UNIVERSITY of GUYANA

CSE 2101

Software Engineering

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Contents

List of Figure

Introduction

A highly intelligent and intricate system with millions of functions, the human body. Based on his research and experiments, man has been able to understand all of these intricate processes. Science and technology advancements made medicine an important subject of study. Medical science has evolved into a wholly new area of study over time. Medical institutions like hospitals, HOSPITALS, R&D facilities, and medical schools make up the modern health industry. In order to provide the general public with the greatest medical services, the health sector works hard. Hospitals play a significant role in our lives by providing the best medical care to people with a wide range of illnesses brought on by climatic changes, rising workloads, psychological stress, and other causes. Hospitals must maintain track of their daily operations and records of their patients, doctors, nurses, ward boys, and other staff members in order to keep the hospital running smoothly and efficiently.

The hospital management system is the desired piece of software (HMS). Any pathology lab, hospital, clinic, or dispensary may utilize the system. To get information from patients, go to a clinic, pharmacy, or pathology. Save the information for later use. The current procedure is a paper-based one. It moves too slowly and is unable to deliver updated patient lists on schedule. The strategy aims to reduce overtime pay while boosting the quantity of patients who can receive the necessary care. Both functional and non-functional requirement assertions may be found in these works.

Objective

We've made the decision to model our project after how the manual system functions as a consequence. The manual method that we developed has been automated and is called the "Administration support system for medical facilities."

- The creation of a hospital that is up to 90% paperless is the main objective of our program. Additionally, it aims to offer contemporary systems automation that is trustworthy and reasonably priced. Additionally, the system offers dependable backup and storage options, as well as top-notch data security across all user-system interface levels.
- Create a hospital management database that is comparable to existing databases and contains details like the number of active cases and patients being treated.
- Make the database better by adding data that will help with managing the doctor and patients in an efficient manner.
- No of the size of the population, the final model should be one that all governments can implement.
- Disclose facts that will be both educational for the average person and helpful in reducing hospital management stress.

Project Organization

We will use the functional project organization system. In this we will structure a team and select a team leader. Team leader will divide the work among members according to their specialization as some members good in programing and some good in documentation.

Member	Specification	Role
Member1	Writing expert	Prepare project documentation including all requirements
Member2	Programmer	Implement the entire project

Risk Analysis

The performance of hospitals nowadays has been impacted by the usage of IT. However, there are some dangers associated with the use of IT.

1. **Market Risk**: The item with the greatest mean in terms of market hazards was competitors' poor activity in IT projects. It is preferable to remind personnel that the usage of IT tools in the hospital is one of the factors for superiority versus rivals in order to mitigate this danger. As a result, if your hospital is active in this area and your competitor's hospital does not, this might be a strong feature that sets your hospital apart from the competition.
2. **Management Risk**: Lack of project monitoring and control had the highest mean among the project management hazards. It is advised to carry out the process of implementing IT projects in hospitals with the assistance of a skilled project manager and a project management expert to monitor and regulate the project's execution in order to mitigate this risk.
3. **Human Resource Risk**: Lack of team member commitment and motivation had the highest mean of all human resources hazards. Financial and morale support for employees is one of the key approaches to inspire them in order to mitigate this risk. It is necessary to consider how management may properly commend the personnel for using IT tools at the hospital rather than paperwork. There are several theories of motivation in management science. One of the most well-known of these is Abraham Maslow's hierarchy of needs hypothesis. Maslow founded his theory on the presumption that each individual has four types of needs (categorized):

- Physiological: comprise thirst, hunger, and safety, among other things.
- Safety: Protect yourself from potential mental and physical harm.
- Respect: Consists of internal and exterior components, including self-worth, self-determination, advancement, repute, and allure.
- Self-Flourishing: An individual works to accomplish something for which he has a skill. The hierarchy of needs must be understood in order to determine the employee's position within it, and then steps must be made to address those requirements. These types of

employees require encouragement to utilize IT tools, thus the IT manager should pay attention to them.

Announcing the use of IT in hospitals, holding employee conferences about new IT developments, providing them with appropriate training, encouraging them to use IT tools, and creating a motivating environment for using IT tools are a few effective ways to generally eliminate all other risks of human resources.

4. **Technical Risk**: The difficulty of software and hardware updates had the highest mean when it came to technical concerns. In this situation, we must turn to the hospital's highly qualified software and hardware specialists. Utilizing cutting-edge technologies that are inexpensive to upgrade is also essential.
5. **Organizational Risk**: Lack of organizational cultural support had the highest mean in organizational hazards. Utilizing the hospital's younger personnel is preferable in this situation. To inform and communicate the value of utilizing and implementing IT solutions in the firm, training sessions can be planned. Management undoubtedly has a big part to play in shaping the atmosphere and culture of the company. The more knowledgeable and connected an administrator is to new technology, the more the company's members will want to learn more about them, and ultimately the culture of the organization will change.
6. **Financial Risk**: Lack of financial management had the greatest meaning in terms of financial hazards. As we all know, a hospital's financial decision-making process may be negatively impacted by a lack of financial resources and financial instability. Hospital managers can better manage a dynamic picture of their activities and goals by having a solid understanding of the fundamentals of financial management, as well as how financial information is provided and costs are shared in a hospital. This is especially true for the implementation of IT projects.
7. **Strategic Risk:** Ambiguity in target definition had the greatest means in strategic risks. Without clearly defined organizational goals, the organization's path will not become evident. And when the organization's activities and movement are unclear, workers will be unsure about the organization's strengths and weaknesses. Without a doubt, this will make the organization less effective.

The objectives of IT installation in hospitals should be clearly specified as a consequence. In general, the rising risks in today's complex world are one of the most significant elements in the success or failure of IT projects in hospitals, therefore ignoring such a significant issue would surely have negative consequences on the execution of such projects in hospitals. As a result, it is advised that hospitals create a risk analysis section inside their IT division to investigate this problem. Then, by upgrading its knowledge in this area, it will foster an environment that is more conducive to the success of IT project implementation.

Additionally, a large number of managers and caregivers involved in hospital information technology initiatives think that the technical risks and the risks related to time and money are the most significant concerns in IT projects. However, the results of this study show that human resources risks are given priority, thus IT managers in hospitals are urged to pay greater attention to this issue. Unfortunately, this recommendation is not always followed, which likely one of the primary causes of IT projects in hospitals is failing.

Risk	Description of Risk	Probability	Impact (# of Day Loss)	Risk Explosure (# of Days)	Control /Action in Place
R01	Time not manage properly due to group diversity	75%	5	3.75	To arrange the online meeting.
R08	Technical problem in system due to which delivery of essay late	75%	5	3.75	Keep system updated
R06	The effort and time of the essay are under estimated and the essay may not be finished by the due date or the quality has down graded due to meeting the deadline	50%	5	2.5	To plan, review and measure the QA plan and Time management. Assign some buffer time for the re-plan and redo work
R03	The coursework file was deleted accidentally or my laptop has issue	5%	10	0.5	Always back up the laptop to ensure it could be retrieved in the time machine / USB / Google Drive
R04	There is some problem that not meet all requirements properly	25%	2	0.5	To create a checklist for proofread to ensure the all requirements meet
R07	The essay has a lot of grammar mistakes	75%	0.5	0.375	Proofread it and to minimize the mistakes
R05	Get sick in the coming week and I cannot work on my essay efficiently	5%	2	0.1	Eat heathly, take vitamin C , Sleep early to maintain a good immune system
R02	It may have another amber warning on 2nd Mar and that may interrupt my internet so I cannot submit the coursework	5%	0.5	0.025	To share the data by the personal hot spot on my iPhone or to visit a coffee shop where provides a good WIFI coverage.

Figure 1: Risk Analysis

Hardware and Software Requirements

Software Requirements

Software requirements are the set of software or languages that need to complete the entire project. It will highlight the type of operating system, all front end and back end languages, server side and client side script and database. It shows all the software need to run the entire program. These requirements must be met before the start of project. Our hospital information management system need following software requirements:

Operating System: Window 8

Front End: HTML, CSS, JAVASCRIPT

Server Side Script: PHP

Database: MySQL

The software supports two levels of users and automates the hospital management system.

1. **Administrator Level**
2. **User Level**

•The software comes with:

- Updating patient information.
- Dispensing prescriptions, warnings, and dietary recommendations.
- Providing and keeping track of all patient testing.
- Report generating and billing.

Nonfunctional Requirements

- DBMS specifications
- Availability: As a desktop application, this system will be accessible to employees during regular business hours.
- Reliability: This system produces reports and maintains precise patient and physician information on medications and visits.
- Efficiency: How information and reports are produced.
- Extendable: Outlines how this system may be expanded in the future. Future expansion of the client/server or web-based system with the inclusion of more departments is possible. It is simple to sustain in a problematic situation.

Hardware Requirements

All software packages need a set of machines to run or execute. This set of machines known as the hardware. All software run on specific machines as they are general or specific. Even operating system also run on specific hardware and install on specific machine for proper working. In the software development field, when operating system involved a hardware compatibility list is given with list of hardware devices. This will show the compatibility of the software with other devices or available hardware. For our hospital information management system, we will use following hardware:

PROCESSOR: Intel Duel Core, i3

RAM: 1GB

HARD DISK: 80GB

It includes processor, Ram and Hard disk as well.

Work breakdown Structure

WBS	Task Name	Start	Finish
1	**Initiating**	**Thu 02-Dec-21**	**Thu 09-Dec-21**
1.1	Develop weight scoring model	Thu 02-Dec-21	Sat 04-Dec-21
1.2	Develop business case	Thu 02-Dec-21	Sat 04-Dec-21
1.3	Create project charter	Sun 05-Dec-21	Mon 06-Dec-21
2	**Planning**	**Fri 10-Dec-21**	**Sun 26-Dec-21**
2.1	Develop scope statement	Fri 10-Dec-21	Fri 17-Dec-21
2.1.1	Define product characteristics	Fri 10-Dec-21	Mon 13-Dec-21
2.1.2	Define product deliverables	Thu 16-Dec-21	Fri 17-Dec-21
2.2	**Work break down structure**	**Sat 18-Dec-21**	**Sun 26-Dec-21**
2.3	**Gantt Chart**	**Sat 18-Dec-21**	**Thu 23-Dec-21**
3	**Executing**	**Mon 27-Dec-21**	**Fri 31-Dec-21**
3.1	Concept	Mon 27-Dec-21	Fri 31-Dec-21
3.2	Website Design	Mon 27-Dec-21	Fri 31-Dec-21
4	**Controlling**	Sat 01-Jan-22	Sun 02-Jan-22
5	**Closing**	Mon 03-Jan-22	Mon 03-Jan-22

Project Schedule

We schedule our project using Gantt chart. It includes all the activities with their duration. Duration include the start time of each activity and end time of each activity. It also shows the dependencies of activities on other activities. It show the all steps of activity completion. Despite all these activities details it focus on the budget of each activity and overall budget of the whole project. It is also known as the general framework of the approved project timeline.

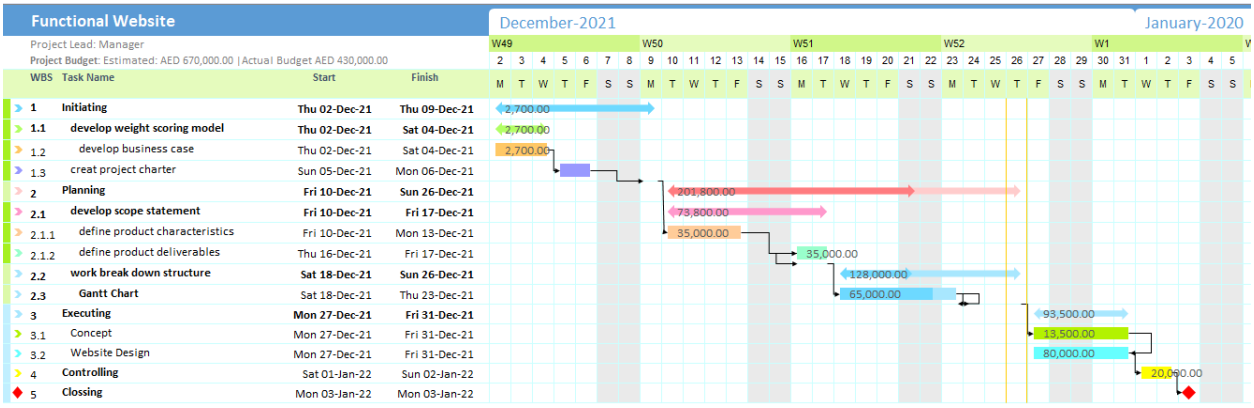

Figure 2: Gantt chart

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