Project Management Plan for Hospital Database Application.

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ISAD357SL

National School of Business Management

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1. Acknowledgement

First and foremost, I would like to proffer my sincere gratitude towards Mr. Craig Barnyard, my module lecturer. I am extremely humbled and grateful to have been able to receive his mentorship, guidance, and support.
The overall accomplishment of this project demanded a significant amount of guidance from many individuals, and I am extremely fortunate to have had this from start to finish.

2. Abstract

Title: Project Management Plan for Hospital Database Application.

Subject: ISAD357SL

University: National School of Business Management

Word Count: 3004 words

With the use of the knowledge that I've gathered from pursuing this module, I intend to implement a well-defined plan for a Hospital Database Application. It would assist in attaining the business purposes and goals of a hospital. In this assignment, I will go through the methodologies that can be utilized to compliment this project's success. Moreover, I will highlight recommendations that will enhance the chance of success and failure avoidance.

3. Introduction:

Hospitals are constitutional enterprises that require database applications for the efficient and well-organized enactment of healthcare operations. Newly available technologies such as pragmatical database applications aid in generally reducing the workload for hospital personnel. Databases are vital to collect patient information when cognizing the number of patients that visit the hospital daily. It also plays a fundamental role in ameliorating the performance, effectiveness, and efficiency of hospital operations. It is imperative that doctors, nurses, medical clinicians, and other personnel can access health data in in the most expeditious way. Furthermore, medical

professionals are enabled to reform and devote their work time towards patient obligations.

Healthcare operations magnanimously depend on the efficiency and accuracy of hospital database applications. It plays a crucial part in assuring that healthcare operations run smoothly and swiftly.

There are many unavoidable impediments and drawbacks that accompany the usual manual approach of hospital file management. Setbacks can include unauthorized access, data misuse, file insecurity, unretentive file retrieval systems and ineffectual file update systems. Even the utilization of traditional file systems like Microsoft Excel and Open Office is disenchant. This is mainly because the traditional file system is a part of an application program that only works with a specific application.

Whenever a patient visits a medical sanatorium, a range of information is acquired. It is important to store this information in a way that compliments ingenuity and practicality. Another aspect to consider is the security, reliability, and user-friendliness.

Effective and adequate documentation implementation is imperative. Frequent resource tracking is very essential. The Hospital Database must be designed in an efficacious and efficient manner with the sole intention of fulfilling, satisfying, and catering towards the requirements of the client.

4. Aim and Objective:

4.1 Aim -

The sole aim behind this report is to instigate a reliable database application design that will satiate and deliver coherent benefits to a hospital. Through the analyzation and application of fundamental knowledge areas, I will propose a method on how to utilize and apply these knowledge areas in a way that will accentuate the overall success of the project and minimize potential failures. The Hospital Database Application will incite benefits of an enhanced administration and convalescing patient care.

The Hospital Database Application will aid in the significant reduction of workload for hospital personnel so that medical professionals devote more work time towards patient obligations. All data and information will be updated in real-time. Records will be kept in

the system for historical purposes.
In addition to that, it will embellish the efficiency and accuracy of hospital data and information and help operations run more smoothly. (Chopra, 2014)

4.2 Objective -

The proposed database application will assist hospital employees with handling hospital data in a more effective and efficient manner. Data should be easy to retrieve, update and analyse when necessary. (Ahmad, 2014) User-friendliness, quick access to stored data and security to prevent unauthorized access are all aspects that are highly considered. Moreover, Agile methodologies will be followed and implemented.
All hospital, patient, hospital personnel and pharmaceutical details will be computerized.

	Doctor	**Other Employee**	**Admin**	**Pharmacy**	**Patient**
Sent to the Database	Doctor's personal Information	Request area assignment	Request organization details	Response for medicine price.	Request for an appointment
	Doctor's specialized area.	Personal information	Response to database error alert		Appointment response
	Request available scans	Qualifications of staff			
	Doctor arrival time				
	Request for ward/room number	Request shift time	Response to organizational details	Check medicine availability	Appointment response
	Request patient details	Response to area assignment	Database error alert sent to admin.	Check medicine expiry date	Medicine availability

Received from the Database	Response for available scans			Request medicine quantity	Medicine receipt.
				Check for age restriction	

Table 1: Objective Table

5. Scope and Boundary

The proposed Hospital Database Application can be applied at laboratories, clinics, hospitals, and research and development institutions to acquire information from patients and store for future utilization. The main goal and purpose behind the implementation of a Hospital Database Application is to accentuate health care delivery, planning and reformation in a user-friendly and effectively productive manner. The proposed system will generally compliment a cost-wise approach, so that the resources of the enterprise are utilized effectively. (Eastwood, 2019)

The Hospital Database Application would facilitate efficient data access, support data integrity, and abstain data redundancy. Hospital staff would be able to update, delete, register, search and retrieve information from the system. Lists of respective patients will be updated in real-time. Updated data will be comprehensible, consistent, and easy to understand.

This data can be put to a range of uses such as the embellishment of healthcare quality, research and development and public health and other various uses.

Hospital Database Applications are crucial to mitigate the experience of human errors, incorrect information, and delays. Hospital staff won't have to undergo tumultuous processes and waste a lot of their time. Paper reports, accounting records and various other tangible excessive paper loads can be avoided. Paper use would still be present, yet greatly reduced in comparison.

It is also essential as it largely benefits and improves the management by connecting all existing computers to one system. Quality of service can be greatly accentuated. Patient information will be comprehensive and complete.
I will be following agile methodologies for this project as it will assist in the planning and guidance of the project's overall success. I would also be able to relinquish the project within the specified budget as it helps save resources. It also instigates the potentiality to quickly respond to issues and challenges throughout the project life cycle. Furthermore, it permits the ability to make significant changes at the right time. (Sawehli, 2019)

6. Business Case

6.1 Business Need

The usual manual approach of hospital file management is not economically feasible when considering the time consumption, inefficiency and unreliability that comes with it. When taking the interminable growth of the human population into deliberation, the manual approach (paper-based system) will impose many limitations.
Inevitable impediments and drawbacks would instigate extreme time-consumption. A paper-based approach would incite more difficulty when collecting patient information as there would be a higher chance of human errors and delays occurring, resulting in slower processes. Manually retrieving great volumes of information can be time consuming. Moreover, it would increase inefficiency, data misplacement, unauthorized access, data misuse and security breaches. (Tripathee, 2016)

6.2 Business Objectives

Taking these factors into consideration, I have decided to implement a Hospital Database Application that would replace the current manual system. It would:

- Reduce the workload for hospital personnel.
- Increase the effectiveness, efficiency, and productivity of hospital operations.
- Easy to access, retrieve, manage, and update data.
- Increase user-friendliness.

- Support data integrity.
- Reduce data misuse and data redundancy.
- Increase data security to prevent unauthorized access.

7. Project Plan of Schedule, Activities, Resources, and Costs

When it comes to assuring the project's success, a project plan is paramount. Each project phase's efficiency, dependability, and security must be monitored as the software platform interacts with many stakeholders with varying statuses and fields. Presented below are the respective activities, along with the expected completion date and time management safe zones. The tasks have been separated into sprints to provide effective time management and risk reduction. This allows progress to be monitored and assessed.

Stage	Start date	Complete date	Deadline	Deliverables
Feasibility study	1/11/2021	4/11/2021		
Analysis of requirements	1/11/2021	4/11/2021		Requirement specification document,Project proposal.PID
Technical architecture	4/11/2021	8/11/2021		
Project proposal and initiation	8/11/2021	12/11/2021		
Sprint 1				
Constructive and scheduled planning	12/11/2021	15/11/2021		Report of requirement analysis.
Detailed design in relation to the HCI principles	15/11/2021	21/11/2021		Project plan
Further research and Implementation of resources	21/11/2021	26/11/2021		Estimated plan
User interface design and Implementation	26/11/2021	29/11/2021		(Cost/ Weeks)

Sprint 2				
Development of Real Time database Architecture and its implementation Unit testing	29/11/2021	4/12/2021		Database and its operation acceptance test
Sprint 3				
Back end development and Unit Testing Implementing features and Unit Testing	4/12/2021	15/12/2021		System development and pilot Implementation
Sprint 4				
Integration testing Debugging and maintenance system testing	15/12/2021	20/12/2021		Maintenance report Error and Debugging testing
Hosting and Connection	20/12/2021	21/12/2021		
Corrective Maintenance	21/12/2021	22/12/2021	23/12/2021	User manual and Final report
Client acceptance report	19/12/2021	22/12/2021		Client review

Table 2: Schedule

7.1 Activity

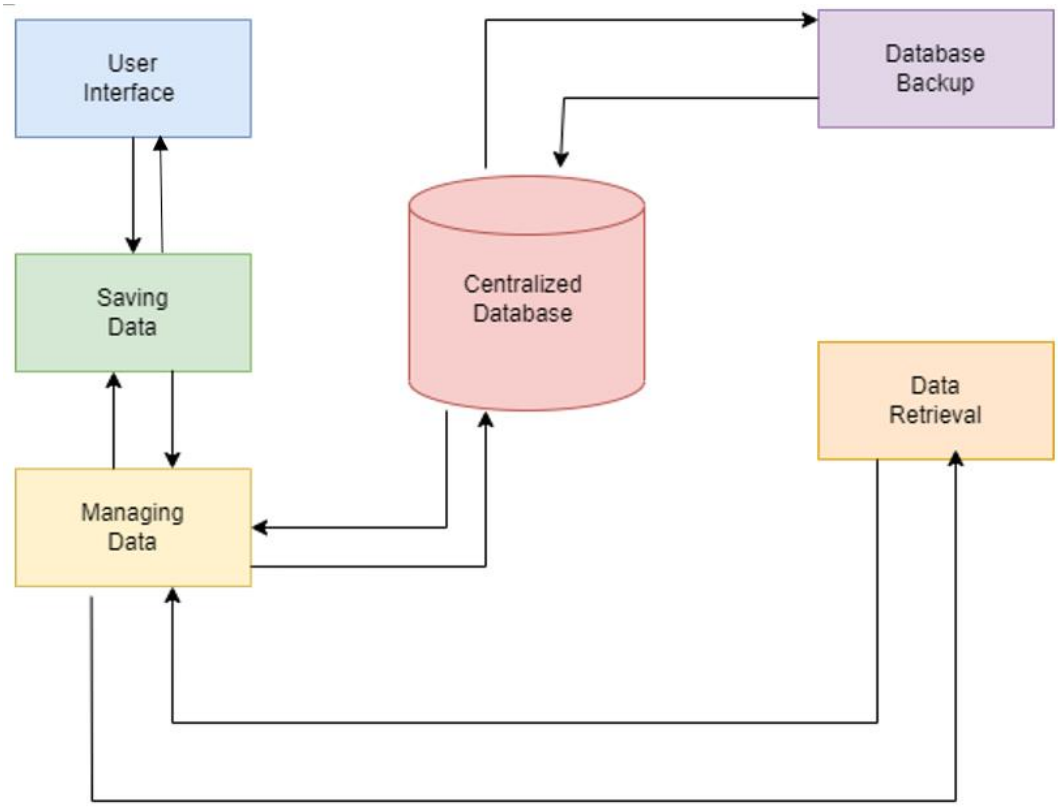

Figure 1: Database working process

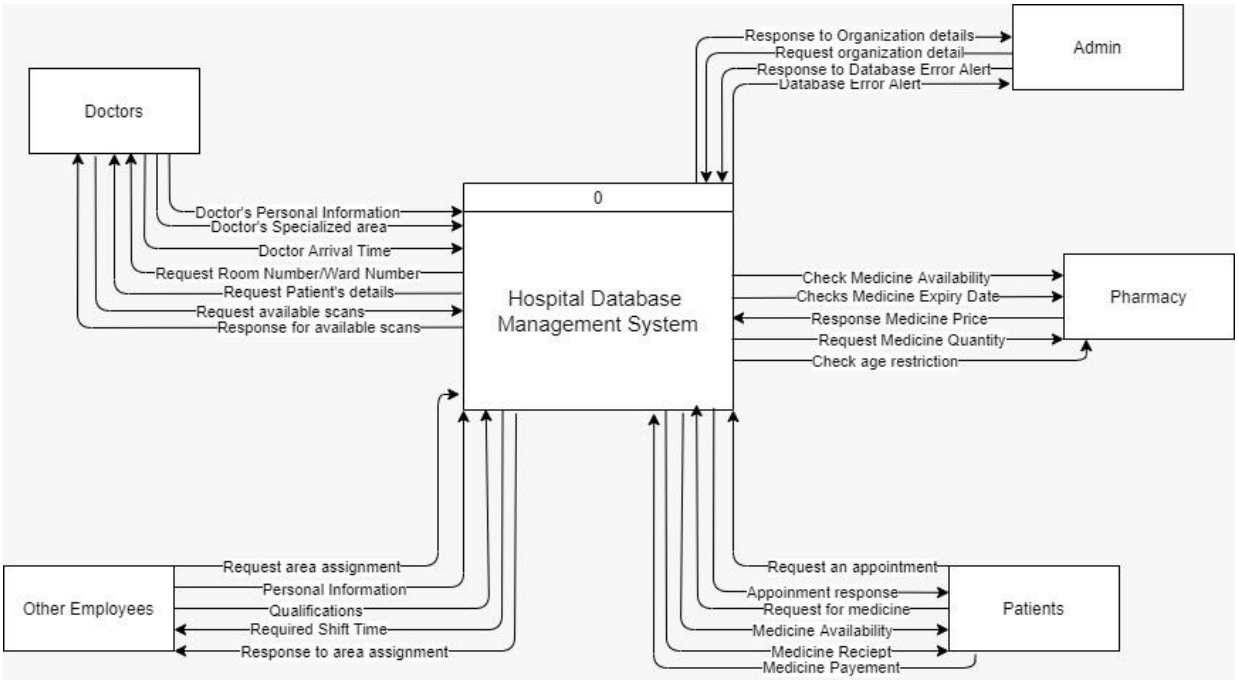

Figure 2 : Network Diagram

7.2 Resources

Monitors:

- To interact with the UI of the database.
- To input data into the database.

Database Tools:

- By implementing and introducing CDS tools, I can store data in a more efficient and effective manner.
- Installing and further processing information (that should be added to the electronic health records).
- Tools should be further optimized and improved to enhance the data quality.

Server:

- To manage and store data in the appropriate areas.

8. Cost Estimation

It is possible to cover costs with the profit generated from the hospital. Due to this, it won't be a prevalent problem for private hospitals, but may affect public hospitals. Therefore, it is better to request the database expenditure costs from the government as all public hospitals are government oriented. (Wardynski, 2019)

Assets	Cost Estimated
System Developer	2600$
BA Charges	800$
Software Operating System	1200$
Domain	20$
Application Interfaces	1300$
Total	5920$

Table 3 : Cost Estimation

Cost estimated with risk exposure = (5920*50/100) = 2960

9. Risk Management Plan

A hospital database application is the heart of an organization as it stores confidential data. Hence, it is mandatory to protect this data from inherent risks. A risk management plan is imperative for the overall achievement of the success, missions, and goals of the project. It is one of the most crucial aspects to consider. To mitigate unpropitious impacts on achieving objectives and goals, the probable risks must be identified before they occur. In this way, risk-handling methods can be deliberated and implemented to avoid potential adverse circumstances. Potential risks must be monitored and prioritized depending on how strong the impact is. I am going to identify and analyse the possible threats and vulnerabilities that could pose as a potential risk to the overall success of the project. Appropriate risk management and mitigation techniques will be implemented to the software development process. (Aalaa Albadarneh, 2015)

Risk	Management Strategy
Probable Data Loss 30%	Data loss can entail potentially catastrophic effects. Not only will data loss lead to serious operational challenges and financial implications, but the enterprise reputation may also suffer. Staff productivity may also be severely affected. Data loss will inadvertently affect decision-making as data is vital for this task. Therefore, required steps must be taken to execute frequent back-ups. To combat the risk of probable data loss, copies of data will be backed up onto separate mediums such as Cloud.
Technical Failure 20%	It is imperative to utilize a stable development environment along with reliant hardware and software.
Potential Technology Limitations 20%	A plentiful amount of analysis must be conducted to identify the capabilities and limitations that can likely materialize. This must be administered prior to the project development process. Furthermore, an analysis on what technologies are more suitable to be administered must be identified and taken into consideration.

Impotence to understand newer technologies 40%	Ample research must be consummated. Information must be gathered to effectively get a better understanding of new technologies that must be implemented when developing the system. Developing and testing out prototypes will be congruent with monitoring potential repercussions.
Project Complexity 40%	Specifications will be followed in accordance to the WBS (Work Breakdown Structure). Setting my focus on the project breakdown and project overview will aid in keeping myself on the right path.
Schedule Overrun 30%	By introducing contingency, the schedule plan must be closely monitored. All tasks must be completed in accordance to the respective schedule. By any means, if the schedule is overrun, additional work hours must be enacted. Workload distribution and record maintenance must be well planned. Tasks should be divided in consonance with sprints. This will succour myself in monitoring whether I am on the right track.

Table 4: Risk Management

9.1 Risk Assessment Matrix

Percentage	Range
High	50% or > chance of taking place
Medium	40% – 20%
Low	> 20% chance of taking place

Table 5: Risk Assessment Matrix

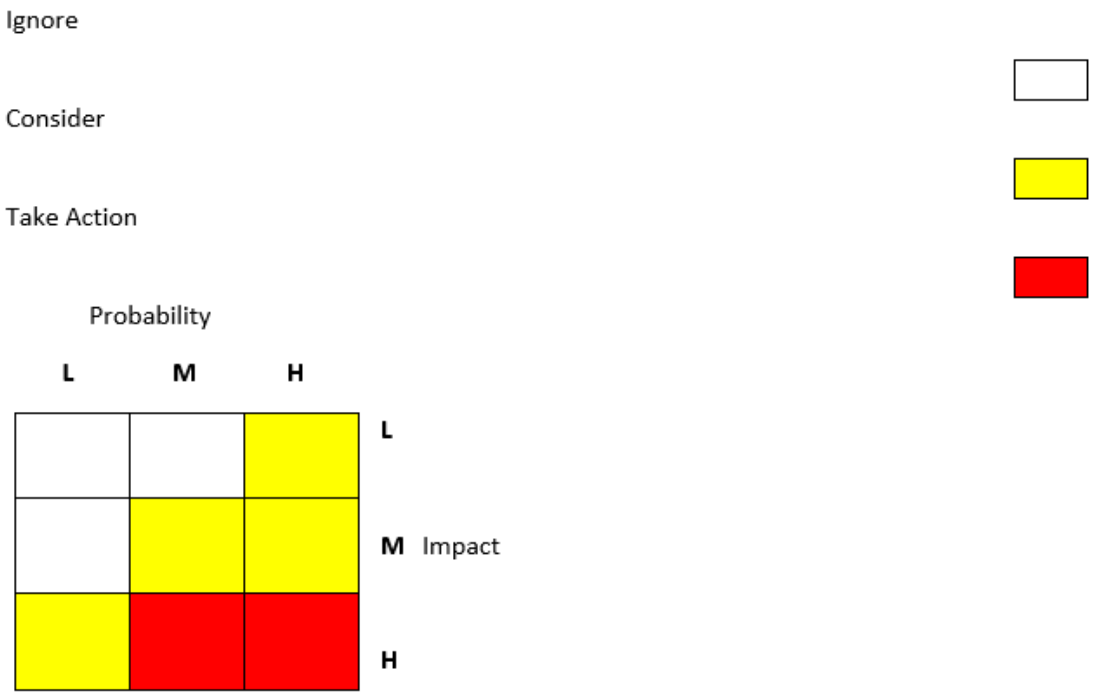

Figure 3 : Risk Assessment Matrix

10. Quality Management Plan

The following table describes the development of a feasible quality management plan for a Hospital Database Application. The product and process quality within the duration of the project life cycle is observed. This quality management plan will assist in improving the quality standards within a hospital and enhance the quality of service. Suitable strategies are presented with each quality check. The aim is to sustain a reliable quality management plan. Factors of Mc Call's risks (that comprise flexibility, reusability, integrity, efficiency, portability, reliability, and security) will be determined to achieve the respective purposes and goals.

It is of utmost importance that the developed software is of high-quality. Particularly, applications utilized in hospitals would have a fundamental impact on patient care delivery. A high-quality software system united with low-quality managerial practices will fail to produce the necessary service quality.

When it comes to managing software, hospitals are highly prone to meet challenges. This is mainly due to the size, practice complexity, lateral management, and overall intransigence to change.

It is important to remember that hospital staff are heavily dependent on gathered data and information for crucial decision-making processes. Data and information that lack quality can undoubtedly jeopardize the predetermined goals of the enterprise. Due to this, clinical data must emulate preciseness and accuracy. (Hashmi, 2011) If the software quality is not critiqued, it is less likely that both patients and staff would benefit from the improved data quality. Data is produced and composed by the software system. Conclusively, quality software systems are what determines the correctness and accuracy of the data. (FRANKLIN, 2020)

Quality Check	Strategy
Requirements	Analysing and averring whether the gathered requirements are demonstrable and achievable. Prototyping and user intervention will be deployed. Continuous unit testing will probe the validity and relevance.
System Design Validation	HCI principles will be followed and taken into consideration (attractive and sleek interface, easily navigable, appealing to the human eye) to compliment a user-friendly experience. User intervention will also be deployed so that feedback would be retrieved. Database Normalization, Data Flow Diagrams & UML Diagrams would provide guidance throughout each phase.
Validation	Will be conducted after each phase.
User Acceptance Testing	Will be conducted in the final phase.

Table 6 : Quality & their Strategy

With the implementation of Agile Methodologies, I managed to fluidly execute the break down and planning of the project. Therefore, I can determine exactly how to make the final product rich in quality. I will compare it against the prototype stats and test it in accordance with Agile Methodologies to set the seal on the product quality.
It is vital that both the development team and client proffers collaboration and transparency. (Sawehli, 2019)

11. Validation

The requirements are validated during system testing and client acceptance stages, revealing whether the system can operate in the given situation. The functionality would be validated when I test the application. It would also ensure whether the clients possess the relevant hardware and software. In order to gain customer satisfaction, a quality check can be executed at the acceptance stage. This would ensure the validity of the final output.

12. Verification

Verification would affirm whether I am meeting the required specifications and building the product correctly. This would be performed through continual testing. After each phase is completed, unit testing will be executed. This would allow myself to see if the respective tasks and functionalities work smoothly. With continuous monitoring, I will be able to envision and understand the result of the platform.

13. Constraints

13.1 Resources Constraints

Hospital personnel should be able to adjust to newer technologies and other requirements. Furthermore, the database administrator must be trained to have a better overall knowledge about healthcare schemes and medical records. As a solution, the hospital personnel must undergo a training period and those who are more familiar with newer technology knowledge should be hired.

13.2 Cost Constraints

It is possible to cover costs with the profit generated from the hospital. Due to this, it won’t be a prevalent problem for private hospitals, but may affect public hospitals. Therefore, it is better to request the database expenditure costs from the government as all public hospitals are government oriented. (Akintoye, 2000)

13.3 Quality Constraints

There are specific standards that a database should follow. When these standards are not properly met, problems may arise. For example, if the system crashes, all stored data and information may be jeopardized. If security violations are violated, huge repercussions will be faced. Inability to meet the proper standards may even lead to lawsuits claiming improper handling of personal information.

13.4 Customer Satisfaction Constraints

In Scrum, the Dynamic Software Methodology (DSM) assists in recognizing the effectiveness of the project. It also revolves around customer satisfaction and the final working product. When it comes to issues regarding customer satisfaction, a quality assurance plan must be put into action. User acceptance testing should also be conducted. (Aalaa Albadarneh, 2015)

13.5 Risks

Hospital Database Applications are prone to multiple risks:

- The personalized data that flows into the database should be secure. As this information is confidential and can only be viewed by an authorized party, it must be handled with proper care. To mitigate the chances of data duplication, fraud, and accession by unauthorized personal, validation and verification is mandatory.
- If any system failures were to occur, it could cause information to be lost, misplaced, or deleted. To alleviate this, frequent backups must be undertaken.
- Lack of proper maintenance could lead to server destruction. This could lead the entire system to failure and cause the complete breakdown of the system. Proper maintenance to the server should be apprehended (and scheduled with a maintenance party). (Tucci, 2021)

14. References

Aalaa Albadarneh, I. A. A. Q., 2015. *Risk Management in Agile Software Development:,* s.l.: s.n.

Ahmad, I., 2014. *Hospital management system(database),* s.l.: s.n.

Akintoye, A., 2000. *Analysis of factors influencing project cost,* s.l.: s.n.

Chopra, H., 2014. *Hospital Management System Project,* s.l.: s.n.

Eastwood, B., 2019. *How to Develop a Project Scope Statement in 8 Steps.* [Online] Available at: https://www.northeastern.edu/graduate/blog/develop-project-scope-statement/

FRANKLIN, A., 2020. *Importance Of Quality Assurance In Software Development.* [Online].

Hashmi, S. I., 2011. *DEVELOPMENT OF A SOFTWARE QUALITY PLAN FOR.* [Online]

[Accessed 2011].

Sawehli, A. F. A., 2019. [Online]

Available at: https://www.researchgate.net/publication/335826991_CT067-3-M_-_Managing_Software_Development_Projects_Part_2_Assignment

Tripathee, D., 2016. *Hospital Database Management System,* s.l.: s.n.

Tripathee, D., 2016. *Hospital Database Management System.* [Online].

Tucci, L., 2021. *What is risk management and why is it important.* [Online] Available at: https://searchcompliance.techtarget.com/definition/risk-management

Wardynski, D., 2019. [Online]

Available at: https://www.brainspire.com/blog/estimating-software-development-cost-6-factors-to-consider