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An Undergraduate Internship report on Approval Management System

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An Undergraduate Internship report on Approval Management System

By

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Summer, 2022

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Dissertation submitted in partial fulfillment for the degree of Bachelor of Science in Computer Science

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Attestation

I Mahamudul Hassan Tonmoy bearing ID-1820243 state that this report is completely made by myself under the supervision of my respected faculty member Sanzar Adnan Alam. I have completed and submitted this document for the partial fulfilment of the requirement for the Degree of Computer Science from Independent University, Bangladesh (IUB).All the works here are the result of my work experience in British American Tobacco Bangladesh.

Tonmoy

Signature

14 September, 2022

Date

Mahamudul Hassan Tonmoy

Name

Acknowledgement

First, I want to thank Almighty Allah (SWT) for allowing me to finish my internship report on time. I want to thank the Faculty of Computer Science and Engineering for including internship credit in the graduate program's curriculum and allowing me to have the experience of industry-oriented duties and the sector of work that interests me. I want to express my gratitude to my supervisor, Sanzar Adnan Alam sir, Lecturer in the Department of Computer Science and Engineering at Independent University, Bangladesh. With his constant direction, invaluable instructions, intriguing suggestions, and insightful advice, he encouraged and directed me throughout this internship and preparing this report.

From the depths of my being, I am grateful to my orgnasational supervisor Sadia Kamal, IDT Corporate Tech Manager, BAT Bangladesh, for her kind support, guidance, constructive supervision, instructions, and advice and for motivating me to complete my internship at BAT Bangladesh smoothly.

I feel proud and gratified that I was always held under the supervision of the team and got advice directly. Here, daily reporting and mental and professional support enhance my experience in the internship experience. I am also indebted to the DBS team's employees, they gave me immense support while working. They always advised me and helped me with my hands and pens. Additionally, I must emphasize this organization's excellent working environment and collective devotion, which have enabled me to deal with various issues. Lastly, I'd want to thank my parents and other family members for their unending support.

Letter of Transmittal

Sanzar Adnan Alam sir,
Lecturer,
Department of Computer Science and Engineering,
Independent University, Bangladesh.
Subject: Internship Report for Graduation Submission.

Dear Sir, I am now submitting my Internship Report as part of my bachelor's degree program in computer science. Working under your active supervision is a significant achievement.

This report is based on the article "An Undergraduate Internship report on Approval Management System". This is the brief report about my work at BAT Bangladesh under the direction of Sadia Kamal, IDT Corporate Tech Manager.
This internship provided me with both academic as well as practical experience. The training has enabled me to build a network in the corporate setting. With the knowledge I gathered throughout my internship, I attempted to make this report as informative as possible. I followed the directions and explained the relevant fields in sufficient depth to write a well-organized internship report. However, I am convinced that this report will meet the needs of my internship program.
I would be grateful if you could accept this report and provide your valuable feedback. If you found this report helpful and informative in acquiring a complete grasp of the situation, it would bring me great joy.

Sincerely,
Mahamudul Hassan Tonmoy
ID: !820243
Department of Computer Science and Engineering,
Independent University, Bangladesh.

Evaluation Committee

.....

Signature

SANZAR ADNAN AZAM

Name

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Supervisor

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Signature

Md Abu Sayed / Ajmiri Khan

Name

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Internal Examiner

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Name

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External Examiner

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Convener

Dr. Mahady Hasan
Head, Department of CSF
School of Engineering & Computer Science
Independent University, Bangladesh (IUB)

Abstract

The internship is defined as obtaining practical experience from various organizations, which helps form a connection between theoretical and practical knowledge. It is essential because it is the first time for a student to acquire a keen practical understanding of different organizations. "n Undergraduate Internship report on Approval Management System" project focuses on to develop approval management system, which will be used for Travel authorisation, Asset code creation, Tender approval, business case approval. I created a system for the Approval Management System. I planned, gathered data, designed the system, and devloped it to build the project. In this project, I am attempting to provide a concept for the management system of Approval, which would Save a lot of time and begin a digital process in the company. This project has provided me with some invaluable learning opportunities. This initiative has inspired me to pursue further development-related endeavors. This experience will be beneficial to my future work.

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Chapter 1

Introduction

1.1 Overview/Background of the Work

It was prepared with the intention of sharing the insights I gained from my three months of internship work at BAT Bangladesh. For students, internships are crucial because they enable them to put the theoretical knowledge they have learned in their courses into practice. Through this job, I was able to put my academic learning into practice and identify my strengths and areas for development. The major objective of the three-month internship was to better understand how the company's Digital Business Solutions department operates and how they accomplish their goals. As a result, this report gives a general overview of the company, in particular the BAT Bangladesh Department of Digital Business Solutions. It contains information about the company and its products, as well as information about the industry in which the company operates.

1.2 Objectives

During the three-month internship, the main goal was to gain an understanding of the operations of the company's Digital Business Solutions department and how they work to achieve their objectives. The purpose of this report is to demonstrate my comprehension of the work completed as well as the experience gained during the internship program.

- To give an overview of 3 months experience as an intern at BAT Bangladesh
- To outline my duties and responsibilities as an intern.
- To depict the company's overall condition and status in both domestic and international markets.
- To relate academic learning with practical experience

1.3 Scopes

This report provides an overview of the organization specially the Digital Business Solutions Department of BAT Bangladesh. A reader will be able to know the overall function of the organization, working condition and contribution in both local and international market. Moreover, it contains insight about the entire tobacco industry. Finally, it will give an idea about my entire internship period, learnings and recommendations.

Chapter 2

Literature Review

2.1 Relationship with Undergraduate Studies

- CSC 401 - Database Management: In this course, we were taught how to plan a project from scratch and complete the project. Six Element Analysis, Problem Analysis, System Development Life Cycle, Rich Picture, Requirement Analysis, Entity Relationship Diagram, Business Process Model, Normalization, and creating and maintaining databases using PHP,MySQL, Apache Server, Xampp were covered. These techniques helped develop the strategy.

- CSC 203 - Data Structure: In this course, we were taught the basic concepts of many data structures and their applications, such as the Stack, Queue, Linked List, Array, Pointer, Nested arrays, Nested objects etc.

- CSC 305 - Object-Oriented Programming: In this course we were taught how to represent data and objects and use modular programming to reduce repetition and long lines on codes. This course is a deep dive into classes and its objects of programming. It helped to design our project code in a modular format.

- CSC 405 - System Analysis and Design: In this course, we were introduced to the tools and techniques for the design and analysis of information systems. Topics covered include Systems and models, Project management, Tools for determining system requirements, data flow diagrams, decision table and decision trees, Systems analysis, systems development life cycle models, Object-oriented analysis, use-case modeling, United Modeling Language, Feasibility analysis, Structured analysis, systems prototyping, system design and implementation, application architecture, user interface design, Front-end and back-end design, database design, software management and hardware selection, Case studies of Information Systems as well as how to apply them to a project.

2.2 Related works

There are a few vendor solutions for the system of approval. Every organization has its unique set of needs. Therefore, they are all unique from one another. From the standpoint of BAT, they have a specific environment to ensure their security and data privacy.

- Avokaado - Create and collaborate on documents from one single platform at every stage of the document lifecycle: clause-based contract automation, drafting based on smart templates, workflow management with digital signing and electronic storing.
- Icertis - The AI-powered, analyst-validated Icertis Contract Intelligence platform structures and connects the critical contract information that defines how an organization runs. Icertis' advanced contract management platform transforms contracts from static documents to strategic advantage.

Chapter 3

Project Management & Financing

3.1 Work Breakdown Structure

The Work Breakdown Structure is a schematic diagram that illustrates how a project is divided into smaller components. We designed a work breakdown structure (WBS) for our project to ensure that our efforts were coordinated. The work breakdown structure (WBS) visualizes all scopes, dangers, communication points, responsibilities, and expenses, ensuring that critical deliverables are not ignored. It is the most effective tool for team brainstorming and collaboration. In our work breakdown structure, we used a top-down approach.

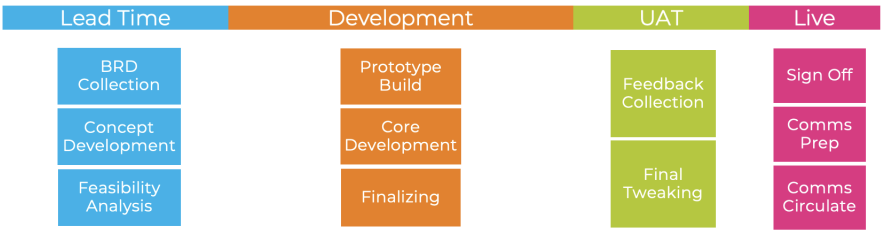


Figure 3.1: Work Breakdown Structure

3.2 Process/Activity wise Time Distribution

The expected time required to complete a project specifies the process-wise time distribution. It assists developers in creating a mental picture of how effectively they must work to fulfill deadlines. The most challenging aspect of designing an application is managing time. So, first and foremost, the content must be fixed, and development must occur in this framework. The process of planning and regulating how much time is spent on various tasks is known as time management. Effective time management allows

a person to accomplish more in less time, reduces stress, and encourages professional success. To finish any project, time management is required.



Figure 3.2: Process Time Distribution

3.3 Gantt Chart

We used a Gantt chart to plan and organize the project's operations in order to properly complete it. In this project, Gantt charts will be used to organize and schedule project operations over a period of time. Gantt charts can also provide us with additional details about the various tasks or portions of a project, such as how far along each task is, how a collection of tasks may be dependent, the resources needed, and the intended sequencing.

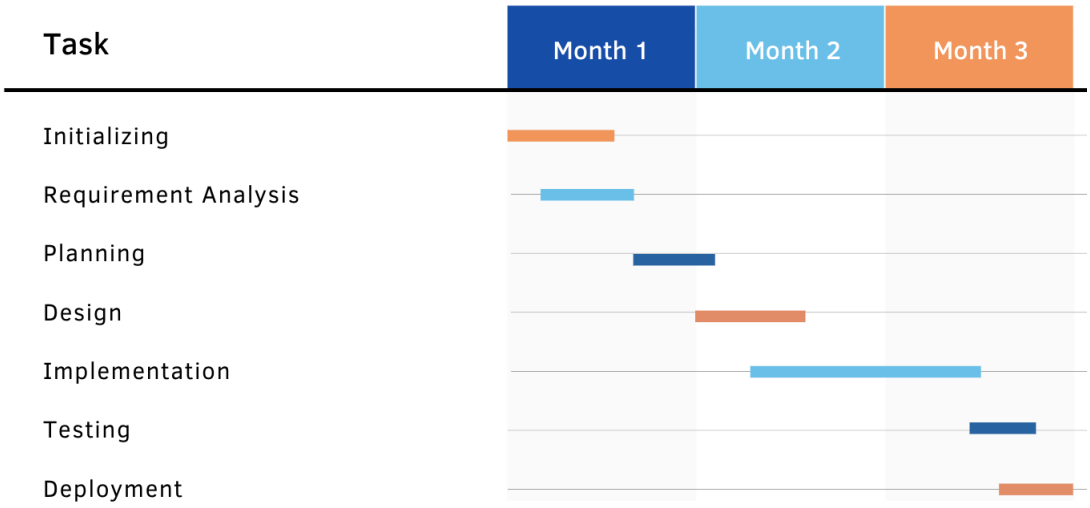


Figure 3.3: Gantt Chart

3.4 Process/Activity wise Resource Allocation

Approval Management system is a process automation and The backbone of a project management is resources. Thus for achieving this all the resources required were allocated for the development and implementation of the project. It was very important for me to allocate every resource needed for the project to fit in its position. So, resource allocation

became an important focus. The activity-wise resource allocation of this project are detailed below:

- Initializing: This is the first step of the development. Here a few ideas were proposed by several Executive Admins. Sometimes when a problem arise, we note down and taken to the supervisor for more discussion.
- Requirement Analysis: This is the initial step in the development of a project. The requirement analysis team gathers information from sources and sets the predictions of what the requirement for the system.
- Planning: The next phase is developing a plan with directions. All the team employees were involved and brainstormed on how we are going to set goals and the approaches we are going to take to develop the system.
- Design: The designing phase is where we designed the features using powerapps. Provided with few diagrams of users and functionality of the system to make it clearer.
- Implementation: At this stage, the developer team members were assigned to their part of the development. The senior developers are tasked with dividing the work among their subordinates. The developers have a weekly target to meet. Developers started working on writing the code for the system.
- Testing: Testing phase started as soon as a feature was added to the site. The errors were being fixed as we were also developing new features in the application. The developer team checks for any bugs and take notes for correction. When the Developer team is satisfied with the project we start UAT.
- Deployment: After a successful feedback session, the project is finally made live and deployed into the live server. Though the development process ends here, the website might face bugs in the live server after deployment and they fix those right away.

3.5 Estimated Costing

Based on the system capabilities that the stakeholder had requested, the cost was determined. It depends on the size, specifications, features, and style of your system. Cost and resource usage of the developer are taken into account.

Requirements	Amount
Project management	150,000
Design	90,000
Development	120,000
Maintenance	30,000
Total	390,000

Table 3.1: Estimated Costing

Chapter 4

Methodology

Waterfall is best suited for projects that require a great sense of consistency, such as software development, where the end product is well specified before beginning. Due to the fact that the project goals were outlined and were defined from the beginning, it has a set timetable and budget. Apart from predetermined milestones or deliverables for each phase, the Waterfall methodology does not require frequent client feedback or cooperation once the project's objective has been established. This makes it simpler for project managers to plan with stakeholders or business partners and to communicate with them. While this can aid in planning, it is only useful when a customer has a specific, definite end objective and does not need to be involved.

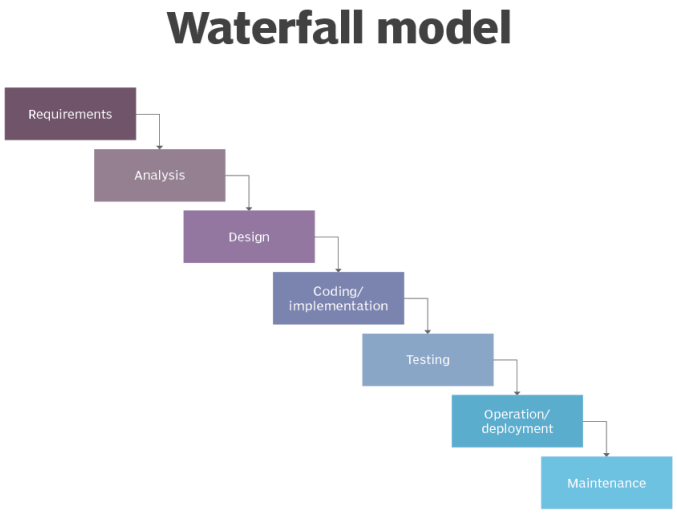


Figure 4.1: Waterfall Model

In this management system, it is required to evaluate and design the complete project before starting the implementation phase. During the analysis step, each sector will be taken into account, and the clients will approve the design. The project will next go on to the implementation phase, which is the most important stage overall, and be

prepared for testing. Testing enables the detection and rectification of current issues as well as the modification of any extra client requirements. The project will be prepared for deployment and proper administration once the entire procedure is finished. It is simple to maintain since the phases are strict and exact, and each phase is completed one at a time.

Chapter 5

Body of the Project

5.1 Work Description

The purpose of this process is to develop approval management system, which will be used for Travel authorisation, Asset code creation, Tender approval, business case approval. Usually It takes a longer period of time because it needs a hierarchical approval according to company DoA. And the Executive admin needs to manually send email and wait for an approval before sending to the next approver in line.

5.2 System Analysis

5.2.1 Six Element Analysis

5.2.2 Feasibility Analysis

To ascertain the project's viability as soon as possible, a feasibility study is required. If a flawed system is identified early in the defining process, months or years of work, significant amounts of money, and most significantly, severe professional embarrassment can be avoided. Feasibility analysis is the process of examining a proposed project to see if it is feasible and should move forward. The primary focus of this examination is the confirmation of the design, plan, and strategy. This can be used to verify presumptions, restrictions, decisions, and approaches. Technical feasibility, operational feasibility, and economic feasibility are the three forms of feasibility analysis.

- Technical feasibility: A technical feasibility assessment helps organizations decide if they have the technical capabilities to turn the idea into a useful, fully functional solution. It supports project troubleshooting prior to the commencement of work.

Process	Six Element Analysis					
	Human	**Non-computing hardware**	**Computing hardware**	**Software**	**Database**	**Comm nicati and netwo**
Login	Admin	N/A	Computer	Web browser, OneID	Sharepoint	Intern
approval request	Admin	N/A	Computer	Web browser, OneID	Sharepoint	Intern
prepared documents	Admin	N/A	Computer	Web browser, OneID	Sharepoint	Intern
supporting documents	Admin	N/A	Computer	Web browser, OneID	Sharepoint	Intern
select approvers	Admin	N/A	Computer	Web browser, OneID	Sharepoint	Intern

Table 5.1: Six Element Analysis Table

The analysis pinpoints potential problems and suggests fixes for them. For long-term planning, it can serve as a flowchart for how products and services develop before they are released onto the market. Technical Feasibility is concerned with both the software and hardware requirements. The development of type systems is not constrained by technology. To carry out this technical feasibility, we must ascertain whether the required technology and the suggested equipment collectively have the ability to keep the data that is employed in the project.

- Operational feasibility: This term relates to the ability of a new system to solve issues. If a new system's software is too challenging to operate, employees could make too many mistakes and stop using it altogether. As a result, it couldn't demonstrate operational viability. It aids in maximizing opportunities and satisfies the demands established during the project's development. It entails imagining if the program will function after it is produced and implemented. This feasibility is based on human resources. It entails estimating whether the system will be used if it is built and implemented and depends on the amount of human resources that are available for the project.

- Economic feasibility: Assessing the economic viability of a new venture entails both financial and time commitments. It also goes by the name of cost-benefit analysis.

This type of study takes into account the costs associated with both starting and running the new business. Numerous variables are taken into account, and if they demonstrate that the notion is economical, it is usually approved. It will lower the costs associated with wasting human effort, pens, and papers. In general, an analysis will examine if there is a market for the goods and services that a new enterprise would offer, especially if they are for sale.

5.2.3 Problem Solution Analysis

Requirements are constantly changing is one of the biggest issues a developer has to cope with during the development process. In order to analyze a problem, it is necessary to first identify the primary issue and then determine its sources and effects. During this project, we have faced some problems that are stated below:

- One of the major problems that a developer has to deal with during the development process is that the requirements are always changing. The solution is before development we had to set a meeting all together for confirmation.
- During this project, We had to merge Sharepoint, Power Automate, Power Apps.
- In this project for searching people we had to connect company's portal from offic
- As technology advances, being in today's world where everyone is attached to their smart- phones. Keeping up with market trends is the solution here.

5.2.4 Effect and Constraints Analysis

In BAT Bangladesh, we have to follow the global instructions from global. There was a platform constraint, We had to build this system with Microsoft Power Platform. There were some limitations in that framework as well. And also for approving a project it takes a longer time which we were trying to solve through this system

5.3 System Design

5.3.1 Rich Picture

The rich picture shows how the system should work. All the actors, databases and-functionalities of the system is shown here and it depicts how everything is going to work

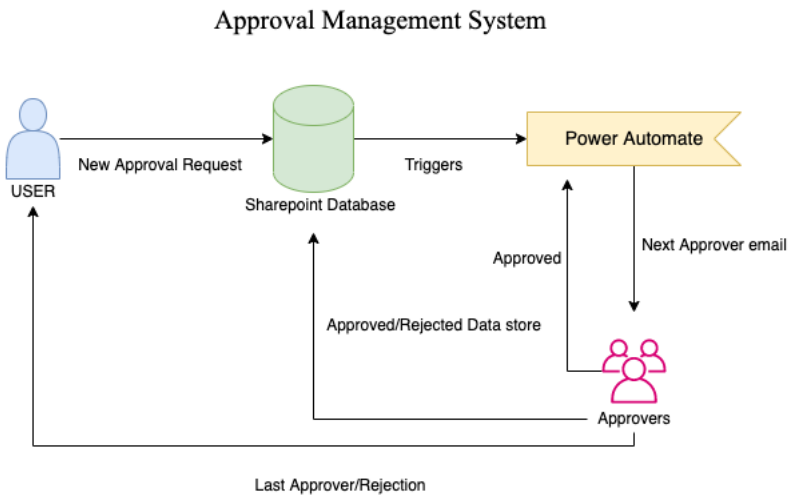


Figure 5.1: Rich Picture

5.3.2 UML Diagrams

A graphical depiction of a system is a UML diagram and its major participants, roles, actions, objects, or classes based on the UML to understand better, update, manage, or keep system documentation. UML diagrams can show a project before it begins or documents it after it has been completed. UML diagrams can depict a project before it starts or writes it once completed. However, UML diagrams' overall objective is to assist teams in envisaging how a project is or will work, and they may be applied in any sector.

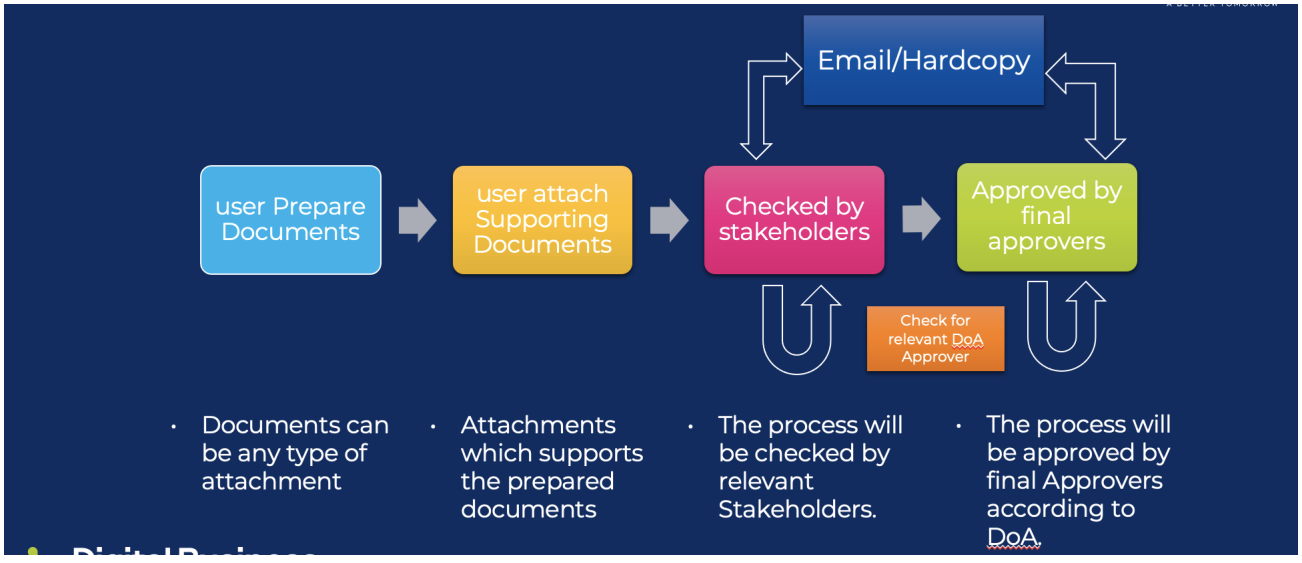


Figure 5.2: Current Process

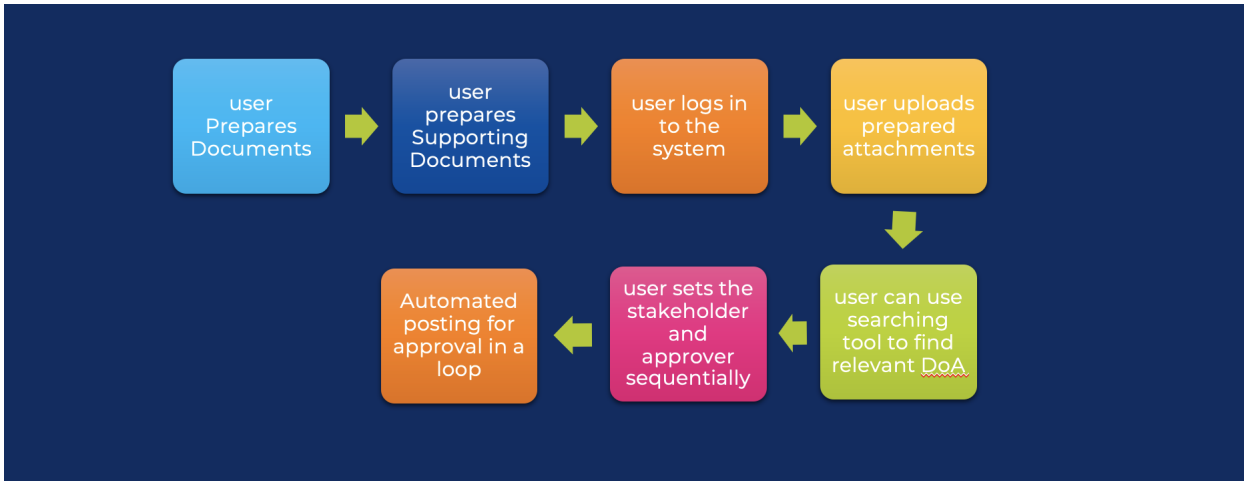


Figure 5.3: Proposed Procees

5.3.3 Functional Requirements

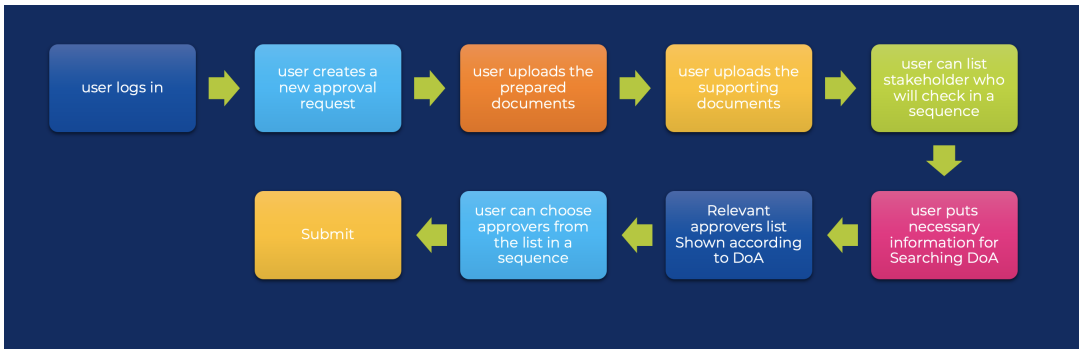


Figure 5.4: Preparer's View

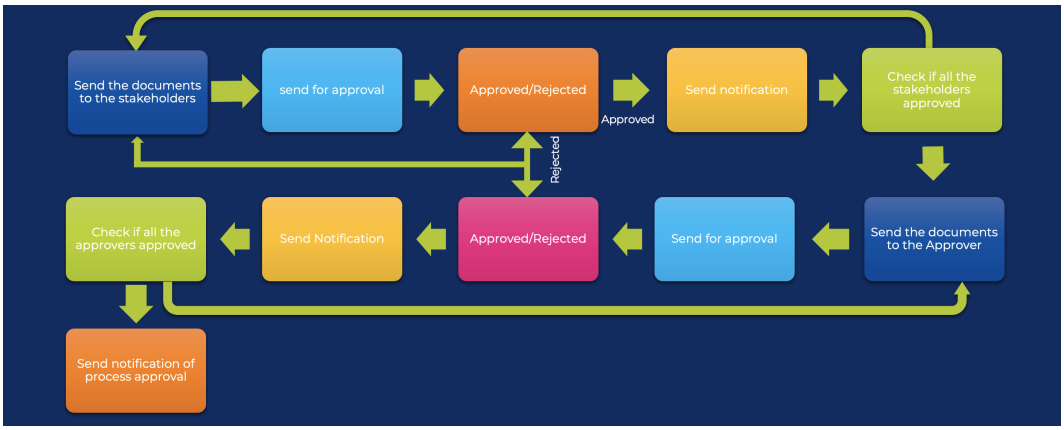


Figure 5.5: Backend Process

5.3.4 Non-Functional Requirements

- Scalability: The system is accessible from any devices like computers, smartphones etc with internet connection availability.
- Usability: The system is made user friendly and designed to be an easy to use interface for the users.
- Security: All information and data on the server is secured. Only the BAT employees will have access to the system.
- Performance: The system's performance has smooth functioning with a secured data storage facility. It is expected to have acceptable throughput and response time without lagging.

5.4 Product Features

5.4.1 Input



Figure 5.6: Button Input

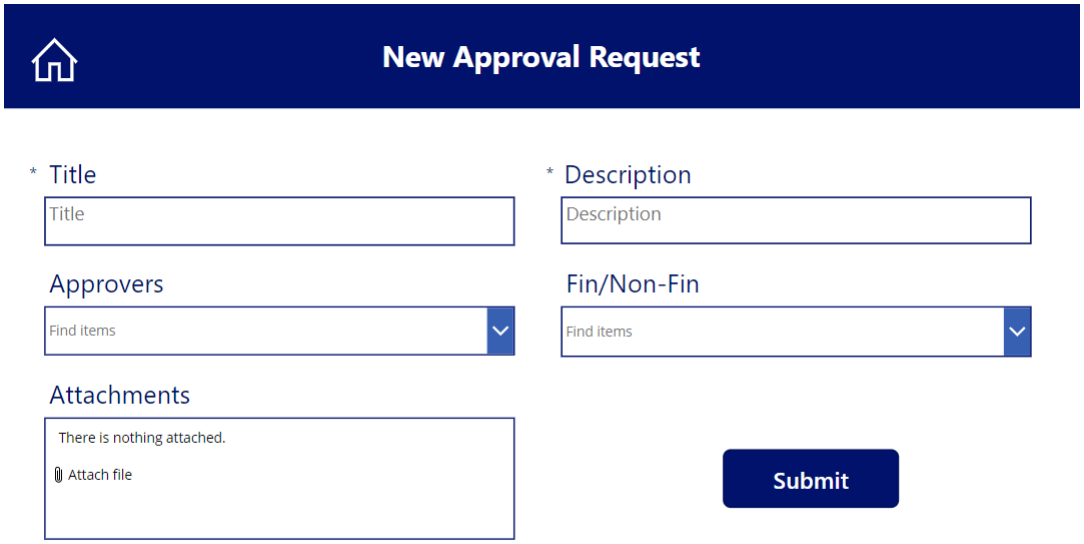


Figure 5.7: Approval Form Input

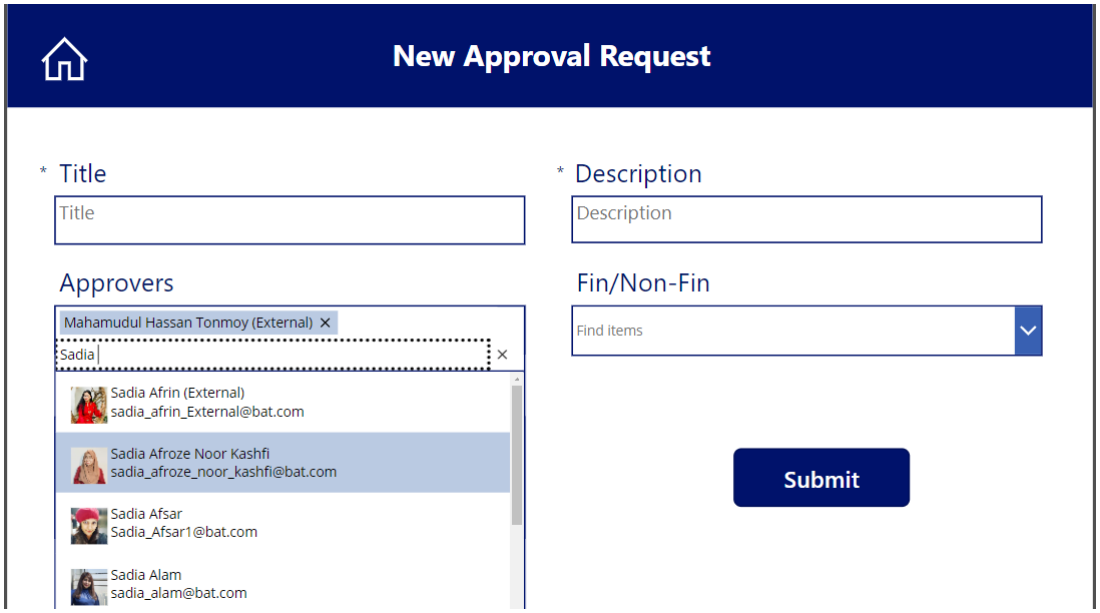


Figure 5.8: Approver Search

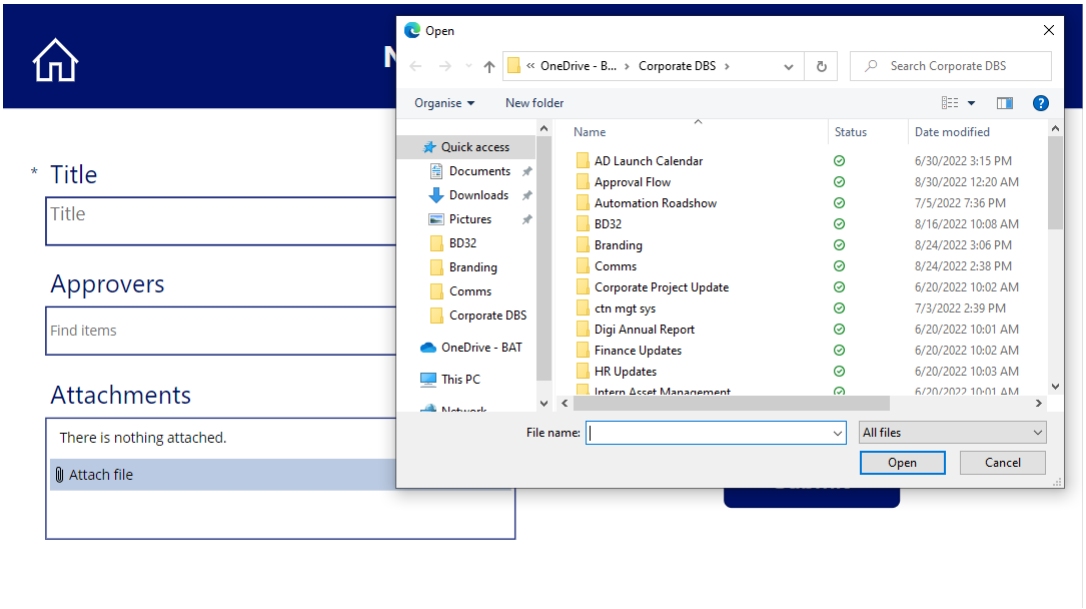


Figure 5.9: Attachment input

5.4.2 Output

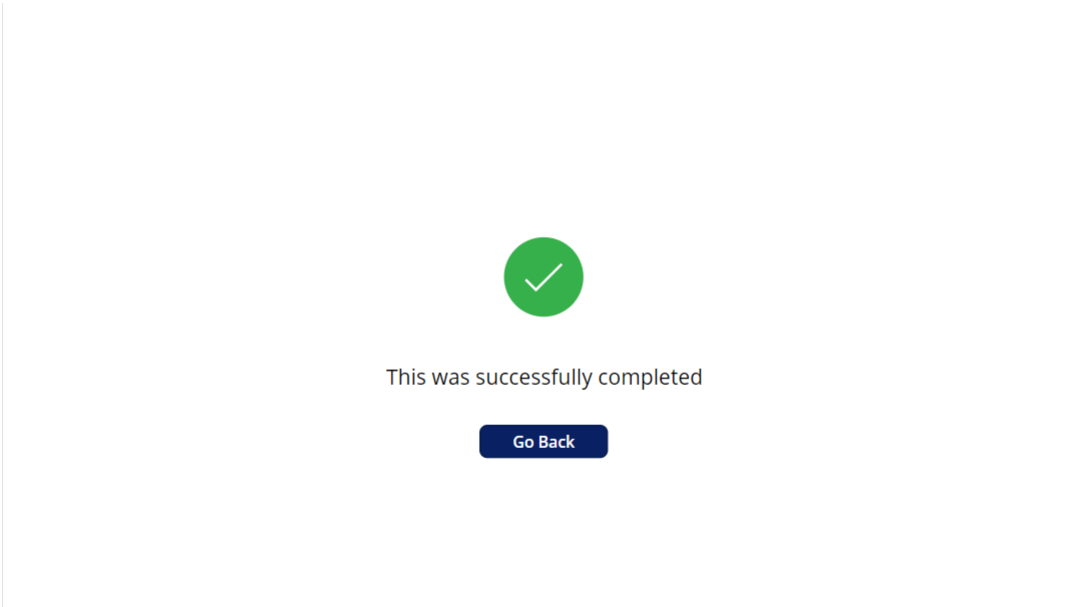


Figure 5.10: Submit Success Output

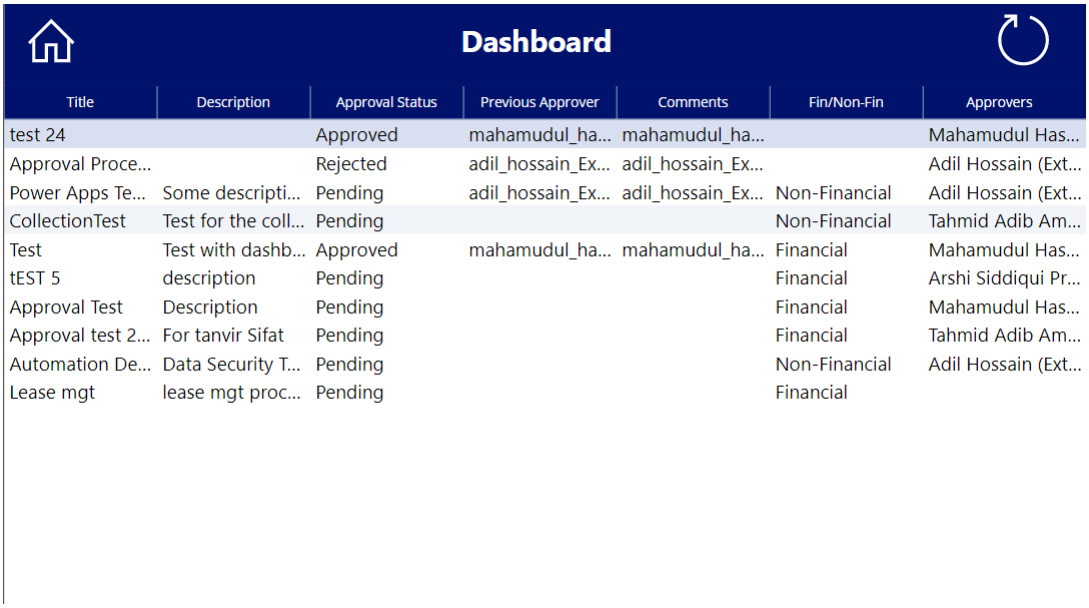


Figure 5.11: Dashboard Output

5.4.3 Architecture

Architecture defines the backbone of any structure. It is mapped to show how a system will stand. For a website, a website architecture establishes the website's design, that is, how the website will work, how the data will be transferred, and where they will be stored. The organization was obliged to use Microsoft products for the Approval Management System. Power Apps, Power Automate, and Sharepoint were used to build the project.For the development of the front-end user interface, we used Power Apps and connected to the SharePoint database. The power automate flow was then created, and it is triggered by sharepoint entries.

Chapter 6

Results & Analysis

6.1 Overview

We take specific actions to obtain project requirements in the early stages of requirement collecting. The executive administrators underwent a system understanding activity during their initial interview. The second step was the analysis, in which my office employees took part. After the interviews had been completed, a general understanding of the project had been created. This made clear the functions that ought to be included in a system like this. It was decided at a second interview session what technology would be employed, the system interface, and the necessary data. Finally, the prototype with all the information gathered from the interviews and analysis developed.

6.2 Results from Analysis

In the beginning, it was obvious what we intended to produce from the interview. The functions of the application were determined from the interviews. Through this analysis, fundamental questions, such as what the employee truly wants and how to make the program more user-friendly, were addressed. Based on the analysis, we discovered that our employees are keen to use the approval management system.

Chapter 7

Project as Engineering Problem Analysis

7.1 Sustainability of the Project/Work

The production of long-term software has been one of the biggest problems in software development. In order to ensure that future generations will be able to meet their own requirements, sustainable development aims to meet present demands while preserving the health of shared systems and the environment. To make the software last longer, regular system maintenance is carried out. With this approach, everything has become automated and time efficient. It is understandable that the "Approval Management System" is very sustainable given the fast-paced environment at BAT.

7.2 Social and Environmental Effects and Analysis

The Approval Management System may have some social implications even though it is only used for approval automation. Every user activity and request for approval is recorded using this system. Users will gain from an improvement in their use of the system when everyone strives to improve and the system performs better. The database can be used to safely store all data. Users need not be concerned about data loss as a result because there will be a backup of the database. We don't need to use as much paper as we did in the past while using this approach, which is good for the environment.

7.3 Addressing Ethics and Ethical Issues

Employees of BAT will have complete access to the system. The database will not disclose any personal data. The highest level of security was our goal. They must utilize their employee oneID as single sign-on to access their portal.

Chapter 8

Lesson Learned

8.1 Problems Faced During this Period

Understanding and defining the issue that has to be fixed constitutes problem analysis. Finding solutions that address the requirements and constraints of the problem is a key component of problem-solving. Much of what is done in the design and development of information systems is to solve problems, regardless of whether the system attempts to enhance current practices or take advantage of market opportunities. Here are a few instances:

- Familiarity with tech stacks: In this project we used Microsoft's power platform. Coming from developer background, I was not familiar with power platform.
- Testing: Despite the development team's great skills in the development phase, a dedicated testing team was lacking. As a result, the development team had to perform the testing.
- Time Management: It can be challenging to book an appointment with employees for a requirement analysis in a fast-paced company like BAT because of their busy schedules.

8.2 Solution of those Problems

- Familiarity with tech stacks: The power platform was quickly learned and adapted by working in a cooperative team. Senior developers assisted me by providing resources and hands-on expertise.
- Testing:Before the release of the product, we began user acceptance testing (UAT) with users. Due to this technique, a testing procedure more efficient.

- Time Management: As soon as I felt comfortable, I made an effort to catch up with them during breaks or preschedule their time.

Chapter 9

Future Work & Conclusion

9.1 Future Works

The work is not completed here. More features will be added to this program in the future, including: • DoA Recommendation: Currently, admin must look up and enter DoA manually. On the basis of the approval request, we may in the future recommend DoA approver hierarchies. • Approval Forwarding: Chain approvals are possible with approvals that are forwarded to subordinates of a specific approver for review.

9.2 Conclusion

I worked on a system called the Approval management system for BAT Bangladesh throughout my internship. This approach for managing approvals is made to be efficient and effective for employees. This project was started to enhance the approvals process, and it will save over a 1,000 man hours annually. Working for BAT Bangladesh has been an amazing opportunity for me. My first entrance into the corporate world was through the three-month internship program here. My experience was rich in information regarding the MNC and the development process. I now know the optimum method for managing the many software needs and development requirements. After completing this program, I have a clear picture of what my future career will entail.

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An Undergraduate Internship report on Approval Management System

By

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Summer, 2022

Consent Form

The student modified the internship final report as per the recommendations made by his/her academic supervisor and/or panel members during final viva, and the department can use this version for archiving.

(Signature of the Supervisor)

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