Student:

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Assignment:

Administración de la
configuración del software

Homework:

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Career:

Maestría en Ingeniería de
Software

Professor:

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Description

The web application is designed to assist healthcare professionals in managing and monitoring the rehabilitation of patients with facial paralysis. The platform enables the creation of patient profiles, where professionals can input and track patient information.
It allows the development of personalized routines for each patient's needs.

Main features:

- **Patient Profiles:** Creation and management of profiles. Storing relevant information like routine's duration time, patient' progress, patient's images, professional's notes, and all related information.

- **Custom Routine Creation:** Design of routines focused on each patient's needs.

- **Routine Assignment:** The professional can assign a specific routine to a patient.

- **Progress Tracking:** Through the information got from the routines the professional can track the progress of the patient in each session.

- **Dashboard:** The professional has a view of each patient's progress and the main focused information.

This software is just a part of a complex system that includes a mobile application and cloud API.

Functional Requirements

1. **Authentication**
   - Log in into the application
2. **Patient Profile Management**
   - The system must allow professionals to create and manage patient profiles.
   - Each patient profile should store relevant information such as routine's duration time, personal details, progress reports, images, and professional's notes.
3. **Custom Routine Creation**
   - Healthcare professionals must be able to design and create custom rehabilitation routines based on the patient's specific needs.
   - The system must allow professionals to update and modify routines as needed.
4. **Routine Assignment**
   - The system should allow professionals to assign specific rehabilitation routines to individual patients.
5. **Progress Tracking**
   - The system must track the patient's progress by storing and analyzing data from each rehabilitation session.
   - Progress reports should be generated based on patient activities, and these reports should be accessible by professionals through the web application.
6. **Dashboard**
   - A dashboard must be available for healthcare professionals, providing an overview of patient profiles, progress reports, and other key information in a user-friendly interface.
   - The dashboard must display high-level patient progress summaries and detailed individual reports.

Non-Functional Requirements

1. **Security**
   - Data encryption must be used for both data at rest and data in transit.
   - The system must implement user authentication and role-based access control to restrict access to sensitive information.
2. **Scalability**
   - The system must be able to handle increasing amounts of patient data.

3. **Performance**
   - The system must respond to user interactions (e.g., loading patient profiles, assigning routines, and updating progress) within an acceptable time frame (less than 4 seconds for most actions).
   - Data retrieval and processing should be optimized to ensure smooth operation for healthcare professionals.
4. **Usability**
   - The system interface must be intuitive and easy to use for healthcare professionals, ensuring minimal training is required.
   - Information should be presented clearly, with key patient information and progress easily accessible from the dashboard.
5. **Reliability and Availability**
   - The system must be available 99.9% of the time, ensuring minimal downtime for healthcare professionals using the platform.
   - Backup mechanisms should be in place to prevent data loss in case of system failure.
6. **Compatibility**
   - The web application must be compatible with all major web browsers
7. **Maintainability**
   - The architecture should support easy integration with future modules or updates in the mobile application or cloud API.
8. **Data Consistency and Integrity**
   - The system must ensure that data is consistently updated across all platforms (web, mobile, cloud) to avoid any discrepancies in patient progress and routines.

Modules

Authentication

Task	Estimation
Manage Users	5 days
Log In and Log Out	3 days
Recover Password	2 days
Authentication by JWT token for mobile devices	10 days

Patient Profile Management

Task	Estimation
Create patient	2 days
Update routine's duration time, personal details, progress reports, images, and professional's notes by API	5 days
Show patient information	2 days

Custom Routine Management

Task	Estimation
Create routines with exercises	3 days
Update exercises in routines	3 days
Show routine information	2 days

Routine Assignment

Task	Estimation
Assignment routine	3 days
Show routine information	3 days

Progress Tracking

Task	Estimation
Storing session data from device	5 days
Generate page to display session information	8 days
Add graphics to tracking page	5 days

Dashboard

Task	Estimation
summary of patients' information	8 days

filters in dashboard configuration	5 days

Configuration

Task	Estimation
Set up of the project(servers, github, CI/CD, Docker)	20 days
Configuration and deploy to production	5 Days

Management

Task	Estimation
Project Manager	35 days
Testing	30 days

Costs

The cost per hour for development is $150.00
The cost per hour for management is $200.00
The cost per hour for Testing is $100.00

Description	Days	Weeks	Cost per day	Total
Development	74	14.8	$1,200.00	$88,800.00
Configuration	25	5	$1,200.00	$30,000.00
Testing	30	6	$800.00	$24,000.00
Management	35	7	$1,600.00	$56,000.00
Time Buffer	32	6.4	$1,200.00	$38,400.00
Total				$237,200.00

Team

- Junior Developer, Salary $12,000 monthly
- Mid Developer, Salary $25,000 monthly

- Project Manager, Salary $28,000 monthly
- Tester, Salary $ 15,000 monthly

A month has approximately 4.35 weeks.

Distribution Team

Description	Weeks	Total
Configuration		
Mid Developer	5	$28,736.00
Development		
Mid Developer	7	$40,240.00
Junior Developer	10	$27,587.00
Testing		
Tester	6	$20,690.00
Management		
Project Manager	7	$45,058.00
Total internal Cost		**$162,311.00**

Duration

The baseline project has an estimation of 8 months

Change Request 1 - Multi-location Clinic

Key

CR-001

Description

The client wants to add a new feature to the system. Since the client has many clinics in Jalisco. So, the client wants to differentiate the sessions and patients from each clinic.

Requirements

- Each Clinic has its patients and sessions.
- Professionals could attend only patients from the clinic assigned.

Modules affected

- **Authentication**: Professional will see only the information based on the clinic assigned.
- **Patient Profile Management:** Patient will be assigned only one clinic
- **Dashboard**: Display information only for the clinic assigned to the professional
- **Progress Tracking**: Device has to know which clinic is set for it

Tasks

Task	Estimation
Add clinic relationship with patients and sessions	3 days
Assign professionals to a clinic	5 days

Redirect professionals based on the clinic assigned	4 days
Display information on dashboard only for the professional's clinic	5 days
Add clinic to API requests	10 days

Feature costs

Description	Days	Weeks	Cost per day	Total
Development	27	5.4	$1,200.00	$32,400.00
Testing	12	2.4	$800.00	$9,600.00
Management	10	2	$1,600.00	$22,400.00
Time Buffer	7	1.4	$1,200.00	$8,400.00
Total				**$72,800.00**

Internal cost

Description	Weeks	Total
Development		
Mid Developer	2	$11,500.00
Junior Developer	4	$11,000.00
Testing		
Tester	2.4	$8,300.00
Management		
Project Manager	2	$12,900.00
Total internal Cost		**$43,700.00**

Revenue

The revenue of the new feature is **$29,100.**

Change Request 2 - Other paralysis support

Key

CR-002

Description

The client requests new functionalities to include new types of paralysis, such as arm and leg paralysis.

Requirements

- Support new routines for arm paralysis.
- Display information about arm paralysis tracking progress on the dashboard.
- Support new routines for leg paralysis.
- Display information about leg paralysis tracking progress on the dashboard.

Modules affected

- **Patient's profile:** Profile needs to have extra information related to the leg and arm.
- **Custom Routine Creation:** Routines need to have new animations and add new information related to new exercises.

- **Progress Tracking:** Have a new section to display information about leg and arm paralysis.
- **Dashboard:** Have a new section to display important information related to leg and arm paralysis.

Tasks

Task	Estimation
Add new attributes to the database and set on models for patients.	8 days
Create new forms to create routines for	10 days

arm and leg paralysis.	
Create progress tracking sections for leg and arm paralysis.	8 days
Display eg and arm paralysis information on the dashboard.	9 days
Support new information for leg and arm paralysis on the API	15 days

Feature costs

Description	Days	Weeks	Cost per day	Total
Development	50	10	$1,200.00	$60,000.00
Testing	23	4.6	$800.00	$18,400.00
Management	15	3	$1,600.00	$24,000.00
Time Buffer	10	2	$1,200.00	$12,000.00
Total				**$114,400.00**

Internal cost

Description	Weeks	Cost	Total
Development			
Mid Developer	4	$5753.42	$23,013.68
Junior Developer	7	$2,761.64	$19,331.48
Testing			
Tester	3	$3452.05	$10,356.15
Management			
Project Manager	3	$6443.83	$19,331.49
Total internal Cost			**$72,032.8**

Revenue

Revenue from the new feature amounted to $42,367.00. This means that 37% profit

SWOT Matrix

Strengths

- Team has a lot of experience working together.
- Feature does not affect the core of the application.
- Developers are full on the project

Weaknesses

- There are two projects coming.
- The Mid developer will be moved into another project.

Opportunities

- The client has more ideas that wants to apply to the application.
- The Junior developer can learn from the process to add new features.

Threats

- Tester will leave the company next month.

CCB Criteria and Voting

CEO - Supports the Change Request

- Reason: The projected revenue from the client ($114,400) exceeds the internal costs ($72,032.80), yielding a profitable margin. Since the feature aligns with the company's strategic vision of creating comprehensive rehabilitation solutions

Financial Department - Supports the Change Request

- **Reason**: The feature cost ($114,400) provides a profitable margin over the internal costs, promising a strong return. The department sees this feature as financially sound, despite upcoming projects, as it doesn't require additional external funding.

Human Resources - Supports the Change Request

- **Reason:** Although the profitability is appealing, there are concerns about resource strain. The mid developer's transfer and tester's upcoming departure could impact project quality and timeline, especially with two other projects

commencing. Postponing this change until team capacity stabilizes is preferred.

Project Manager - Supports the Change Request

- **Reason**: The Project Manager sees the feature as feasible but recommends added support for testing and a timeline buffer to mitigate the risks of staffing changes

Final outcome

With **majority support**, the recommendation is to proceed with the change request.

Change Request 3 - Government Reporting Compliance

Key

CR-003

Description

Due to new government regulations, therapists are required to report patient services, including patient progress and timelines, monthly. This report must be submitted to a designated government server, ensuring compliance with the new mandate. The system needs to automatically compile, format, and submit these reports while maintaining data security and privacy standards.

Requirements

- Generate a comprehensive report for each patient, including services received, progress, and timeline of attention.
- Submit the monthly report to the designated government server via a secure API endpoint.
- Implement required security measures to protect patient data during report compilation and submission.
- Ensure the data format aligns with government specifications.

Modules affected

- **Patient Profiles:** Include fields to track additional information required for government reporting.

- **Progress Tracking:** Ensure all necessary data points for timelines and progress tracking are recorded for reporting.

- **Report Generation:** New module or extension to generate and format the monthly report.

- **API Integration:** Integration to securely submit reports to the government server.

Tasks

Task	Estimation
Extend database to support additional patient report attributes	5 days
Develop reporting module to compile patient data into a government-compliant format	12 days
Create API integration for secure report submission	10 days
Implement logging for successful and failed submissions	4 days
Test the report generation and submission process	10 days

Feature costs

Description	Days	Weeks	Cost per day	Total
Development	41	8.2	$1,200.00	$49,200
Testing	10	2	$800.00	$8,000.00
Management	8	1.6	$1,600.00	$12,800.00
Time Buffer	6	1.2	$1,200.00	$7,200.00
Total				**$77,200.00**

Internal cost

Description	Weeks	Cost	Total

Development			
Mid Developer	4	$5753.42	$23,013.68
Junior Developer	4	$2,761.64	$11,046.56
Testing			
Tester	2	$3452.05	$6,904.10
Management			
Project Manager	1.6	$6443.83	$10,310.13
Total internal Cost			**$51,274.47**

Revenue

Revenue from the new feature is estimated at $77,200, yielding a 34% profit margin based on internal costs.

SWOT Matrix

Strengths
- Aligns with compliance standards, potentially required for future healthcare clients.

Weaknesses
- Adds workload amidst two other upcoming projects.

Opportunities
- Builds trust and compliance standing with healthcare clients and government entities.

Threats
- Possible delays due to mid-developer reallocation and staffing changes.

CCB Criteria and Voting

CEO - Supports the Change Request

- **Reason**: This feature is critical for regulatory compliance, enhancing the platform's value for healthcare clients. The profit margin is adequate, and the feature aligns with the company's goals to expand in the healthcare sector.

Financial Department - Supports the Change Request

- **Reason**: The profit margin is sustainable, with $77,200 billed to the client and internal costs estimated at $51,274.47, making it a financially sound addition.

Human Resources - Supports the Change Request

- **Reason:** This is a regulatory requirement, so HR supports the change. However, they advise monitoring workloads due to the departure of a tester and increased demands from new projects.

Project Manager - Supports the Change Request

- **Reason**: The Project Manager supports the feature, given that timelines are buffered and that additional resources for testing are secured if the team cannot cover the workload internally.

Final outcome

With **majority support**, the recommendation is to proceed with the change request.

Change Request 2 - Other paralysis support

Key

CR-002

Description

The client requests new functionalities to include new types of paralysis, such as arm and leg paralysis.

Requirements

- Support new routines for arm paralysis.

- Display information about arm paralysis tracking progress on the dashboard.
- Support new routines for leg paralysis.
- Display information about leg paralysis tracking progress on the dashboard.

Modules affected

- **Patient's profile:** Profile needs to have extra information related to the leg and arm.
- **Custom Routine Creation:** Routines need to have new animations and add new information related to new exercises.

- **Progress Tracking:** Have a new section to display information about leg and arm paralysis.
- **Dashboard:** Have a new section to display important information related to leg and arm paralysis.

Tasks

Task	Estimation
Add new attributes to the database and set on models for patients.	8 days
Create new forms to create routines for arm and leg paralysis.	10 days
Create progress tracking sections for leg and arm paralysis.	8 days
Display eg and arm paralysis information on the dashboard.	9 days
Support new information for leg and arm paralysis on the API	15 days

Feature costs

Description	Days	Weeks	Cost per day	Total
Development	50	10	$1,200.00	$60,000.00
Testing	23	4.6	$800.00	$18,400.00
Management	15	3	$1,600.00	$24,000.00

Time Buffer	10	2	$1,200.00	$12,000.00
Total				**$114,400.00**

Internal cost

Description	Weeks	Cost	Total
Development			
Mid Developer	4	$5753.42	$23,013.68
Junior Developer	7	$2,761.64	$19,331.48
Testing			
Tester	3	$3452.05	$10,356.15
Management			
Project Manager	3	$6443.83	$19,331.49
Total internal Cost			**$72,032.8**

Revenue

Revenue from the new feature amounted to $42,367.00. This means that 37% profit

SWOT Matrix

Strengths

- Team has a lot of experience working together.
- Feature does not affect the core of the application.
- Developers are full on the project

Weaknesses

- There are two projects coming.
- The Mid developer will be moved into another project.

Opportunities
- The client has more ideas that wants to apply to the application.
- The Junior developer can learn from the process to add new features.

Threats
- Tester will leave the company next month.

CCB Criteria and Voting

CEO - Supports the Change Request
- Reason: The projected revenue from the client ($114,400) exceeds the internal costs ($72,032.80), yielding a profitable margin. Since the feature aligns with the company's strategic vision of creating comprehensive rehabilitation solutions

Financial Department - Supports the Change Request
- **Reason**: The feature cost ($114,400) provides a profitable margin over the internal costs, promising a strong return. The department sees this feature as financially sound, despite upcoming projects, as it doesn't require additional external funding.

Human Resources - Supports the Change Request
- **Reason:** Although the profitability is appealing, there are concerns about resource strain. The mid developer's transfer and tester's upcoming departure could impact project quality and timeline, especially with two other projects commencing. Postponing this change until team capacity stabilizes is preferred.

Project Manager - Supports the Change Request
- **Reason**: The Project Manager sees the feature as feasible but recommends added support for testing and a timeline buffer to mitigate the risks of staffing changes

Final outcome
With **majority support**, the recommendation is to proceed with the change request.

Change Request 4 - Client Satisfaction Survey Module

Key

CR-004

Description

The client requests a new module dedicated to collecting client satisfaction data. This module will deploy random surveys to patients, gathering feedback about their rehabilitation experience. Based on the survey responses, the system should generate statistical insights. These insights should be available monthly or upon request to help professionals and management gauge satisfaction levels and identify areas for improvement.

Requirements

-   Randomly distribute satisfaction surveys to patients following sessions or at defined intervals.
-   Include a variety of questions assessing patient satisfaction with the treatment, therapist interaction, and overall experience.
-   Securely collect and store survey responses within the patient's profile.
-   Ensure all responses are anonymized and follow data privacy standards.
-   Generate monthly reports summarizing survey responses to highlight satisfaction trends.
-   Provide real-time statistics accessible upon request, showing breakdowns by factors such as patient demographics, treatment types, and therapist interaction ratings.
-   Add a section to the dashboard that displays key satisfaction metrics, trends, and average ratings.
-   Allow professionals to view detailed survey insights for specific patient groups or timeframes.

Modules affected

-   **Patient Profiles:** Extend patient profiles to log survey participation and anonymized responses.

-   **Survey Management Module:** New module to manage survey content, distribution schedules, and response collection.

- **Statistics & Analytics:** Expand statistics capabilities to generate satisfaction insights based on survey data.

- **Dashboard:** Integrate satisfaction statistics and insights to allow quick access for healthcare professionals.

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Tasks

Task	Estimation
Develop survey management module for creating and scheduling surveys	12 Days
Extend database for storing anonymized survey responses	6 days
Implement survey distribution logic for random patient sampling	8 days
Develop statistical analysis module for monthly and on-demand reporting	10 days
Add satisfaction metrics section to dashboard	5 days
Test survey distribution, response collection, and reporting functions	7 days

Feature costs

Description	Days	Weeks	Cost per day	Total
Development	48	9.6	$1,200.00	$57,600.00
Testing	15	3	$800.00	$12,000.00
Management	12	2.4	$1,600.00	$19,200.00
Time Buffer	5	1	$1,200.00	$6,000.00
Total				**$94,800.00**

Internal cost

Description	Weeks	Cost	Total
Development			
Mid Developer	5	$5753.42	$28,767.10
Junior Developer	5	$2,761.64	$13,808.20
Testing			
Tester	3	$3452.05	$10,356.15
Management			
Project Manager	2.4	$6443.83	$15,465.20
Total internal Cost			**$68,396.65**

Revenue

Revenue from the new feature is estimated at $94,800, resulting in a 27.9% profit margin based on internal costs.

SWOT Matrix

Strengths
- Adds value to the application by providing client insights, enhancing client experience through data-driven adjustments.

Weaknesses
- Survey distribution and analytics may require substantial testing to ensure quality results without disrupting user experience.

Opportunities
- Helps the client address patient needs proactively, positioning the application as a responsive healthcare tool.

Threats

- Complexity in survey deployment and analytics may affect timeline, especially with current workload and staffing constraints.

CCB Criteria and Voting

CEO - Does not support the Change Request

- **Reason**: The feature's alignment with strategic goals is noted, but additional profitability or cost-saving measures would be required to reconsider.

Financial Department - Does not support the Change Request

- **Reason**: While the feature is potentially valuable to the client, the profit margin of 27.9% is insufficient based on internal policy.

Human Resources - Does not support the Change Request

- **Reason:** The project could further strain resources, especially with new projects in the pipeline

Project Manager - Supports the Change Request

- **Reason**: Manager believes the feature is achievable and valuable with additional resource support or cost adjustments.

Final outcome

With majority **non-support**, the **recommendation is not to proceed** with Change Request 4 unless profitability can be adjusted to meet the 30% threshold.