strategic goals for the system.
* **Gym Administrators**: Personnel responsible for day-to-day operations and system management.
* **Trainers**: Providers of personalized training plans, tracking member progress, and interacting with members through the system.
* **Gym Members**: End-users who will interact with the app for memberships, progress tracking, tutorials, and communications.

#### **Secondary Stakeholders**

* **IT Support Team**: Responsible for maintaining, troubleshooting, and upgrading the app.
* **Third-party Service Providers**: Payment processors and integration services.
* **Regulatory Bodies**: Ensure compliance with industry and data privacy standards.

### **2. Development Steps**

#### **Step 1: Requirement Gathering and Analysis**

* Conduct interviews, surveys, and brainstorming sessions with stakeholders.
* Analyze the current challenges in gym management operations.
* Draft a comprehensive list of functional and non-functional requirements.

#### **Step 2: Feasibility Study**

* Evaluate technical, financial, and operational feasibility.
* Prepare a feasibility report identifying potential risks and mitigation strategies.

#### **Step 3: App Design**

* Create architectural diagrams and user interface mockups for mobile platforms.
* Define data models, workflows, and user roles.
* Validate the design with stakeholders.

#### **Step 4: Development and Implementation**

* Divide development into phases and prioritize key functionalities.
* Use Agile methodology for iterative development and regular feedback loops.
* Integrate third-party services (e.g., payment gateways).
* Implement coding standards and maintain version control.

#### **Step 5: Testing and Quality Assurance**

* Conduct unit, integration, and system testing.
* Perform usability testing with end-users on multiple mobile devices.
* Ensure compliance with security and privacy standards.
* Validate scalability through load and stress testing.

#### **Step 6: Deployment and Migration**

* Deploy the app on major platforms (iOS and Android).
* Migrate existing data securely.
* Train staff and end-users on app usage.
* Define a rollback strategy for deployment failures.

#### **Step 7: Maintenance and Support**

* Provide ongoing technical support and regular updates.
* Monitor app performance and address issues promptly.
* Conduct periodic scalability assessments and enhancements.

### **3. Requirement Documentation**

#### **Functional Requirements**

* Membership management: Sign-up, login, renewals, and updates.
* Attendance tracking: Real-time data for members and trainers.
* Progress tracking: Monthly reports, weight progress graphs, and goal tracking.
* Financial reporting: Revenue, expenses, and ROI metrics.
* Communication: Chat functionalities for trainers, members, and admins.
* Tutorials and plans: Personalized diet and workout plans.

#### **Non-functional Requirements**

* **Security**: Role-based access, encryption, and secure payment processing.
* **Portability**: Support for multiple devices and platforms.
* **Usability**: Intuitive interfaces for all user roles.
* **Performance**: Handle up to 1,000 simultaneous users with minimal latency.
* **Scalability**: Accommodate future growth in users and features.
* **Privacy**: Adherence to GDPR and other data protection standards.
* **Maintainability**: Ensure that bug resolution does not exceed three hours and no more than one critical bug occurs every six months.

#### **Constraints**

* Geographic and language support for multi-location gyms.
* Defined backup and disaster recovery procedures.
* Integration with legacy systems and third-party services.
* Defined environmental constraints for gym-specific setups.

### **4. Final Documentation**

#### **Overview**

* App objectives and scope.
* Key features and functionalities.
* Stakeholder roles and responsibilities.

#### **Development Summary**

* Timeline and milestones achieved.
* Technologies and tools used.
* Key design decisions and justifications.

#### **Testing Report**

* Summary of testing phases (unit, integration, system).
* Usability test results and feedback.
* Compliance validation results.
* Performance testing outcomes (load, stress, and latency metrics).

#### **Deployment Summary**

* Deployment process and timeline.
* Data migration details.
* Training sessions conducted.
* Rollback procedures defined.

#### **Maintenance and Support Plan**

* Regular updates and monitoring schedules.
* Contact details for support and issue escalation.
* Plan for scaling the app as user base grows.
* Guidelines for maintaining documentation and system updates.