ABSTRACT

A Workflow is a series of decisions made by different people that determines what happens to a particular request that one of those people made, according to a defined and repeatable process.WfMS allows the user to define different workflows for different types of jobs or processes. For example, in a manufacturing setting, a design document might be automatically routed from designer to technical director to the production engineer.At each stage in the workflow, one individual or group is responsible for a specific task. Once the task is complete, WfMS ensures that the individuals responsible for the next task are notified and receive the data they need to execute their stage of the process.WfMS also automates redundant tasks and ensures that uncompleted tasks are followed up.This project is built using Node.js for back-end and React.js for front-end. Node.js is an open-source and cross-platform runtime environment for executing JavaScript code outside a browser .Node.js for building back-end services like APIs like Web App or Mobile App.NodeJS is not a framework and it's not a programming language.React.js is an open-source JavaScript library. This front-end framework allows you to develop user interfaces for websites and apps

The website has some features like:

1. **Increased efficiency-** Automating time-consuming tasks frees employees up to focus on their core activities.
2. **Increased accountability-** Employees can see what they are supposed to be doing and when important deadlines must be met. This also serves to boost job satisfaction.
3. **Increased transparency-**Both employees and management can see all activities and who is responsible for completing each task.
4. **Coordination-**Provides coordination of work between the Employees and staff of the organization.

Contents

Chapter 1

INTRODUCTION

1.Project Purpose

Workflow management is the coordination of tasks that make up the work an organization does. By 'workflow' we mean a sequence of tasks that are part of some larger task, and is sometimes synonymous with 'business process'. The purpose of a workflow is to achieve some result, and the purpose of workflow management is to achieve better results according to some set of goals.

Workflow management is principally a management discipline, focused on the structure of work within some organization and how teams collaborate to complete this work. In principle, workflow management doesn't require software, but in practice software tools are used to keep track of the work and to automate parts of it.

Workflow management is concerned with the work that people do, but tasks may also be automated and performed by IT systems – computer software. Workflow management can therefore include IT systems integration, in order to share data between workflows and other IT systems within an organization.

1.1 BENEFITS AND LIMITATIONS OF WORKFLOW MANAGEMENT

1. Reduced errors

Operating with zero errors is impossible. But being proactive in identifying and setting errors right is something you can work on. With workflow management systems, it is easier to prevent errors from occurring in the first place. And if they happen, your system pinpoints the exact location. You can work out the kinks and prevent the same errors from happening again

2. Improved connectivity

Workflow management systems connect multiple entities–people, software, and work culture. Employees have communication tools to connect with each other. But what about their work? Work should be equally well-connected to enable high productivity

3. Increased productivity

Employees feel the difference before and after you implement a workflow management system. Since all workflows are automated, teams save a lot of time sending emails and updating information in multiple tools. Employees don’t need to wait with crossed fingers for approvals to reach them. They can track the progress in the workflow system and stay in the loop.

When it comes to limitations

- It requires maintenance. Automation is a change in your process, and it should be monitored to make sure it's worth it.
- Learning Process. Every Workflow Software has its unique way of working.Unfortunately for that reason,you and your coworkers will have to take some classes or training to learn how to use the software.
- Lack of Communication
- IT Complexity.

1.2 SCOPE OF THIS PROJECT

When you are in the market for a workflow management system (WMS), you are looking for something that

- Allows individuals to automate repetitive processes
- Follows up automatically on uncompleted tasks in the process
- Gives an overall picture of the workflow along with performance metrics

Chapter 2

EXISTING & PROPOSED SYSTEM

2.1 EXISTING SYSTEM:

In general,workflow happens between the users or workers of any project or process in an organization.If they need to pass on the work to the next coworker they need to contact them physically and approach them about the next stage of the process

DRAWBACKS

- It is more time consuming.
- All the sufficient information will not be conveyed to the coworkers.
- Final outcome is not fully error free.

2.2 PROPOSED SYSTEM

The Proposed design of a workflow engine includes automation of procedures where documents, information or work is passed between several processing entities.Work contains activities with certain alms.Usually any work can be divided into smaller subworks. When the subworks have been executed, the original work is done.Each processing entity executes its own part before the work is passed onto the next processing entity. The work administrator enables the engine to process the workflows.The user interface provides two-way communication between the engine and the processing entities. The engine enables the execution and scheduling of work by ensuring that it is conveyed to the appropriate entity during a suitable interval.The work database stores the work processing information. Initial results show that the prototype based on the design is capable of processing production-based workflow.

BENEFITS:

- Reduced errors
- Improved connectivity
- Increased productivity

Chapter 3

SYSTEM REQUIREMENT

3.1 MINIMUM SOFTWARE AND HARDWARE REQUIREMENTS

3.2 Hardware Components

- Memory - 4 GB RAM or above
- Monitor 15 inch
- Hard disk 20 GB
- CD drive
- Key board
- Mouse
- Windows,intel i3 and above

3.3 Software Components

- Operating system- Windows XP,7,10, Ubuntu,MAC os
- Programming Languages-JavaScript XML,JavaSCript,SQL
- Front End-React.js
- Back End-Express.js,node
- Database-MySQL
- Web Browser-Chrome

Chapter 4

SYSTEM DESIGN

4.1 DATABASE SCHEMA

ER Diagram:

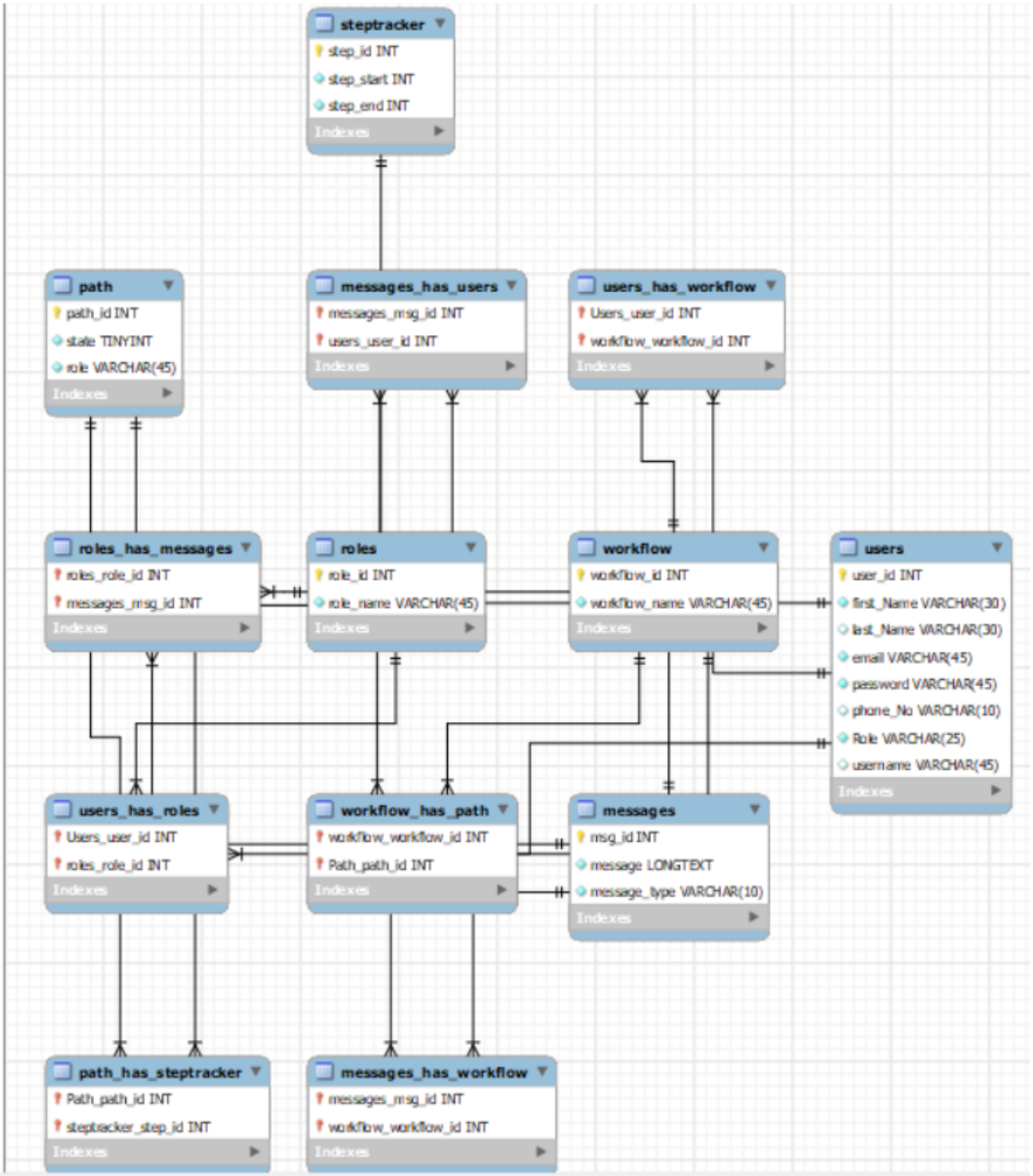

Fig 4.1 Database Schema

In a database schema diagram, we can represent the dependencies between the primary key and foreign key. Fig 3.1 shows the schema diagram for our Workflow Management project. Here, each of the relations appears as a box, with the name given to it at the top in blue, and attributes listed inside the box. Primary key attributes are shown with a bulb icon. Foreign key dependencies are shown with a hashtag symbol. Referential integrity constraints other than foreign key constraints are not shown explicitly in schema diagrams. Entity relationship diagrams let us represent several kinds of constraints, including general referential integrity constraints. Many database systems provide design tools with a graphical user interface for creating schema diagrams

4.2 DIRECTORY STRUCTURE:

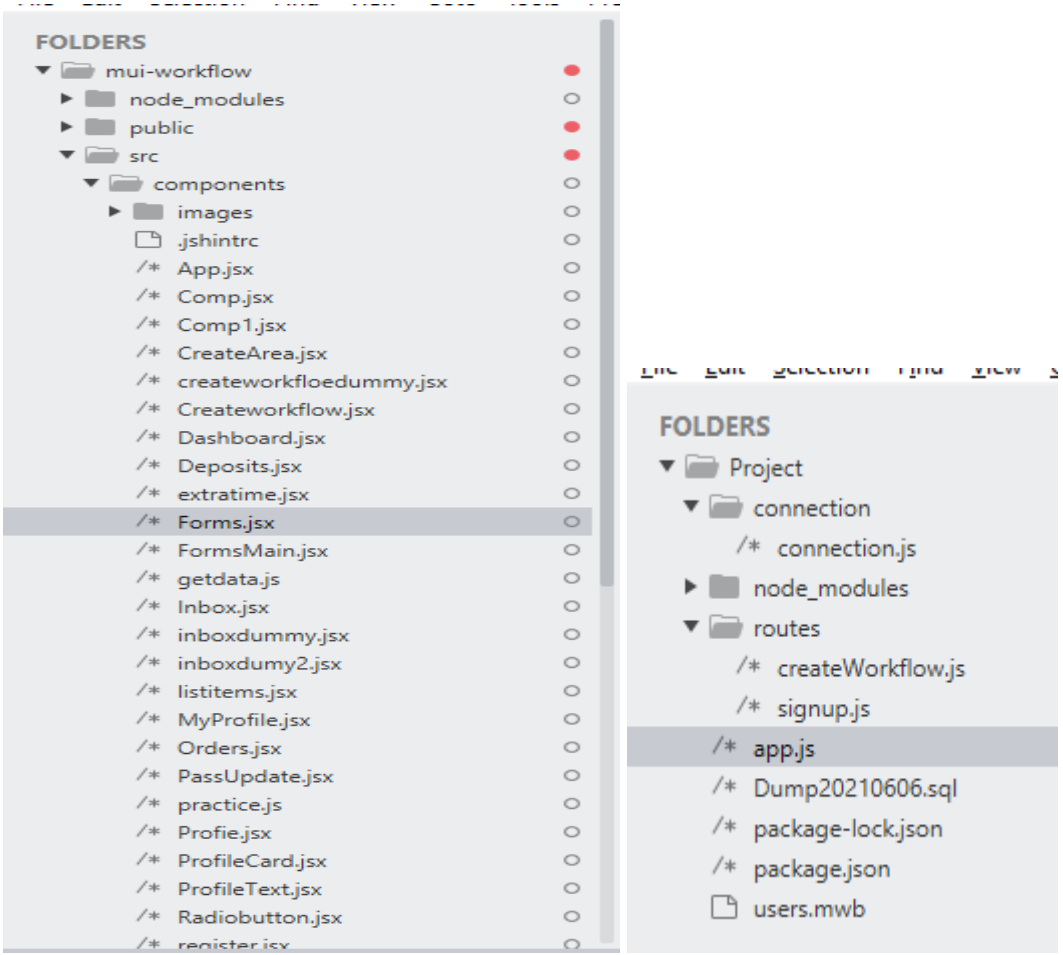

Fig 4.2 Directory structure

Chapter 5

IMPLEMENTATION

5.1 FRONT END DESIGN

5.1.1 LOGIN PAGE

The page shown in Fig 5.1.1 allows the user to login using their login credentials. This page checks whether the user is registered already or not. If the user is registered, then the user will be redirected to the home page. If the entered credentials are incorrect, then the user has to try logging in again

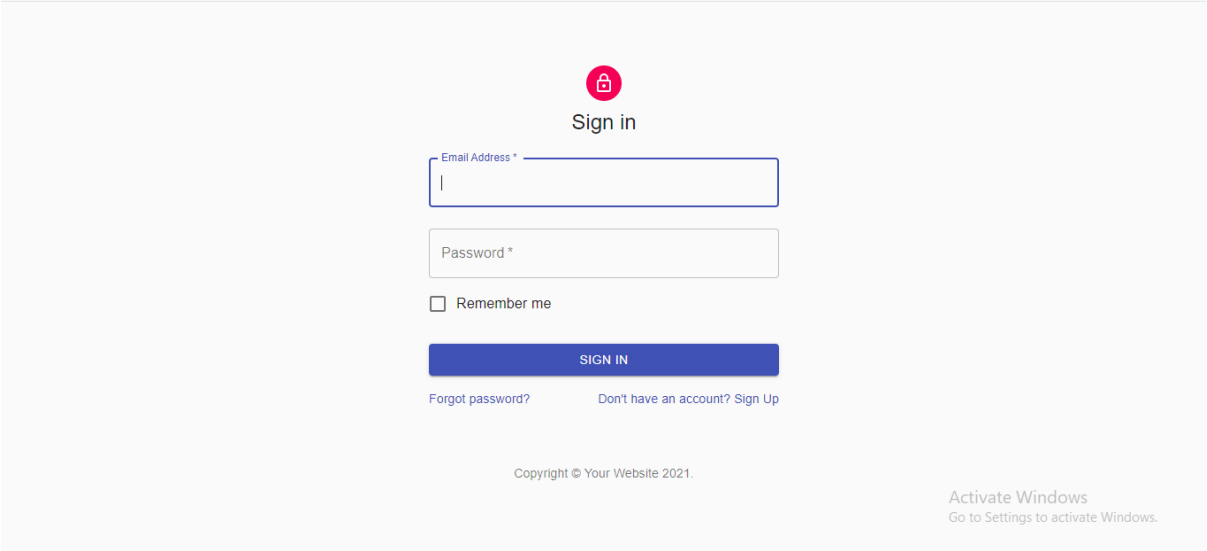

Fig 5.1.1 LOGIN PAGE

5.1.2 SIGNUP PAGE

The page shown in the fig 5.1.2 allows the new users to register by providing essential details like username, first and last name, email id, password andPhone number. The details entered here will be stored in the database.

Fig 5.1.2 REGISTER PAGE

5.1.3 HOME PAGE

The page in the Fig 5.1.3 shows the Home page where we can see all the options in the project such as **view profile, create workflow,view workflows,Proceed workflow,integration,logout.**And also the signed in user can see his messages from his coworkers if the workflow had approved or denied.

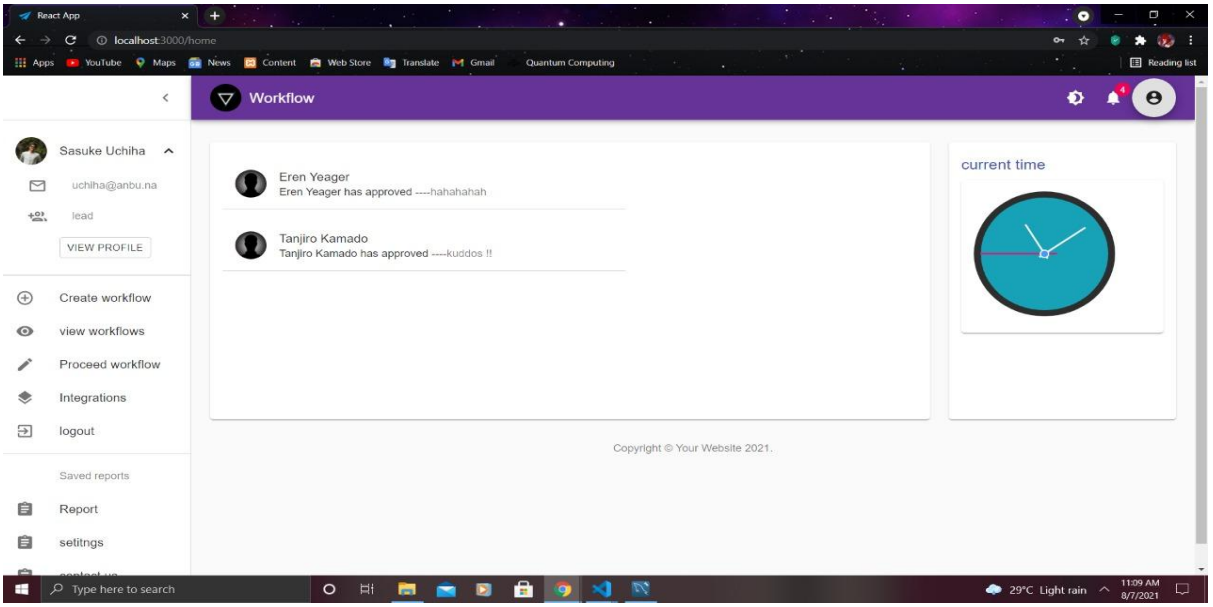

Fig 5.1.3 HOME PAGE

5.1.4 USER PROFILE PAGE-The page in Fig 5.1.4 shows the user profile page,where the user can update his profile and his personal details.only user can see and update the information.

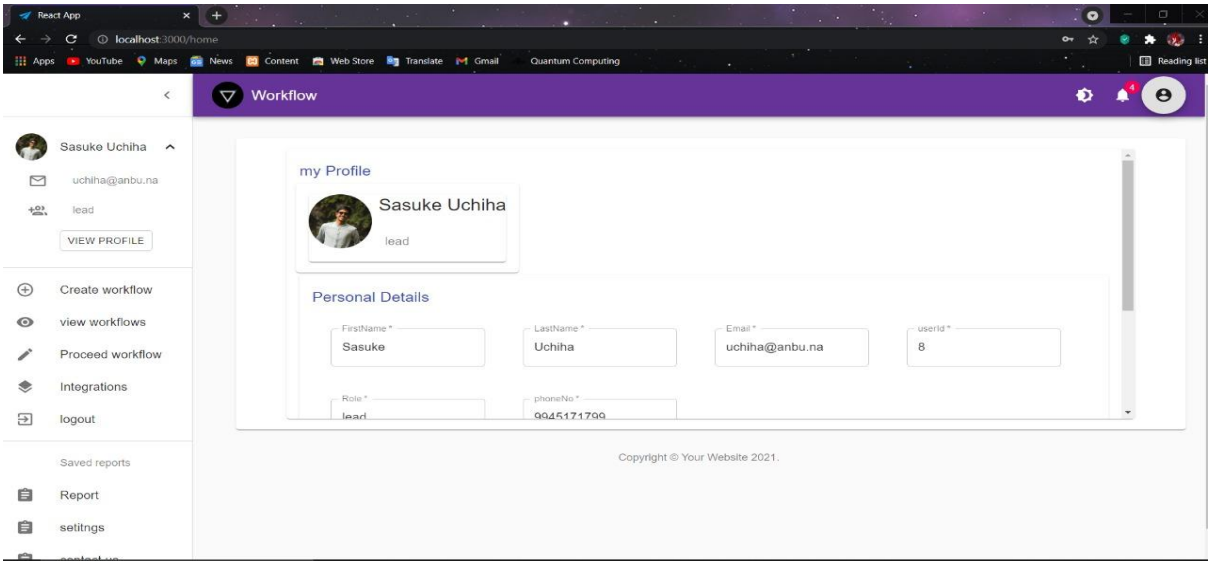

Fig 5.1.4 USER PROFILE PAGE

5.1.5 CREATE WORKFLOW PAGE

The page in Fig 5.1.5 shows the Create workflow page,where the signed in user can create any workflow and assign it to the next coworkers for the next stages of the project.Here users create Workflow with a name to the workflow and assign it to the particular coworkers with their designation names.

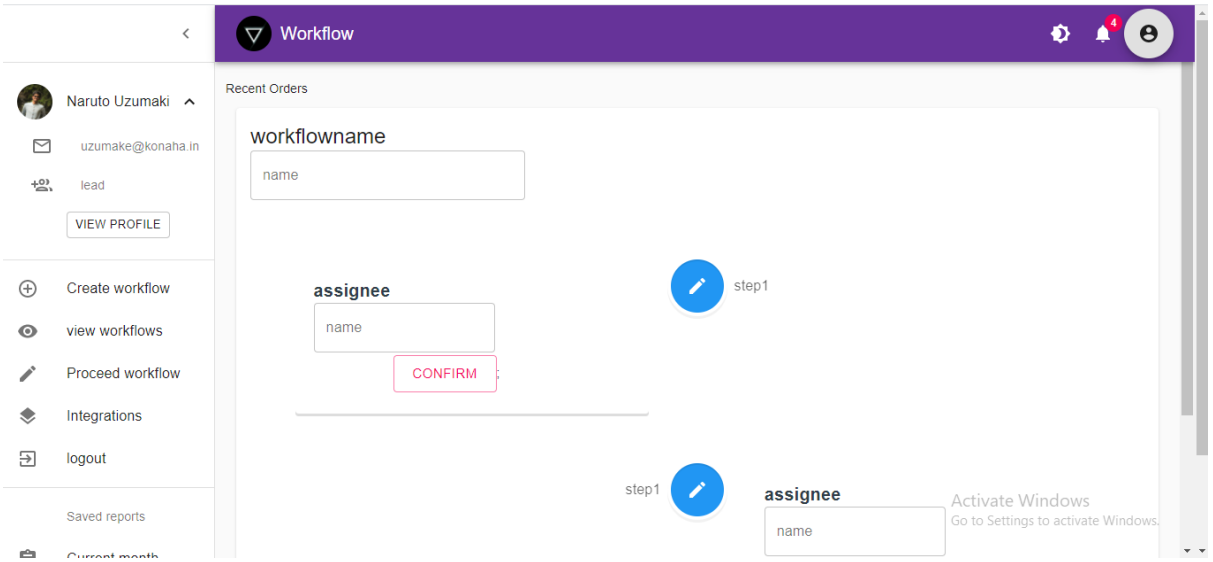

Fig 5.1.5 CREATE WORKFLOW PAGE

5.1.6 VIEW WORKFLOWS PAGE

The page in Fig 5.1.6 shows the view workflows page,where the user can view the status of the workflow ,whether the assigned workflow is approved and positioned to the next user or denied and sent back to the same user.

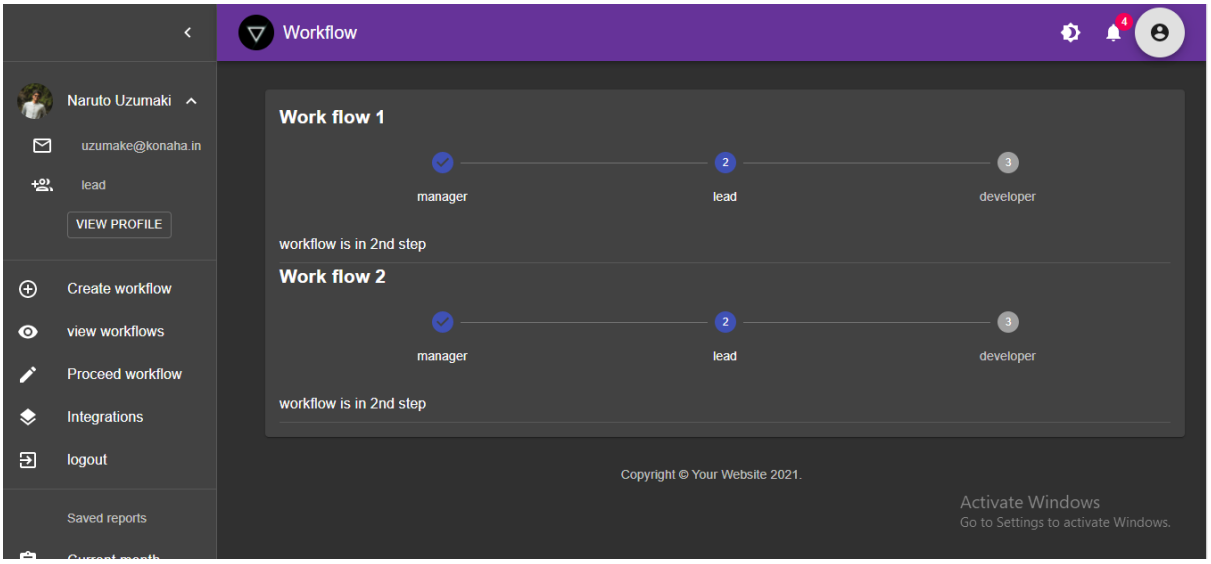

Fig 5.1.6 VIEW WORKFLOWS PAGE

5.1.7 PROCEED WORKFLOW PAGE

The page in Fig 5.1.7 shows the Proceed workflow page,where users can approve the workflow sent by the previous user in the workflow if there are no bugs and errors to the next user in the workflow.Also the users can deny the workflow and send it back to the previous user in the workflow to fix the bugs and make the project error free.

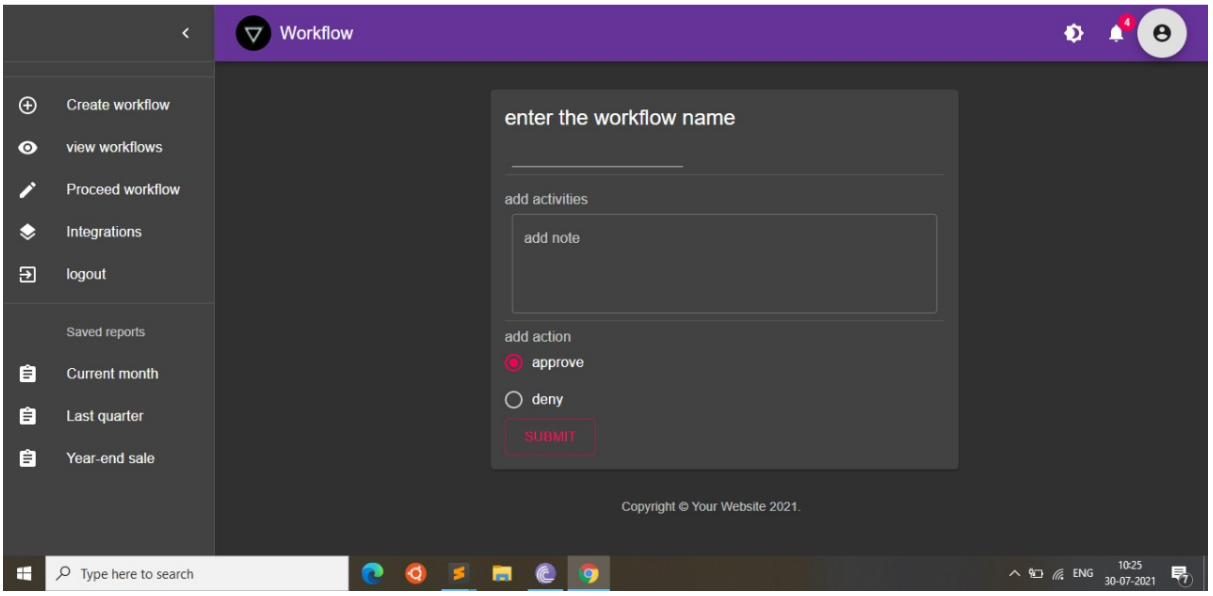

Fig 5.1.7 PROCEED WORKFLOW PAGE

5.2 BACK-END DESIGN

5.2.1 Workflow table:

This table is used to store names of all the workflow present in the database.

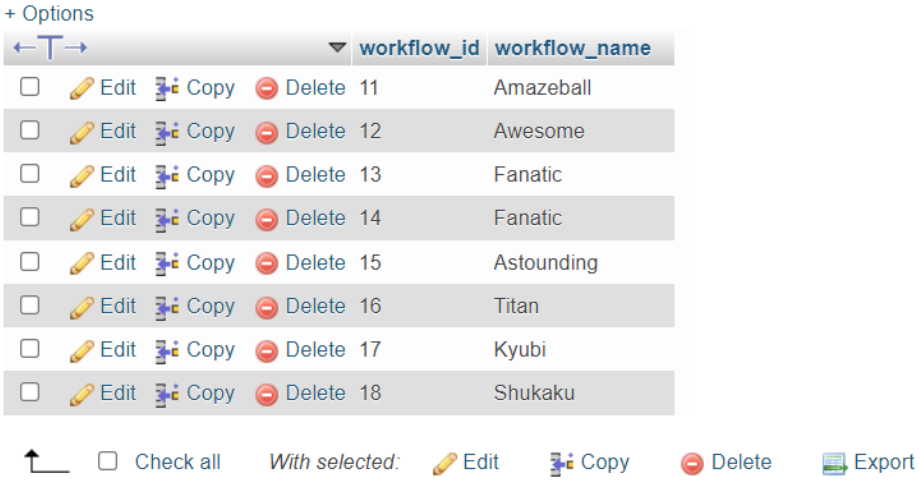

Fig 5.2.1 Workflow table

5.2.2 Users table:

This table is used to store all the registered user data like their role,phone no etc..

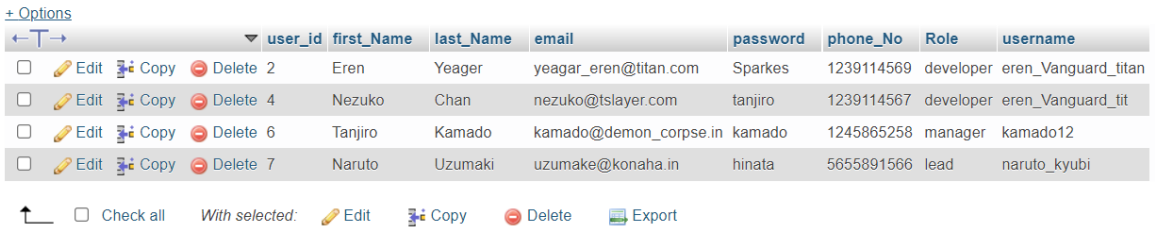

Fig 5.2.2 Users table

5.2.3 Path table:

This table is used to store the steps or stages (i.e. roles) involved in a workflow.

+ Options

	path_id	state	role
Edit Copy Delete	131	1	Manager
Edit Copy Delete	132	0	Lead
Edit Copy Delete	133	1	developer
Edit Copy Delete	134	0	Lead
Edit Copy Delete	135	1	manager
Edit Copy Delete	136	0	Lead
Edit Copy Delete	137	1	manager
Edit Copy Delete	138	0	developer
Edit Copy Delete	139	0	lead
Edit Copy Delete	140	1	manager
Edit Copy Delete	141	0	developer
Edit Copy Delete	142	0	Lead
Edit Copy Delete	143	1	manager
Edit Copy Delete	144	0	developer
Edit Copy Delete	145	0	Lead
Edit Copy Delete	146	1	developer
Edit Copy Delete	147	0	lead
Edit Copy Delete	148	1	developer
Edit Copy Delete	149	0	manager

Fig 5.2.3 Path Table

5.2.4 <u>Steptracker table:</u> This table is used to store the start and end of a workflow.

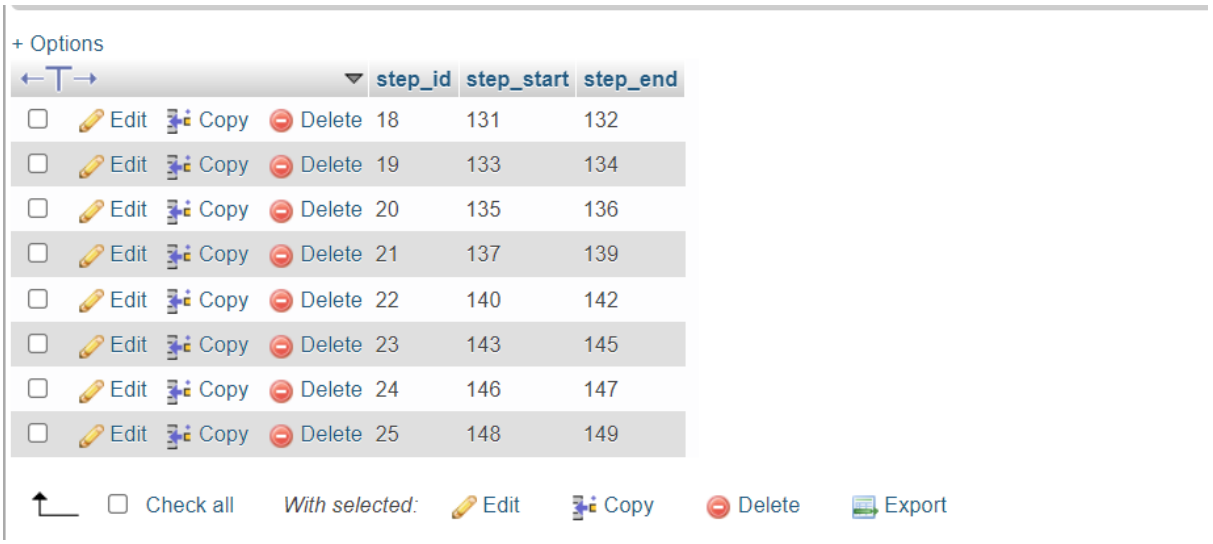

Fig 5.2.4 Steptracker table

5.2.5 <u>Roles table</u> :

This table holds possible roles a user can have.

Fig 5.2.5 Roles table

5.2.6 Messages table:

This table stores messages intended for a user.

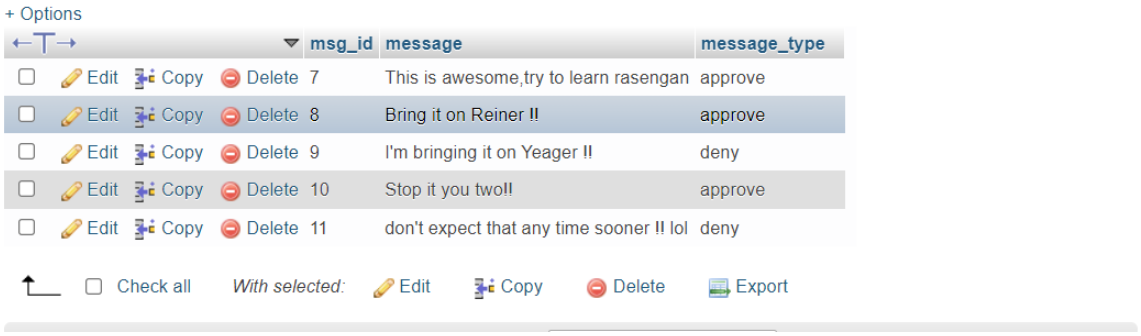

Fig 5.2.6 Messages table

5.2.7 Workflow has path table:

This table is used to form a connection between the workflow table and the path table.

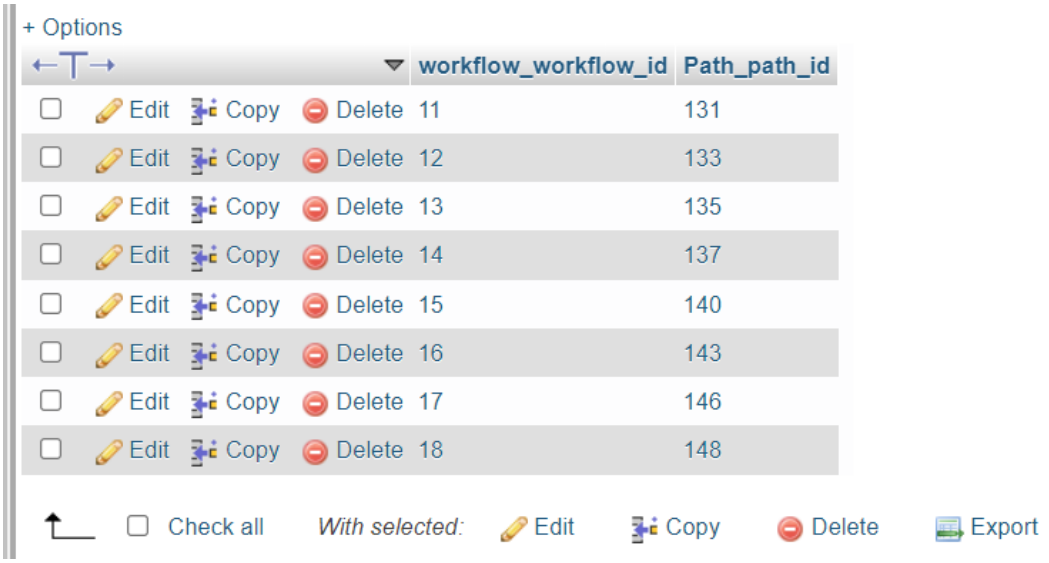

Fig 5.2.7 Workflow has path table

5.2.8 Users has workflow table: This table is used to form a connection between the workflow table and users table.

+ Options

	Users_user_id	workflow_workflow_id
Edit Copy Delete	2	12
Edit Copy Delete	2	14
Edit Copy Delete	2	15
Edit Copy Delete	2	16
Edit Copy Delete	2	17
Edit Copy Delete	2	18
Edit Copy Delete	4	12
Edit Copy Delete	4	14
Edit Copy Delete	4	15
Edit Copy Delete	4	16
Edit Copy Delete	4	17
Edit Copy Delete	4	18
Edit Copy Delete	6	11
Edit Copy Delete	6	13
Edit Copy Delete	6	14
Edit Copy Delete	6	15
Edit Copy Delete	6	16

Fig 5.2.8 Users has workflow table

5.2.9 Path has steptracker table:

This table is used to form a connection between steptracker table and path table.

+ Options

	Path_path_id	steptracker_step_id
Edit Copy Delete	131	18
Edit Copy Delete	133	19
Edit Copy Delete	135	20
Edit Copy Delete	137	21
Edit Copy Delete	140	22
Edit Copy Delete	143	23
Edit Copy Delete	146	24
Edit Copy Delete	148	25

Check all *With selected:* Edit Copy Delete Export

Fig 5.2.9 Path has steptracker table

5.2.10 Users has roles:

This table is used to form a connection between users table and roles table.

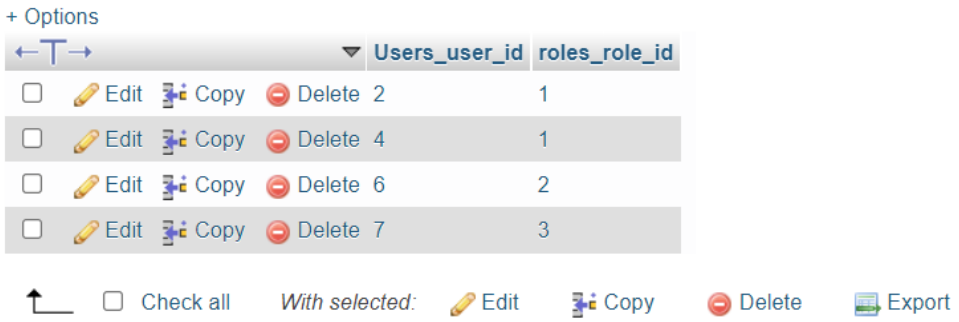

Fig 5.2.10 Users has roles

5.2.11 Messages has users table:

This table is used to form a connection between users table and messages table.

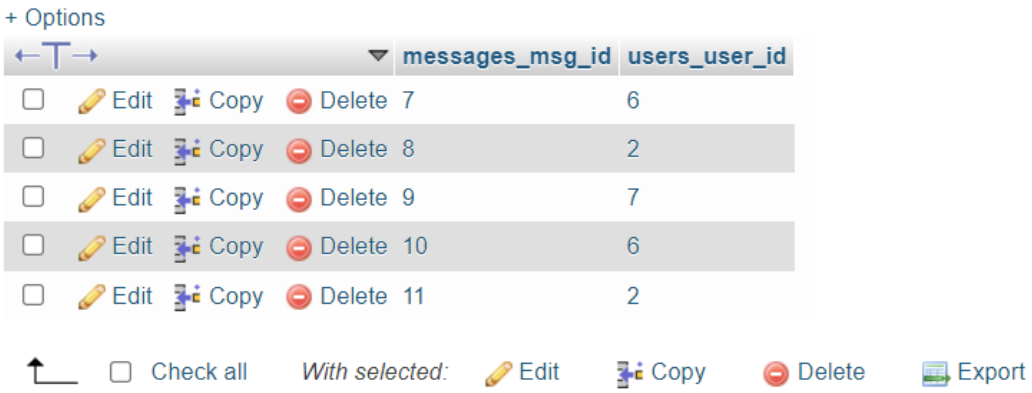

Fig 5.2.11 Messages has users table

5.2.12 <u>Roles has messages table</u>: This table is used to form a connection between the roles table and the messages table.

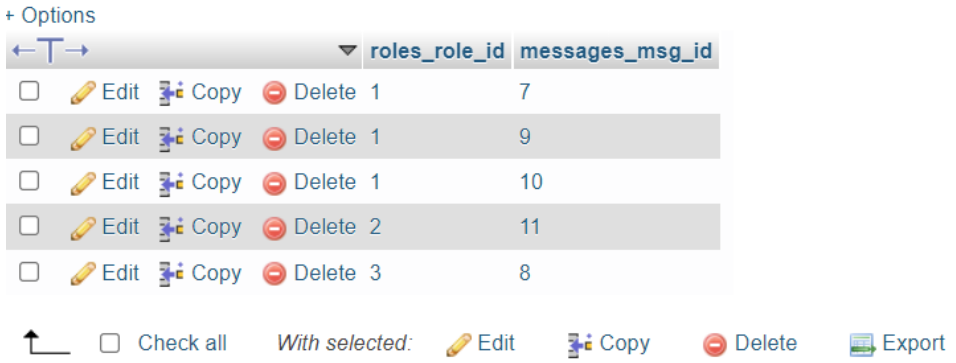

Fig 5.2.12 Roles has messages table

5.2.13 DIRECTORY STRUCTURE:

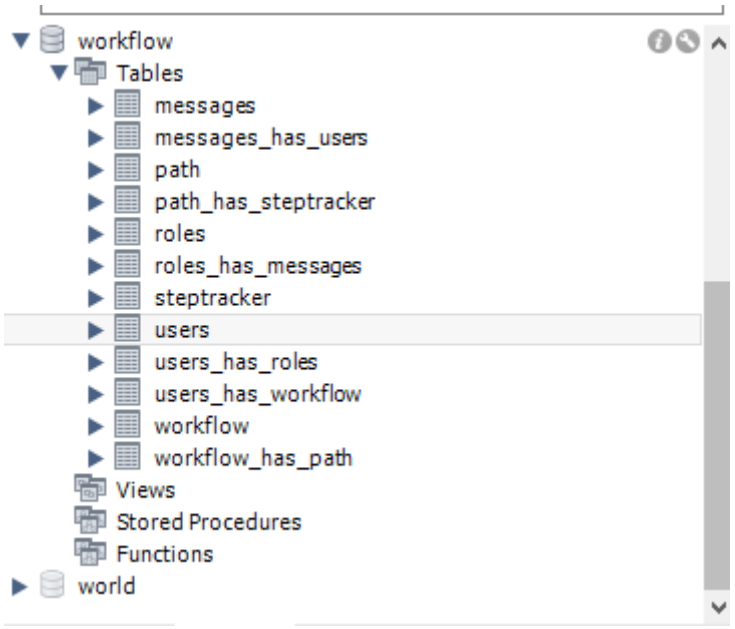

Fig 5.2.13 Directory structure

CONCLUSION

The application works well and satisfies the required conditions. The application is tested very well and errors are properly debugged

Thus,Workflow management is a proven discipline that has been helping successful organizations manage their workflow efficiently for over a century. Yet it has received increased attention in recent years following the proliferation of innovative systems that make it easy for organizations to automate tasks.

As you read in the report above, it provides both the employees and business owners with a better, more structured, and efficient way to communicate and collaborate.

FUTURE ENHANCEMENT

Every application has its own merits and demerits. The project has covered almost all the requirements. Further requirements and improvements can easily be done since the coding is mainly structured or modular in nature. Changing the existing modules or adding new modules can append improvements. Further enhancements can be made to the application, so that the web site functions in a more attractive and useful manner than the present one.

Some of the future enhancements can be as follows:

- Updating,removing Workflow
- Adding Profile pictures
- Adding new roles Dynamically

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