Task Management System

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A Project

in

The Department

of

Computer Science and Engineering

Presented in Partial Fulfillment of the Requirements

For the Degree of Master of Science in Computer Science and Engineering

United International University

Dhaka, Bangladesh

January, 2018

Approval Certificate

This project titled "**Task Management System**" submitted by Sohana Mahmud, Student ID: 012122021, has been accepted as Satisfactory in fulfillment of the requirement for the degree of Master of Science in Computer Science and Engineering on 31th January, 2018.

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Declaration

This is to certify that the work entitled "**Task Management System**" is the outcome of the research carried out by me under the supervision of Dr. Hasan Sarwar, Professor, Department of Computer Science and Engineering.

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In my capacity as supervisor of the candidate's project, I certify that the above statements are true to the best of my knowledge.

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Abstract

Actually a Task is an action that requires to be accomplished within a distinct period of to work towards goals. It may be in the form of assignments which should also have a defined start and end date or a deadline for completion. Truly, having more assignments on a task speeds up the execution process. Completion of all assignments on a specific task ultimately renders the entire task completed.

It is the coordination of others that requires a task to be fruitfully completed to meet a common goal.

Now, comes the concept of task management software for successful task completion. Over the last two decades, task management software has spread much. And business world now see it to be one of the major components of business, which helps a business advance speedily. Therefore, a lot of task management software has already been used by business community, but most of them are often in package form, being expensive, ultimately being a overload for a business itself. It is because major parts of those are not often suitable for business needs and a business often has to spend a large amount of money for purchase of such software in a package form. This indicates undesired wastage of money. In this project, existing Task management systems are studied. The components those are required for implementing such system is discussed. Selected features are discussed. Task Create and Task Assign is implemented from Database. Task process from front end is implemented. Productivity Monitoring, Identifying and picking idle workers implemented through backend.

Acknowledgement

First and foremost, all praises and gratitude go to the almighty Allah for giving me the strength, patients and courage to complete this project.

I would like to convey my heartfelt gratitude to my supervisor Professor Dr. Hasan Sarwar for his valuable guidance, inspiration and friendly attitude. I am thankful to him for offering this unique project to me, which has a great value to the industry. He also promotes the project commercially to the industries as well. All these became possible for his vision toward this project and its potentiality.

I would also like to thank Professor Dr. M. N. Huda for his flexible cooperation and constant support towards completion of this project.

My special thanks go to External Examiner Mr. Suman Ahmmed for his great cooperation during the project implementation.

I am very much grateful to the authority of Department of Computer Science and Engineering, United International University for giving me the great opportunity to complete this project. This always helped me to feel like my second home from starting to now.

My heartfelt gratitude also goes to my colleagues who contributed considerably into my project functions.

Last but not the least; I also like to express my deepest gratitude and love to my family members, especially to my mother, husband and uncle and aunt.

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Chapter 1

Introduction

Task Management System (TMS) is simple lightweight software which is designed to facilitate the empowerment of a project and team. A task management system (TMS) should take care of all aspects of a task construction and its operation [1].
Generally, people plan a business which obviously needs a lot of tasks to be successfully completed. Successful completions of tasks needs perfect plan of execution of the tasks. Without successful execution of those tasks, business may partially or totally fail.
Task Management System, that is, this simple light weight software of ours is what can defend any partial or total failure of any business owing to non executions of tasks for absence of a disciplined work system.

1.1 Aims and Objectives

The Aims of this project is to design and construct a Task management system which
Some salient features our System has:

- Task Assign
- Productivity Monitoring
- Project wise milestone fix
- Identifying and picking idle workers
- Finding out support-based overall activity
- Identifying hanging task and taking proper initiatives
- Overall monitoring system

1.2 Project Planning

The Gantt chart of the project is given in Figure 1

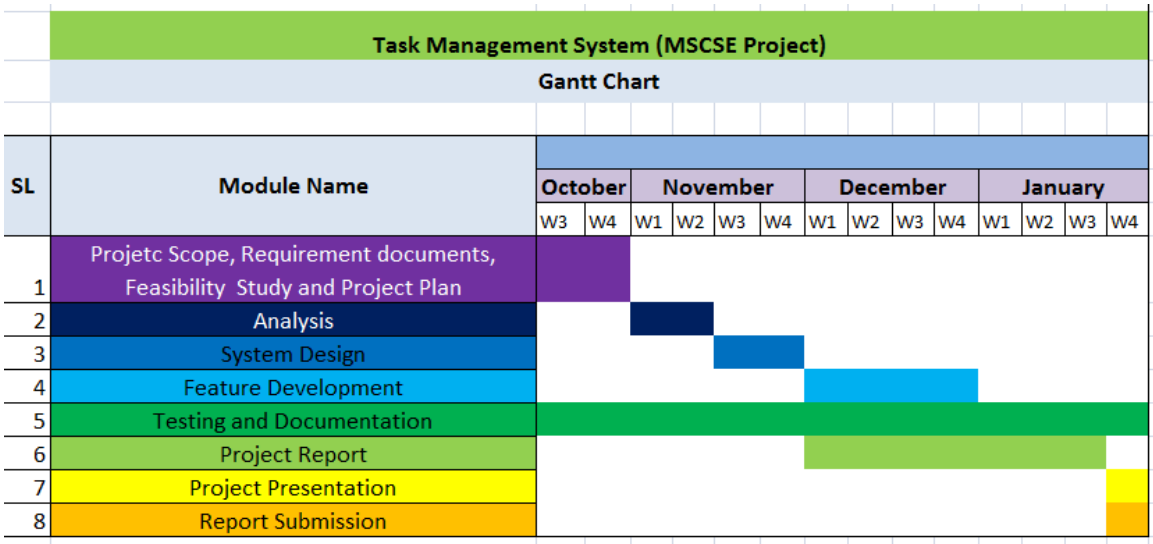


Figure 1: Gantt chart of Task Management System

Chapter 2

Background and Literature Review

2.1 Task Management System

Task management software assists business to accomplish giant projects efficiently and on plan. It helps business to meet feasible targets and deadlines in line with the information included in the application. In addition, it helps to observe interdependent tasks for the purpose of seeing the whole picture and to make sure your team members balance, and not contradict, their deliverables.

The following states of TMS could be:

- Ready
- Assign
- Terminate
- Expire
- Forward
- Start
- Finish
- Verify
- Fail

This state machine diagram describes diverse states of a task over its life cycle. This diagram is referenced from IBM [2].

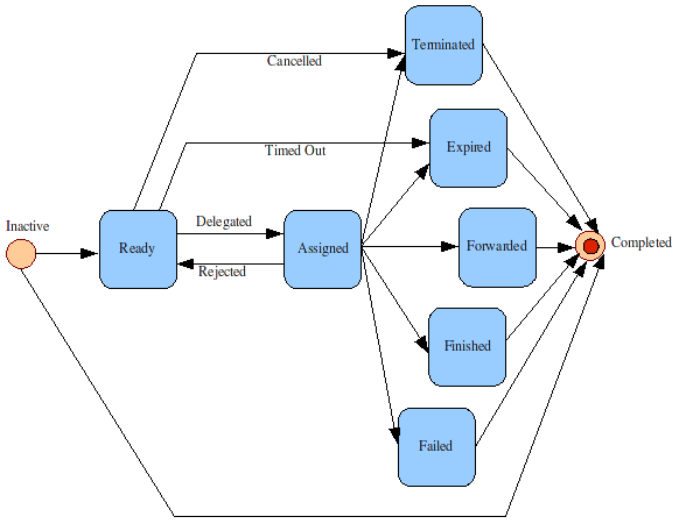


Figure 2: Task States

Task Activities -

TMS has several key activities, such as -

- Task creation allow user for task planning, brainstorming, creation, reduction, targeting and preliminary prioritization.
- Personnel, sales, quality or other management areas is concern of Functional activity. It should allow for planning, reporting, tracking, prioritizing, configuring, delegating, and managing of tasks.
- Project activities allow for project task breakdown, task allocation, to task databases.
- Service activities allow for file attachment and links to tasks, document management, access rights management, inventory of client & employee records, orders & calls management, and annotating tasks.

2.2 SQL Server

Features:

- Enterprise-level data managing
- Encrypted database
- Mobile interface based business analytics and reporting
- Data based projecting models
- On-premise, cloud-based, or both with a hybrid systems

Pricing:

- Express edition – Free (up to 10GB)
- Developer edition Free
- $0.10/hour Microsoft Azure SQL Server with 5GB storage
- $931 (Per) – and $3 (Per) - Core DM and BI
- $14,256 - EE [3]

2.3 IIS

The most publicly-facing web properties in the organization are IIS. It is a number of internal-only line-of-business web applications and the corporate SharePoint.

Pros and Cons

- Simple configuration. IIS Manager provides access to almost all of IIS functionality via an easy to use GUI.
- Centralized Certificate Store can be centrally stored and referenced by various IIS installs.
- Issues can often be resolved quickly via forums, etc [4].

2.4 .NET Framework

XML Web services is building and running with .NET [5]. It is considered to accomplish the following objectives:

- To grant a steady OOP surroundings whether object code is stored and executed locally, however Internet-distributed, or executed distantly.
- Reduce software deployment
- Lessen versioning conflicts
- Safe execution of code
- Eliminates the performance troubles of scripted or interpreted environments.
- Windows-based and Web-based apps

- Easy to Integrate

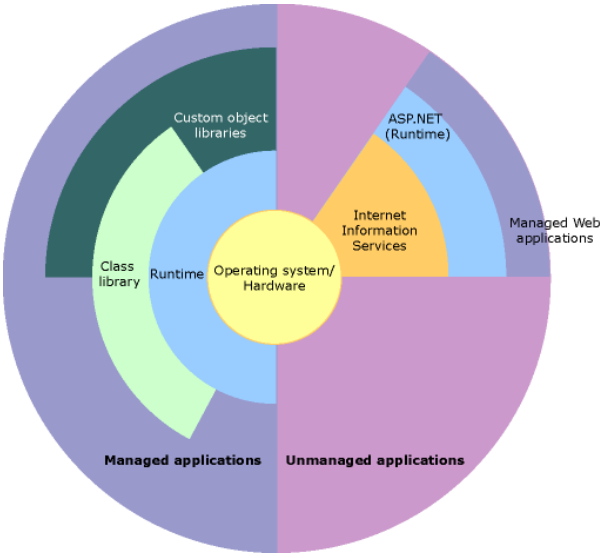


Figure 3: Dot Net Framework

2.5 Microsoft C#

c# is an OOP based language considered as windows graphical programming. The approach is structured method for solving problems. And the thoughts can easily convey in to programs using OOP. In addition, code reusability and maintenance is another attractive feature.

2.6 Different task management Systems

2.6.1 JIRA

JIRA is renounce project management software now a day.

It helps customer to capture, assign, and set priorities to their work as well as manage the entire system of application development.

Currently, JIRA is worn by more than 51,000 clients worldwide including top brands like eBay, Spotify, Cisco, and LinkedIn. The agile team can use JIRA to plan, track, and release effective software. Using JIRA, one can create stories and issues, plan sprints, and assign tasks.[6].

Overview of JIRA Features:

- Polished user experience
- Powerful and customizable workflows
- Unlimited custom fields
- Bugs and defect management
- Seamless source and issue integration
- Powerful search and filtering
- Advanced reporting
- Customizable dashboards and wallboards
- Advanced security and administration
- Integration with flexible REST APIs
- Easily import data from other systems
- Mobile interface
- Available On Demand in the cloud
- Available for download

Pricing:

Table 1: Pricing Table of JIRA

User	**Rate per Month**
10	$10
15	$75
25	$150
50	$300
100	$450
500	$750
2000	$1500

2.6.2 Podio:

Podio is collaboration software, which helps teams correspond and organize things to facilitate the completion of tasks and projects. It is a system that puts content, context, and conversations in one place. So whether you're working on a project or following up and closing a sales lead, you get everything related to the job on one page, making for easier collaboration and completion of the task at hand with less confusion and distraction and more clarity and focus [6].

Podio has tools for social collaboration, task management, file sharing, automated workflows, calendar, meeting scheduling, and integrated chat, among others.

Overview of the features:

- Easy Scheduling
- Data revelation
- Social Collaboration
- Task Management
- Calendar
- Limitless storage space
- individual Dashboards
- Connected CRM
- Project Management
- Integrated Chat
- Completely Customizable

Pricing:

Basic: $9 or $ 7.20 (annual)

Plus: $14 or $11.20 (annual)

Premium: $24 or $19.20 (annual)

Enterprise: Custom plans & pricing for larger teams

2.6.3 Microsoft Project:

MS Project is a flexible portfolio management with cloud-based and on-premise tools. It helps business to organize and keep the projects, including daily tasks and overall direction. That can be delivered online through Office 365 with the Project Online Professional edition.

It has three main modules: project management, portfolio management and resource management. It also provides project planning like Gantt charts etc [6].

Overview of the Features:

- Portfolio Management of a project
- IT management simplifying
- Work seamlessly across tools
- Communicate in real time
- Stay organized
- Everyday collaboration improvement
- Access from virtually anywhere
- Discover and share information

Pricing:
Cloud-based solutions
Essentials: $7 per user/month
Professional: $30 per user/month
Premium: $55 per user/month
On-Premise Solutions
Standard: $589.99
Professional: $1159.99

2.6.4 Basecamp:

Basecamp is popular nowadays and renowned as a consistent service with flexible setup and short learning time.

It has flexible pricing scheme as per user and all clients will have access to the same features, depending on the purpose for which they're using this system [6].

Features of Basecamp:

- Gantt Charts
- Templates of Project
- Priorities- Set
- History of Task
- To-Do List
- Create Group
- Document Management
- Instant Messaging with forum
- Social Networking
- Resources Alignment
- Track Project Hours
- Calendar

Pricing of Basecamp:

Table 2: Pricing Table of Basecamp

User	Price per month
Basecamp for Internal Teams	$29/month
Basecamp for clients	$59/month
Enterprise Pricing	$3000/starting price per year

2.6.5 Trello:

The most powerful and leading PM software is Trello now a days.

Trello operate the idea of boards and within board. Using Trello, it's easy to track the progress of a project or to simply categorize things, well-integrated and reasonably priced.

It has real time discussion facility as well. Using this, everybody informed about their task assignments, activity log, and email notifications [6].

Features of Trello:

- Basic service- Free
- Drag and drop facility
- Editing - In-line
- checklists, with progress meter
- Files uploading easy
- Filtering facility
- Deadline reminders
- Email notifications
- Activity log
- Assign tasks
- Encrypted data
- Developer-API

Pricing:

Free

Business Class – $9.99/month

Chapter 3

System Concept, Design and Implementation

3.1 Requirements Analysis

The task aims to analyze the need, create the designs that support the need, explore and analyze solution options, and recommend the effective option is actually requirement analysis. It is sometimes critical to the accomplishment of a mature project. It must be actionable, measurable, testable, and associated to identified business needs or opportunities. There are 2 types of requirements - functional and non-functional.

In our system, we gather requirements from online software, previous work and stockholders requirements. Then analyze the requirements through different modeling and diagrams. Finally record the documents such as use case, user stories etc.

3.1.1 Process Flow

Here, Process flows represent the whole story of our project prototype. Which stakeholders have how much privilege to get access the software feature? It also represent the whole system of our prototype.

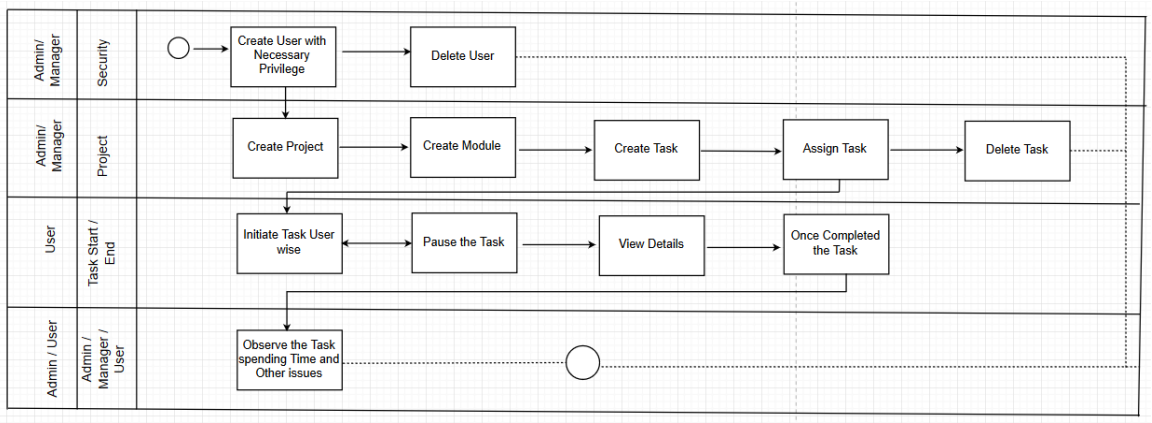


Figure 4: Process Flow of TMS

3.1.2 Selection of Hardware and Software

Hardware:

Client:

Any PC with Internet Connection

Server:

Minimum Requirements: 4GB RAM and above, Core i3 Processor, OS- Windows 7 and above

Software:

For Server: Dot Net Framework 4.0, Cristal Report 13, SQL Server 2008 R2

3.2 Project Architecture

We followed 3 tire architecture in our project. The architecture is partially similar to MVC. Business layer is almost merged with front end. Entity as a object cuts all three layers horizontally.

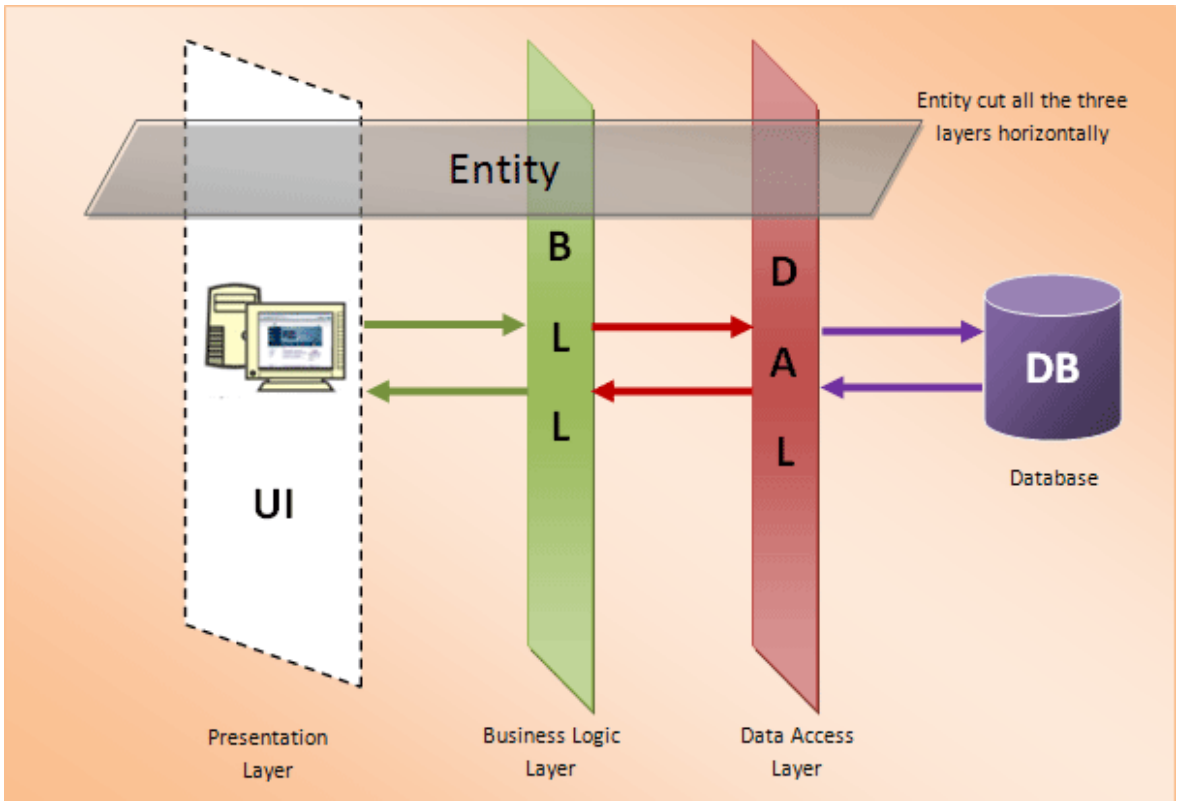


Figure 5: Architecture of Task Management System

3.3 Use Case Diagram

In our TMS, we tried to keep it simple and as it is. It is clearly shown that the major actor is System admin / manager and any registered user such as software engineer, tester, BA etc. System itself is also actor here. 4 subsystems here –

- Task Entry
- Project Info
- Security
- Login

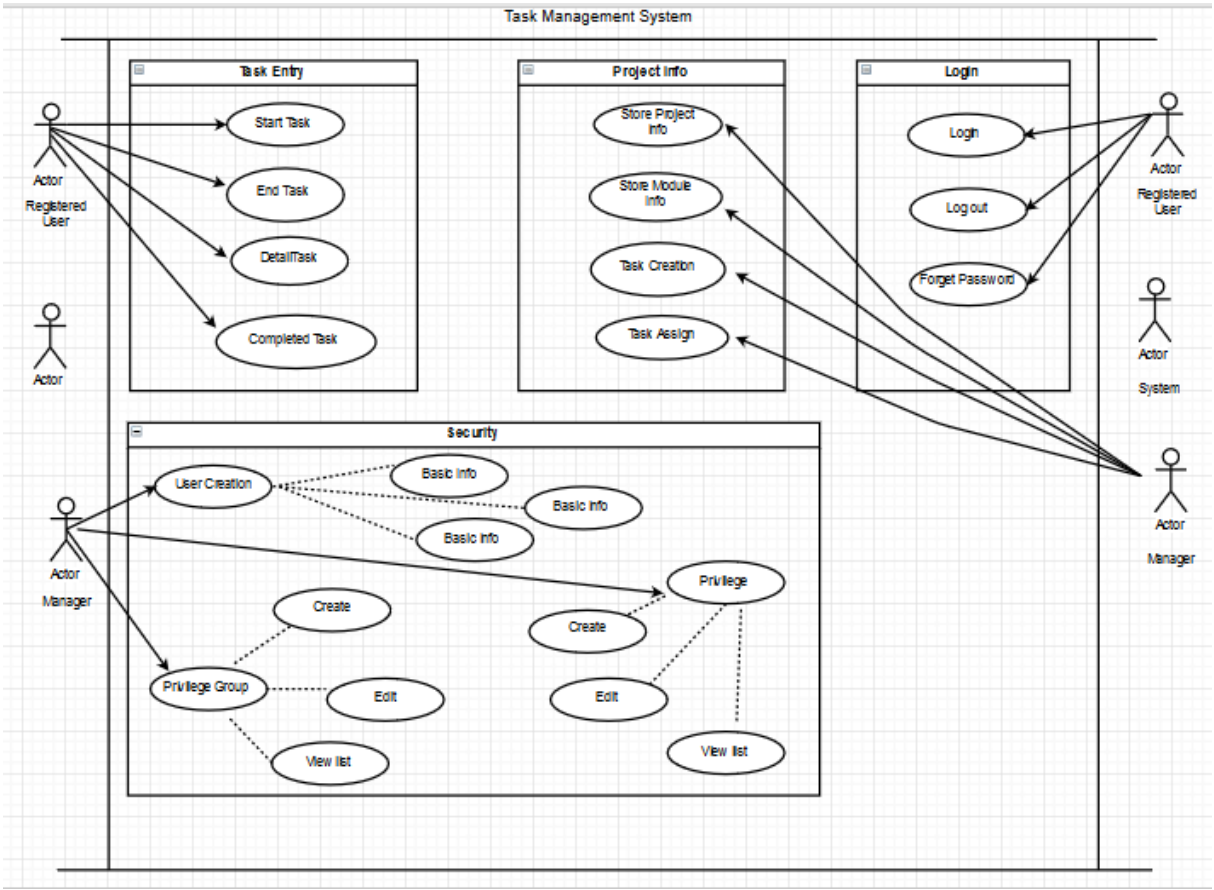


Figure 6: Use Case Diagram of Task Management System

3.4 Class Diagram

Below this figure represent the partial class diagram of our TMS which produced by .Net Framework 4.

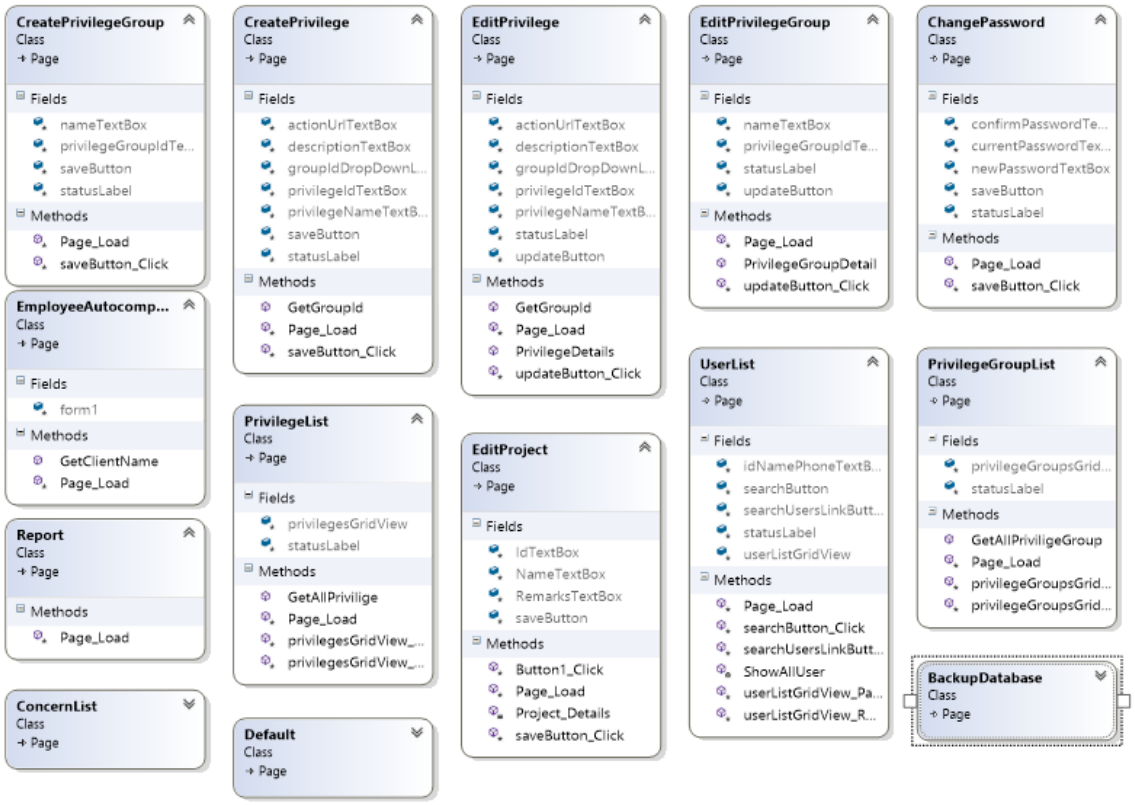


Figure 7: Class Diagram of TMS

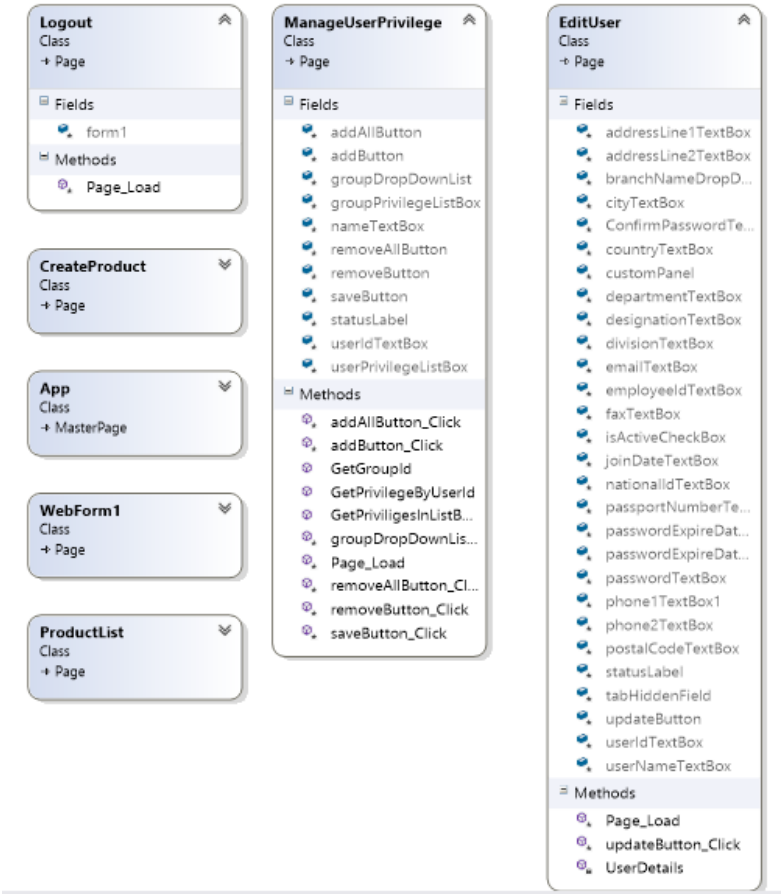


Figure 8: Class Diagram of TMS

3.4 E-R Diagram

An entity-relationship diagram (ERD) is a data modeling systems that graphically demonstrate entities and their relationship.

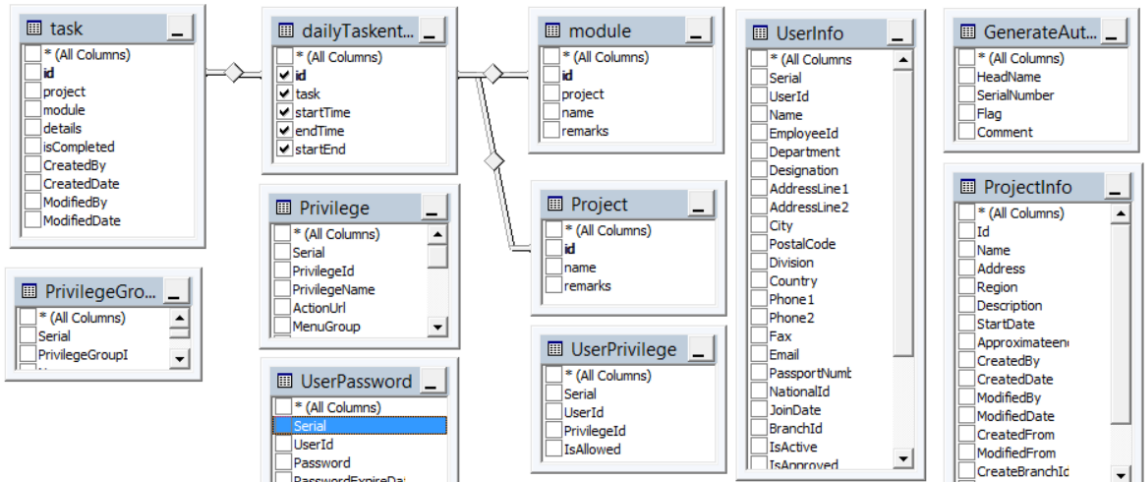


Figure 9: E-R Diagram

Chapter 4

Pilot Work

Suppose to Log in as user with admin privilege

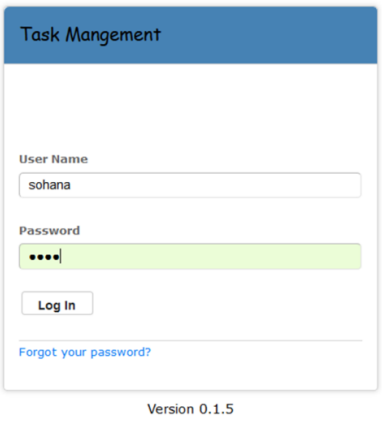


Figure 10: Login page

After Successful login, user will get Home page with necessary privilege.

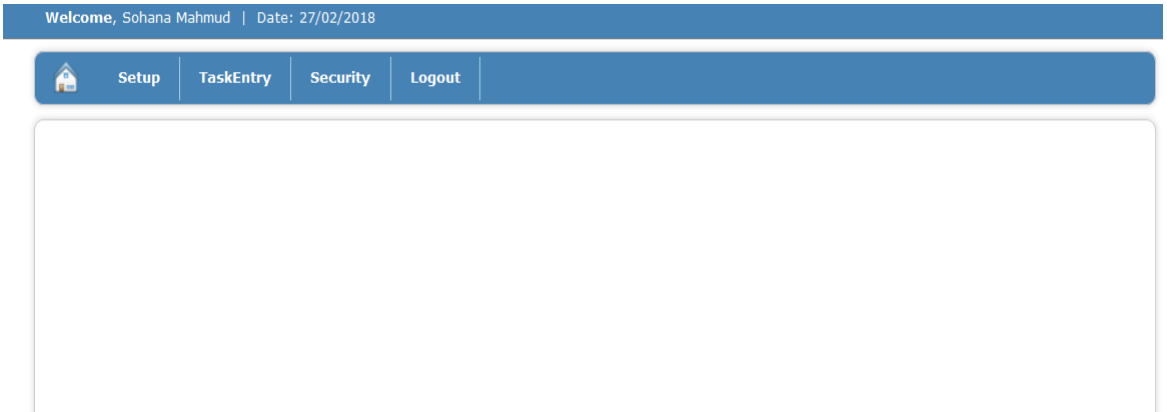


Figure 11: Home Page

From Setup, admin privilleged user can create or update project and module information.

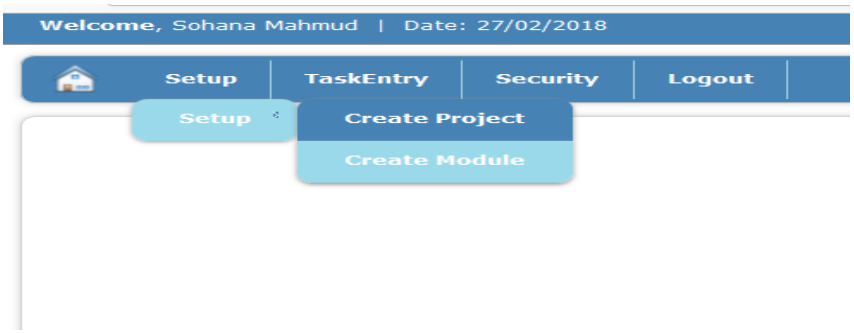


Figure 12: Setup

Create Project option where ID will generate automatically after successful creation.

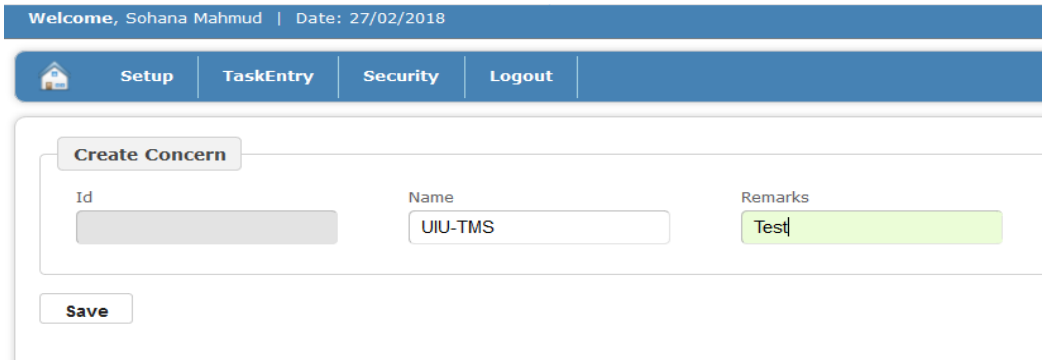


Figure 13: Create Project

Create Module option where ID will generate automatically after successful creation.

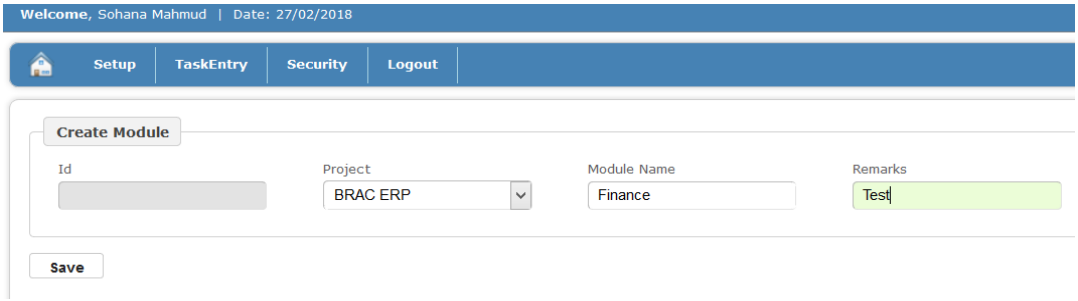


Figure 14: Creating Module

Security Features has 3 steps

- Need to create user
- Create Privilege group before assign any user to specific group
- Create necessary Privilege according to this privilege group.

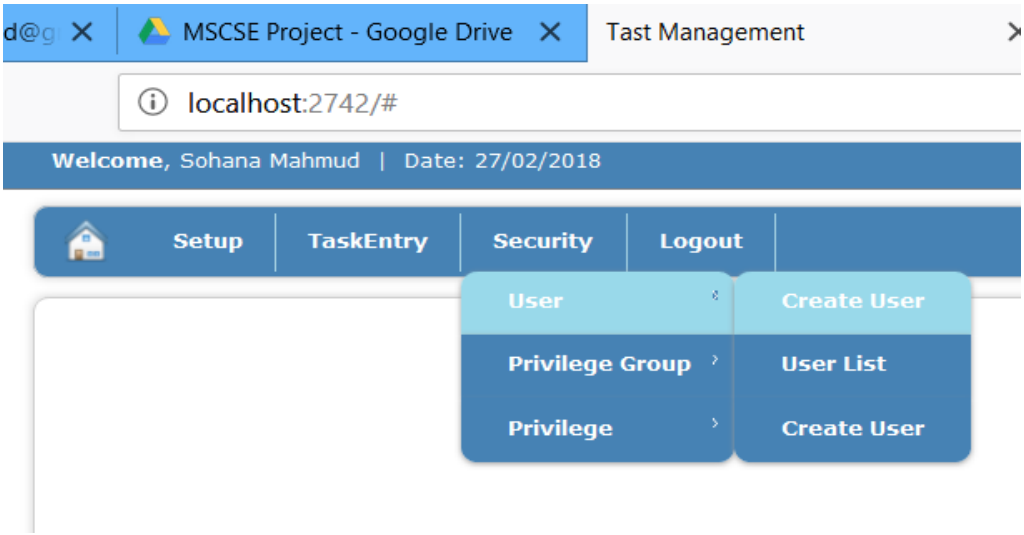


Figure 15: Security

User creation has 3 sections-

- Basic Info
- Address and
- Security, After successful creation, an ID will be generated automatically.

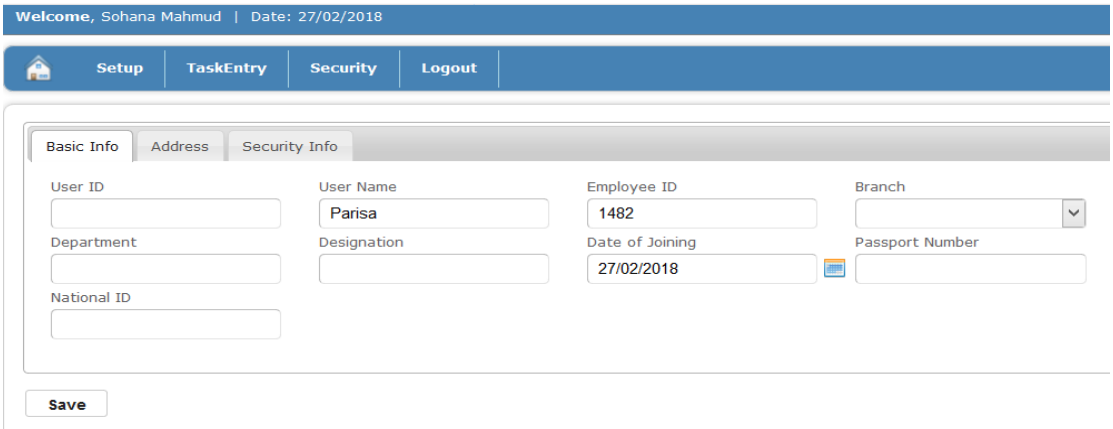


Figure 16: Security –User- Create User

Here is the list of user with edit user information and privilege edit option.

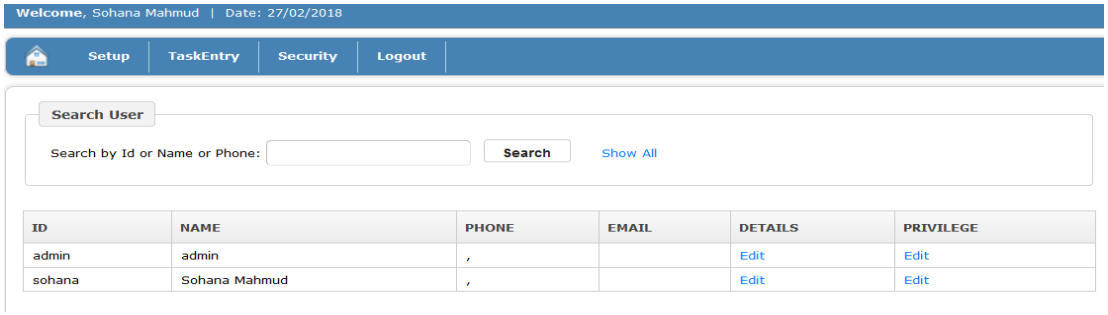


Figure 17: Security- User-User List

From Privilege group option, admin can create /edit / view groups.

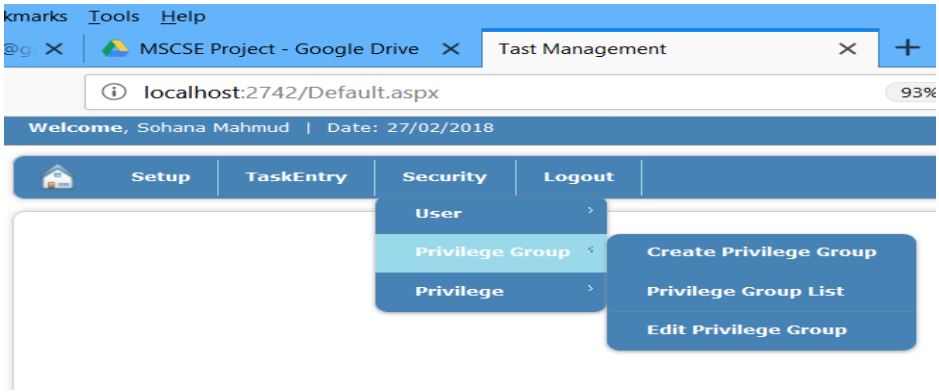


Figure 18: Security- Privilege Group

Here is the screen for create privilege group – For e.g. Task entry is a group name with auto generated Group ID

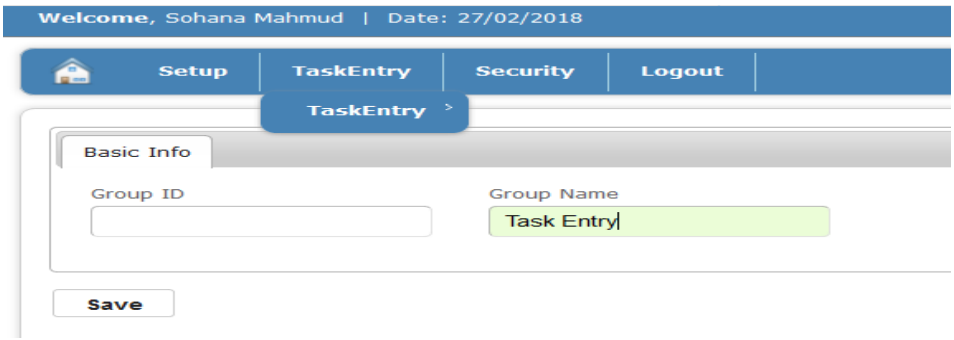


Figure 19: Security- Privilege Group-Create

Here is the screen for privilege group list where we can edit the specific group also.

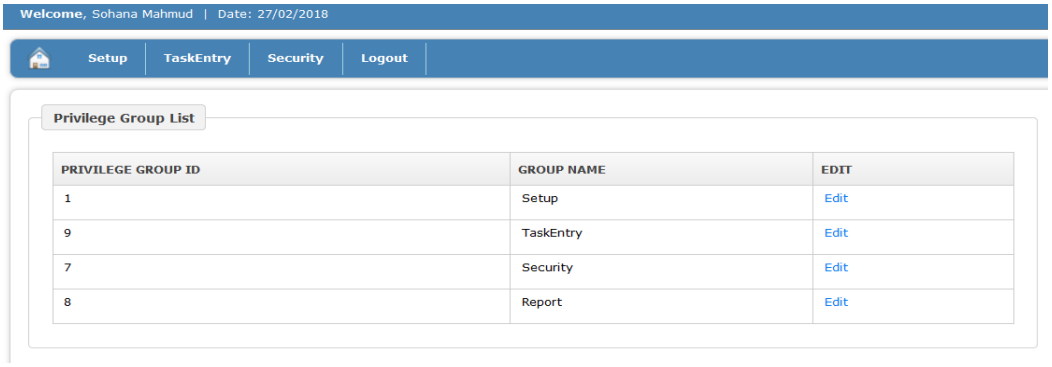


Figure 20: Security- Privilege Group-Group List

Here is the screen to edit Group.

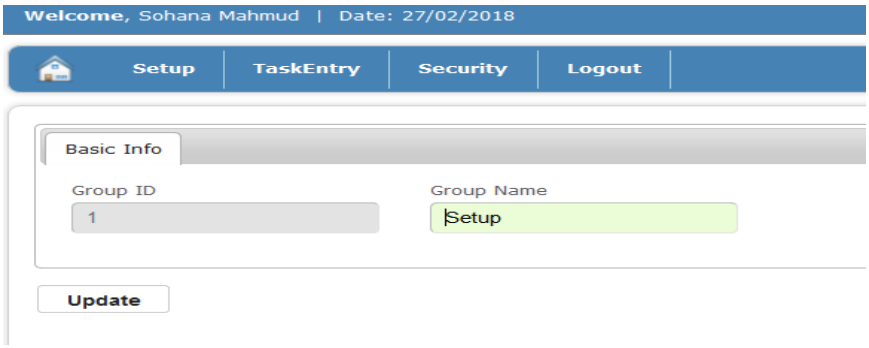


Figure 21: Security- Privilege Group-Edit

From privilege, we can create, edit, view, and manage user privilege

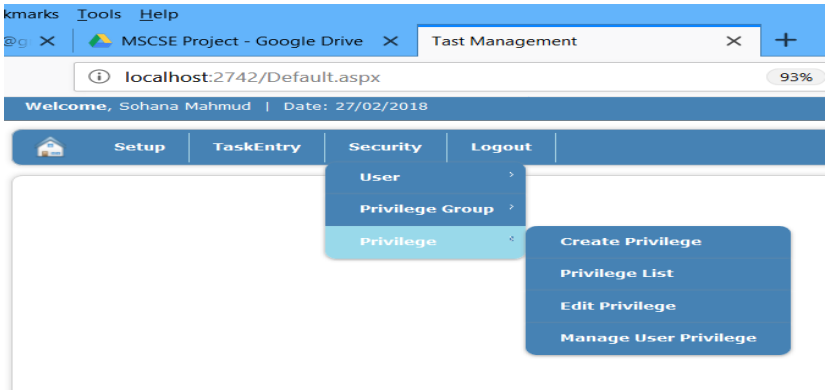


Figure 22: Security- Privilege

Create Privilege screen

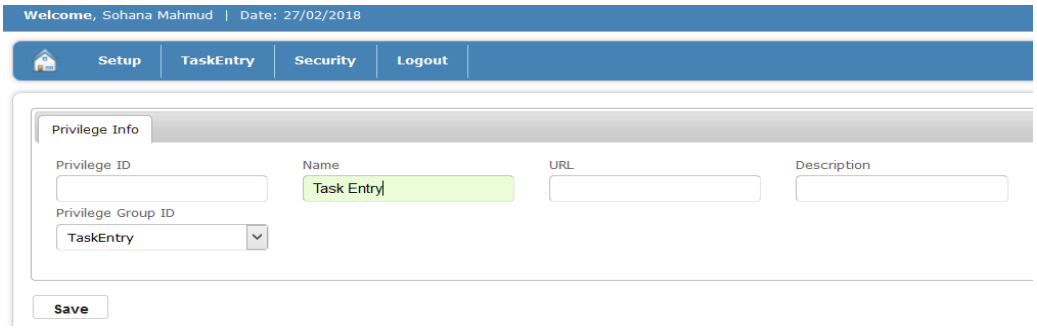
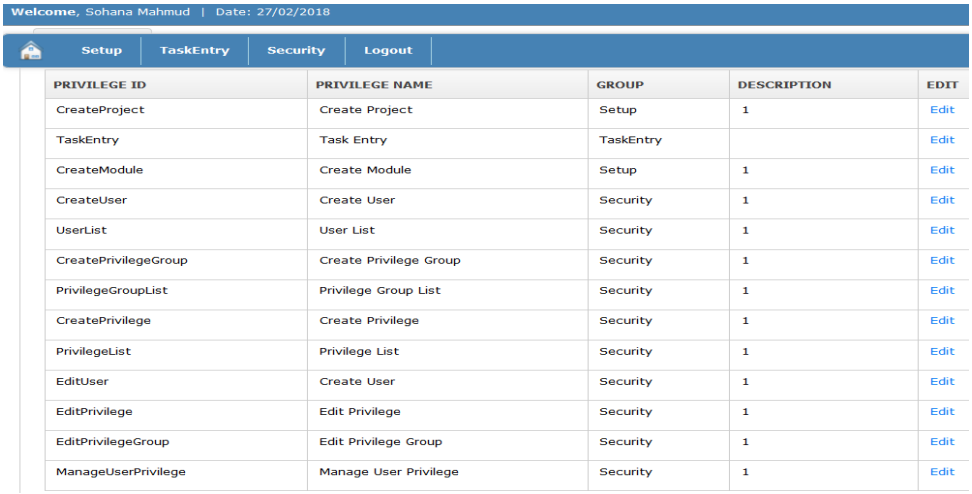


Figure 23: Security- Privilege-Create



PRIVILEGE ID	PRIVILEGE NAME	GROUP	DESCRIPTION	EDIT
CreateProject	Create Project	Setup	1	Edit
TaskEntry	Task Entry	TaskEntry		Edit
CreateModule	Create Module	Setup	1	Edit
CreateUser	Create User	Security	1	Edit
UserList	User List	Security	1	Edit
CreatePrivilegeGroup	Create Privilege Group	Security	1	Edit
PrivilegeGroupList	Privilege Group List	Security	1	Edit
CreatePrivilege	Create Privilege	Security	1	Edit
PrivilegeList	Privilege List	Security	1	Edit
EditUser	Create User	Security	1	Edit
EditPrivilege	Edit Privilege	Security	1	Edit
EditPrivilegeGroup	Edit Privilege Group	Security	1	Edit
ManageUserPrivilege	Manage User Privilege	Security	1	Edit

Figure 24: Security- Privilege-List

Edit privilege option from privilege list

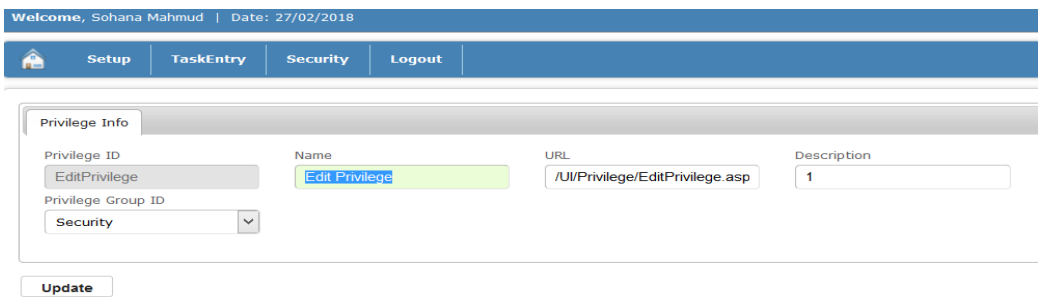


Figure 25: Security- Privilege-Edit Privilege

Here is the screen for manage user privilege feature. It actually represent group wise

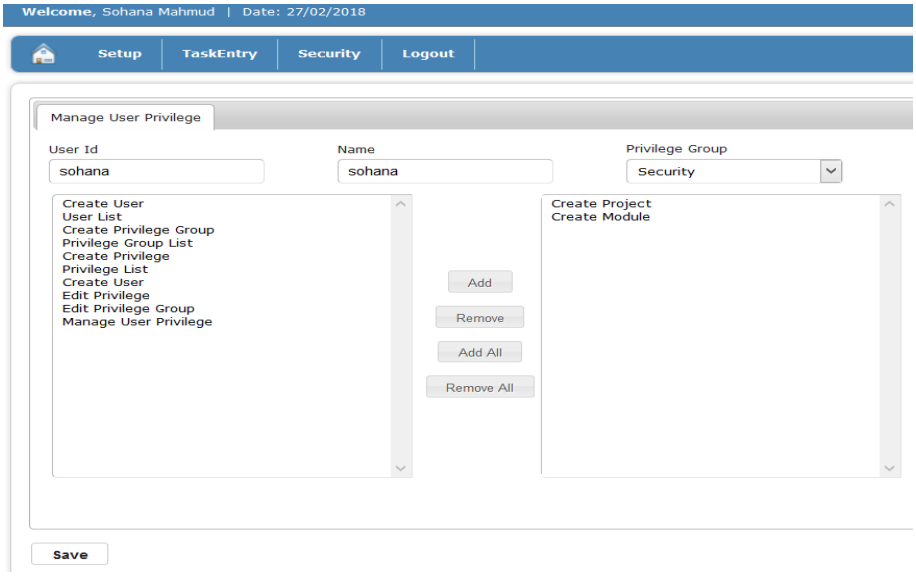


Figure 26: Security- Privilege-Manage User Privilege

Here is the Task Entry screen where user can view the listed task he assigned for and it is viewed project and module wise accordingly. From Detail button, user can view the details of a specific task. User can pause the task multiple times until the status is not completed from DB.

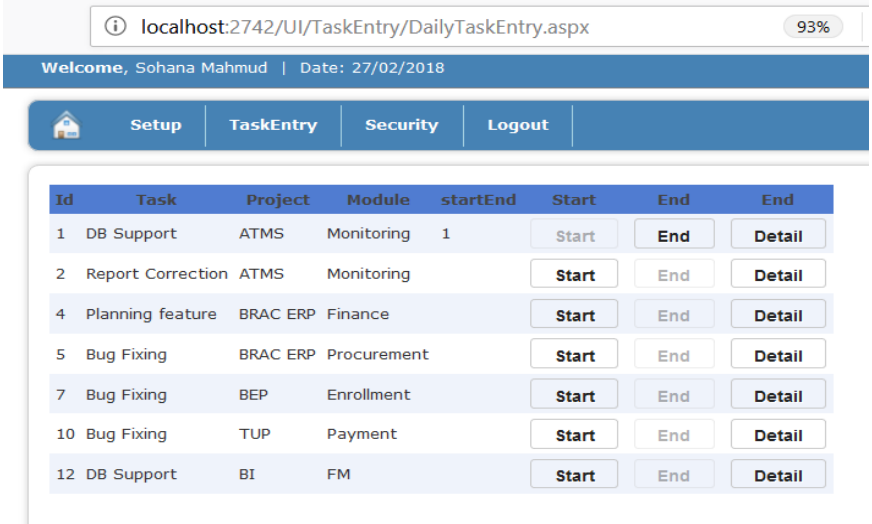


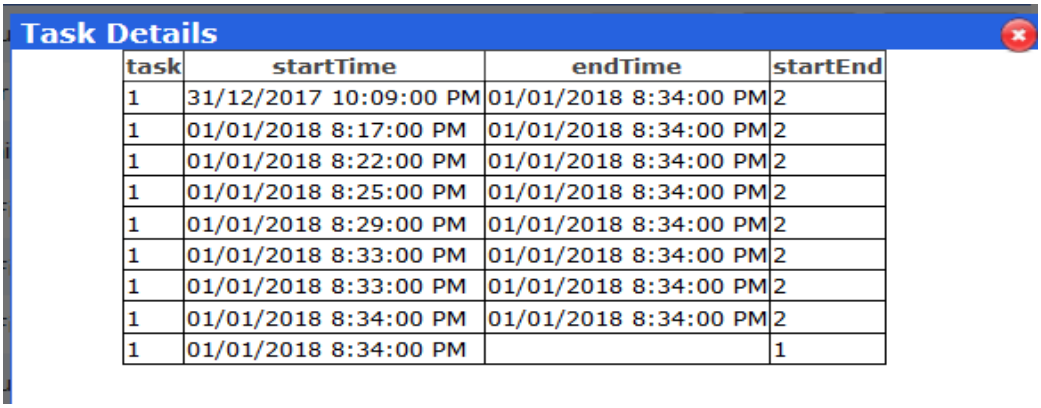
Figure 27: Task Entry

Here is the detail view screen of a specific task. There is 3 types of status

- start however not end is “1”

- End but not completed is “2”

- Completed “3”



task	startTime	endTime	startEnd
1	31/12/2017 10:09:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:17:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:22:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:25:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:29:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:33:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:33:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:34:00 PM	01/01/2018 8:34:00 PM	2
1	01/01/2018 8:34:00 PM		1

Figure 28: Task Entry – Details

Chapter 5

Critical Analysis

Critical Analysis is one of major things we do while working on this software of ours. It is nothing but self – evaluation of a task with a keen observation to ensure whether there is a commendable perfection in the work process. Our software, too, has this critical analysis which ensures our clients' work process to be perfect. And to do that, we have unhesitatingly said about our limitations like not having clients included, not having used latest SQL Server. However, we have put backend control than frontend in our system.

Chapter 6

Conclusion

Task Management System is then a system that ensures smooth management of an office's work process, ensuring result-oriented progress, creating overall success of a business concern. Business can reach hassle free smooth process and the overall success of a project by this task management system.

References

[1] Takahara Y., Chen X. (1996) Task management system. In: Pichler F., Díaz R.M., Albrecht R. (eds) Computer Aided Systems Theory — EUROCAST '95. EUROCAST 1995. Lecture Notes in Computer Science, vol 1030. Springer, Berlin, Heidelberg

[2] "Life Cycle of Human Tasks". IBM WebSphere Process Server documentation. IBM. Retrieved 25 May 2009.

[3] https://zapier.com/apps/sql-server

[4] https://www.trustradius.com/reviews/microsoft-iis-2017-03-28-11-20-47

[5] https://docs.microsoft.com/en-us/dotnet/framework/get-started/overview

[6] https://project-management-software.financesonline.com/c/task-management

Appendix

API - Application Programming Interface

BA - Business Analysis

BI - Business Intelligence

CRM - Customer Relationship Management

DB - Database

DM - Data Model

EE - Enterprise Edition

ERD - Entity Relationship Diagram

GUI - Graphical User Interface

OOP - Object Oriented Programming

REST - Representational State Transfer

SQL - Structured Programming Language

TM - Task Management

TMS - Task Management System