# INTRODUCTION

## Introduction

Document Management System (DMS) has significantly contributed to the effectiveness of an organization. Nowadays many activities related to people are handled by physical forms up to date; and after filling those forms, it follows long continual manual procedures to get those works done. A document management system is essentially a software solution designed to store, organize, track, and manage internal documents in an organization. The file types typically supported by document management system include text, images, spreadsheets, audio, video, and web documents. To sum it up, Document Management System is a tool that acts as a centralized repository of all corporate data. It can be a standalone system or a part of a bigger corporate content management system, but the purpose for both is the same simplifying the workflow and speeding up business processes.

## Background & motivation

Document management system can help organize all your files and data in one place, keep track of all your critical documents, speed up your workflow, improve accuracy and provide around-the-clock access to documents from any part of the world. If it is an online system users can upload the file to relevant website and the admin can view, retrieve, edit, or delete at any time according to his/her convenience. Document management system in an organization need to be up to date as the job demands them to be. Document management does not just stop with file management, but also contains dynamical workflow and folder manipulation. Today, file manipulation processes spread beyond this and are more of people operations.

## Problem in brief

At the start of a business, manual document management system can be quick, easy, and necessary. However, as your business grows manual filing, retrieving can become a very cumbersome practice. In the busy business world, it is important that you can file, find, and store documents in a quick and effective way. But this system had lots of issues while handling documents. Such as

• Takes up a lot of space

• Hard to make changes

• Access time

• Lack of security

• Prone to damage

• Limit communication and collaboration

This is physically a tiresome process because it consumes much time waiting.

## AIM & OBJECTIVES

Aim:

The aim of this project is to develop a system for addressing manual manipulation of documents for an organization with the use of web application

Objectives:

* i. Project proposal (Initial version)
* ii. Study of the Human Resource Management and existing HRIS in the market.
* iii. Study of modern technologies to implement the actual system
* ¬ React.js ¬ Node.js ¬ Flutter ¬ mongo DB ¬ Other technologies
* iv. Requirement analysis and preparing SRS
* v. Project proposal (Final version) vi. Design ¬ Database design ¬ UML diagrams ¬ UI design vii. Preparing Interim Report
* viii. Coding
* ix. Implementation and Integration
* x. Software Testing
* xi. Deployment

## Proposed solution

Our system contains some features that will help to overcome those problems mentioned above

Group- grp id, grp description, grp name, userid

User management user history- userid, last login, access doc,

Admin management

File management

Folder management

Dynamical workflow

Notification settings

Search & index

Security

User history

Versioning

## Features in brief

* User management – Main features of this module are personal details, contact details, emergency contacts, dependence, job, qualification etc
* Admin management – Main features are users, database, reporting, organizational structure, promotion, permission etc.
* File management - This module includes file details,
* Folder management – It contains the details about folders and its creators
* Dynamical workflow – This module has users, authorization details, permission etc.
* Notification settings – Main features of this module are messages, permissions

## Resources requirements

1. .NET Core
2. Angular
3. Azure cloud services
4. Mongo DB
5. SQL
6. GitHub
7. IDE (Visual Studio, Visual studio code, IntelliJ)
8. Browser
9. Computer with 4GB and 1.6GHZ
10. Internet connectivity
11. Windows OS

# Similar solutions

## Introductions

It could be argued that cave paintings were an early example of document management, but we start our document management history with the 'game changer' of its day, the nineteenth century filing cabinet. The cabinet in its many forms was the mainstay of paper document management for more than a century until it faced a recent backlash from modernists, techies, and green activists. There after Electronic document management (EDMS) evolved in the 1980s. Initially EDMS was a complicated tool managed by expert operators. By the early 1990s user-friendly systems saw the emergence of knowledge workers using document management systems in their roles, which then extended to non-specialist staff. We also started to see more collaboration with clients using EDMS and automated processes such as the retention and timely destruction of records to comply with regulations.

In this chapter we focus on documenting the different approaches of addressing the same underlying problem which we have selected to offer a solution for. Document management system is a type of software for documents/files that incorporates a variety of systems and processes to ensure that used to capture, track and store electronic documents such as PDFs, word processing files and digital images of paper-based content. It provides document security, access control, centralized storage, audit trails and streamlined search and retrieval

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## Similar products

Following listed software are some of the popular solutions that’s focused on the above problems.

* Seed DMS
* Open Doc Man
* Open KM

### Seed DMS

Seed DMS is a simple to use and intuitive document management solution with a wide range of sophisticated and functional features. The software is free to use, and the open-source version offers betterment with every update.

Graphical user interface, website

Description automatically generated

### Open Doc Man

Open Doc Man is a free, web-based, open-source document management system (DMS). This easy-to-use and set-up software allow users to add any file type to the system. The software was released under the GPL license. It is ideal for individuals, small businesses, non-profits organizations, educational institutions, government agencies, and so on.

Graphical user interface, text, application, email

Description automatically generated

### Open KM

Open KM is one of the most efficient and powerful systems that facilitates safe and efficient management of your documents. This free and open-source document management solution makes it easier for any size organization to store, manage and retrieve information and images of any file types at any time. Open KM’s advanced search functionality is one of the key highlights. Improve your decision-making capability and boost the productivity of your workgroups and enterprise easily with this document management software.

Graphical user interface, application

Description automatically generated

## SUMMARY

According to the above research it’s evident that there are many different approaches of Document Management System as a solution to the above problem. Almost all the solutions use the locations to identify where the users are currently staying, as a common feature. Compared to those currently used solutions our web application does not support and promote only CRUD operations on file operations but also every other features as well. Moreover, our system ensures the privacy and security of the users in a better way

# Technology used

## Introduction

In this chapter, we focus on the technology that can be used to build software that analyses and submits processed data to a dashboard and a notification system for requirements. The solution suggested varies from the method of approaching the technology.

Before choosing the technology which best fits the software, there are certain requirements that should be taken into consideration. When selecting the technology, variables such as compatibility, quick and easy service and portability are given priority. The technology that will be used to build the Document management system will be addressed in this chapter.

|  |  |  |  |
| --- | --- | --- | --- |
| Front-End | Back-End | System Database | Cloud service |
| Angular | .NET Core | Mongo DB  SQL | Azure |

## Technologies

### Angular

Angular is a TypeScript-based free and open-source web application framework led by the Angular Team at Google and by a community of individuals and corporations. Angular is a complete rewrite from the same team that built AngularJS. Angular is a platform for building mobile and desktop web applications

### .NET Core

NET Core is a new version of .NET Framework, which is a free, open-source, general-purpose development platform maintained by Microsoft. for Windows, Linux, and macOS operating systems. It is a cross-platform successor to .NET Framework. The project is primarily developed by Microsoft employees by way of the .NET Foundation and released under the MIT License. NET is a developer platform with tools and libraries for building any type of app, including web, mobile, desktop, games, IoT, cloud, and microservices.

### Mongo DB

It is a free and open-source cross-platform document-oriented database program. Classified as a NOSQL database program. Reasons for choosing this technology are flexible data model (no predefined schema), expressive Query Syntax, stores workable data in RAM (able to serve information much faster), highly scalable and reliable.

### SQL

SQL is a domain-specific language/ Query language used in programming and designed for managing data held in a relational database management system, or for stream processing in a relational data stream management system.

## Summary

In this chapter we discussed about technologies that we used to developed web application and how they are applied to function of this project. Next chapter is about approach to the proposed solution

# Proposed solution

## Introduction

Our Document Management system is an intersection of documents and information technology through a Document management software solution. This allows file manipulation and processes to occur electronically. It is a software or online solution for documents/files that incorporates a variety of systems and processes to ensure that used to capture, track and store electronic documents such as PDFs, word processing files and digital images of paper-based content. The goal of DMS is to organize all your files and data in one place, keep track of all your critical documents, speed up your workflow, improve accuracy and provide around-the-clock access to documents from any part of the world

Finally, we are planned to implement with,

* User Authentication
* Admin Management
* System Administration and User Roles
* User Dashboard
* User Management
* File Management
* Folder Management
* Dynamical Workflow
* Settings
* Search & Index
* And some other features

## Users

|  |  |
| --- | --- |
| User | Activities:   * Login using name & password * View dashboard * Update profile * Edit profile details * File upload * View/modify/delete file * Create folder * Change password * Create folders * Username & password * File details * Messages * Folder details * User details |
| Administrator | * Login using username & password * Add/modify organization details * Add/modify employee roles * Add employee to the organization * Promote employees * Approve CRUD operations request * Monitor user history * Modify user permissions * Handle complaints * Handle group maintenance * Username & password * Employee basic details * Organization details * Notifications forms * Messages   Admin UI |

## Process of the system

System begins with login page. Every user must login before the home page. After login, home will be visible according to the user roles.

Initially, Admin is added to the database with username and password. Thereafter Admin must add the organization info and finalise the roles of each user according to their positions in the organization. Then user must register into the page and must get approval from admin for continuous process in system. While logging into the software, Dashboard will be appeared. In the dashboard, user can see file management module, file uploading module, folder manipulation module and other modules. User can see messages from workflow groups or notifications at the top of the home page. User can upload documents to the system meanwhile they can create new documents or edit, delete, read the documents according to their roles and restrictions. Folders also can be created by users for ease of access. Every new document will be undergoing several supervisions by the higher officials for approval through the workflow system in this software. Higher officials can validate, error detection, approve the documents.

## Summary

This chapter provides an overall idea on our project and how it works. Furthermore we have described the process of our project from the beginning.in the next chapter it is described how we have analysed and designed our project

# Analysis and design

## Introduction

This chapter provides detailed description of the system by describing and analysing each module of the system. This chapter contains the diagrams which show the process clearly. Our proposed system consists of below modules

## Functional requirements

* User management
* Admi management
* File management
* Folder management
* Dynamical workflow
* Notification settings
* Search & index
* Security
* User history
* Versioning

## Non-functional requirements

* Performance Requirements
* Safety Requirements
* Security Requirements
* Development environment requirement

## Design

As the requirement gathering is done, we designed UML diagrams for the system. The list of diagrams we decided to draw is as follows

* Context diagram
* Use case diagram
* Activity diagrams
* Sequence diagrams
* Class diagram
* EER diagram

## Summary

This chapter shows the designing and the analysis part of each module. There are mainly five modules in the systems which are Admin module, PIM module, Leave module, Time/Attendance module, and Recruitment module. Next chapter is about the implementation of the proposed solution with these modules

# Implementation

## Introduction

In this chapter describes about the implementation of our system which include Admin module, PIM module, Leave module, Time/Attendance module, and Recruitment module. Use case diagram, Activity diagram, Sequence diagram, and Entity Relationship model gives clear picture for the implementation and development process.

## implementation

## Summary

In this part shows the software use to implement each module and show the process with a module. Each module has interconnections with the system to give a better output to the user. Next chapter is about and evaluation part of the proposed solution

# Discussion

## Introduction

From all previous chapters we discussed about the problem that we are addressing through our project, background and motivation, existing systems, client requirements and how we are planning to develop a system to acquire those requirements including designing and implementation. In this chapter, we discuss the differences in our system compared to existing systems, further developments, evaluation plan of our project and a summary of what we discussed in this report.

## Testing and Evaluation

Under testing and evaluation first we have designed Entity Relationship Diagrams, UML Diagrams for better visual representation and as an effective communication tool. In UML diagrams we completed Use case diagram, Activity diagrams, Sequence diagrams, Class diagrams. The use cases show every task done by the actors of the system as well the users of the system. Class diagram is designed by observing the classes of the system. Every class having the attributes and functions. It is very vital to get an overall idea about the system. Sequence diagram shows the whole scenario of the system. Objects of the system can be identified respectively by using the Sequence diagram. We have designed the activity diagrams according to the functionalities of the system. These diagrams are very convenient to proceed with the development of the system.

# References

Individual contributions to the project

S.Keethasaba 194080H

I divided the work among the group, and we started working according to the agile scrum. First, we made ourselves clear and had a proper overview of the project and the proposed solution. I went on with the basic of software process models which will help our system. And we choose the most appropriate model which is agile scrum. I was allocated to implement Dynamical workflow module. I studied about how user privileges are implemented through the internet. As we already decided to use .NET Core, SQL, I learned these technologies from the internet using YouTube, Udemy and other web resources. I studied how workflow define the company operations. I supported to draw UML diagrams like use case, activity, and class specially I gave ideas and accurate requirements related to admin module. I implemented part of frontend for the web application using Angular.

k.kukesan 194073

I went through the problem very specifically which our client was given. And contributed to give a proper solution by giving proper and effective technologies. Specifically, I was allocated to implement time module which is a module that managing the employee’s working hours. I searched and learned things and technics to track employee’s working time. Finally, I gave an appropriate solution to track employees’ time in a secure manner. I learned about time sheet, how to mark attendance in secure way, how to show working time graph and modifying time details, calculate performance and mange notification. I used Udemy, you tube, w3 school as resources to get knowledge on node.js, mongo dB, flutter. I also implement UI design for the web application.

S.Sarangani 194144J

I was allocated to implement file management module. I learned a lot about how to manage files and its operations within an organization. There are several techniques that are used manipulate files such as scanning documents via OCR technology and barcode scanning. Specially I learned how to upload files, manipulating with CRUD operations, compressing files to reduce the size while uploading documents and managing different types of files with extensions. I studied .NET Core, mongo DB as technologies from the internet like you tube, w3 school, etc. I contributed to implement to build UML like class, use case, activity diagrams related to file management module. I contribute of preparing the documentation of our project.

K.Shobishanth 194153K

I was responsible for implementing user report module. I searched on the internet and find out what are documents that are used by HR department and learned how to generate these documents from existing data in the data base. Especially I learned how to define, generate and edit a report, how to organize data to show the report, bug tracker section, contact form and files download features. I learned mongo DB, node.js, react.js from Udemy, YouTube and other web resources. And learned UI design and contributed to design report module UI, Inquiry contacts us form and request progress page. I contributed to draw UML like class, use case, activity diagrams and gave accurate information related to report module.

T.Uthayakumar 194173V

I was allocated to implement PIM (Personal Information Management). I learned what features basically PIM module should provide and defined actual information of employees that should be stored in the database. Especially I learned about Employee information, User interface to show Employee data, how to protect personal information from unauthorized access, user’s report facilities, users’ membership, work experience and how employees upload their documents. And I learned about UI design, git, node.js, mongo DB, react.js from Udemy, you tube and other web resources. I contributed to draw UML diagrams specially related to PIM module. I learned how to implement user authentication, secure our database, build backend using MVC architecture as well database backup and storage.