1.INTRODUCTION

PROJECT TITLE: Optimizing User, Group, and Role Management with Access Control and Workflows

Optimizing user, group, and role management with access control and workflows is **crucial for enhancing security, streamlining operations, and improving overall system efficiency**. By carefully managing access rights through well-defined roles and permissions, organizations can ensure that users only access the resources they need, minimizing the risk of unauthorized access and data breaches. Furthermore, integrating workflows into this process automates tasks, reduces manual errors, and improves the speed and consistency of access provisioning and management.

1.1 Project Overview

Title:

Optimizing User, Group, and Role Management with Access Control and Workflows

Objective:

To design and implement an effective and secure management system in ServiceNow that:

- Organizes users, groups, and roles efficiently.
- Controls access to applications and data.
- Implements ACLs (Access Control Lists) and workflow automation to streamline IT processes.

Expected Outcomes:

- Streamlined user and access management.
- Improved security and compliance.
- Efficient handling of workflows through automated role and group assignments.
- Demonstrated understanding of ServiceNow's access control mechanisms.

1.2.Purpose

The purpose of this project is to design and implement secure and efficient user access management within the ServiceNow platform. It focuses on the creation and management of users, groups, roles, and the enforcement of access controls and workflows to ensure data integrity and system security.

Real-world Use:

- Prevent unauthorized access.
- Make sure users only see what they need.
- Automate user provisioning tasks.
- Maintain data security and compliance.

2. IDEATION PHASE

Date	
Team Id	
Project Name	
Maximum Marks	

2.1. Problem Statement

In a small project management team consisting of a Project Manager (Alice) and a Team Member (Bob), there is a need to efficiently manage project tasks and ensure accountability throughout the project lifecycle. The current system lacks clear role definitions, access controls, and a structured workflow, leading to confusion regarding task assignments and progress tracking.

3. REQUIREMENT ANALYSIS

Date	
Team Id	
Project Name	
Maximum Marks	

3.2. Solution Requirement

ServiceNow is a **cloud-based workflow automation platform** that enables digital transformation by helping organizations manage digital workflows for enterprise operations.

ServiceNow Platform

The primary platform used for this project. It provides all the modules required to manage users, roles, groups, access, and workflows.

Functional Requirement

FR NO	Functional Requirement	Sub Requirement
FR-1	**User Management**	**C**reate new users in ServiceNow. **P**opulate user details such as name, email, department, etc. **E**nsure users are active and ready for assignment.
FR-2	**Group Management**	**C**reate different groups. **A**dd users to appropriate groups. **G**roups should reflect department/team structures.
FR-3	**Role Management**	**C**reate custom roles if needed. **A**ssign out-of-the-box and custom roles to users or groups. **D**emonstrate role inheritance
FR-4	**Table Configuration**	**C**reate custom tables. **P**rovide relevant columns/fields. **C**onfigure the table for access control testing.
FR-5	**Assign Users to Groups**	**A**dd individual users to

		the relevant groups using group membership. **T**his should reflect in automatic role inheritance.
FR-6	**Assign Roles to Users**	**A**ssign roles directly to users if group-level roles aren't suitable. **D**ocument which roles are assigned to which users.
FR-7	**Application Access Configuration**	**S**et up access for specific users/groups to particular applications. **C**onfigure access under “Application Access” tab or module.
FR-8	**Access Control List (ACL)**	**C**reate ACL rules for the custom table or other tables. **D**efine Read, Write, Create, Delete permissions. **A**CL conditions may include: - Role-based access - Field-level restrictions - Scripted ACLs
FR-9	**Workflow Configuration**	create a workflow to automate user/group approvals or access provisioning using Flow Designer.

Non-Functional Requirement

FR NO	Non-Functional Requirement	Description

NFR-1	**Usability**	**T**he interface must be user-friendly with clearly labeled modules (Users, Groups, Roles, ACL, etc.).
NFR-2	**Security**	**O**nly authorized users should be able to: - Create users or roles - Assign roles to users - Modify access control rules (ACLs)
NFR-3	**Reliability**	**I**t must recover from session or workflow errors gracefully with proper error messages.
NFR-4	**Performance**	**T**he system should load user, group, role, and table data within 2 seconds under normal network conditions.
NFR-5	**Availability**	**T**he system should ensure 99.9% uptime during working hours .It must recover from session or work flow errors gracefully with proper errors messages
NFR-6	**Scalability**	**T**he solution should support managing at least 1000 users,100 groups and 500+ roles without

Data Flow Diagram:

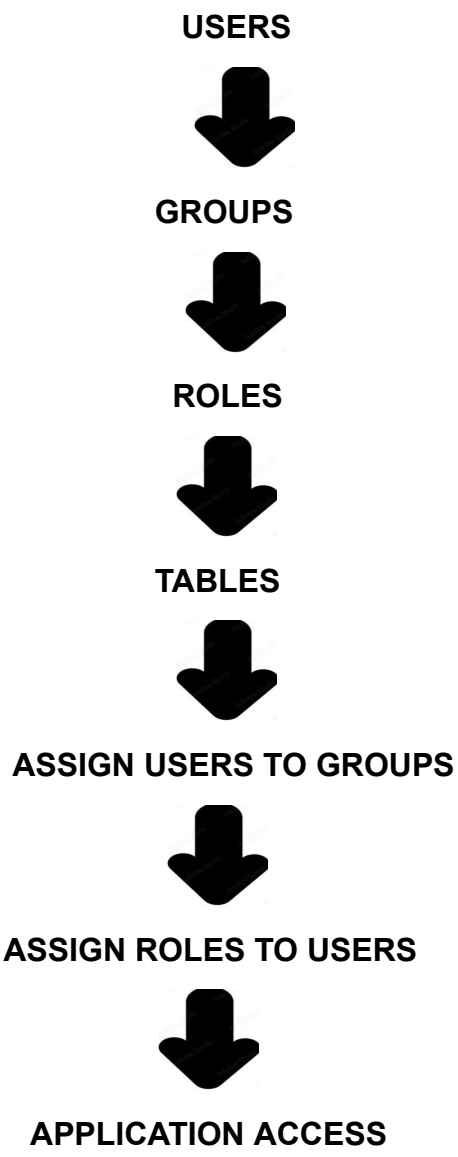
A Data Flow Diagram (DFD) is a graphical representation used to show how data moves through a system. It illustrates:

- Where data comes from,

- How it is processed,
- Where it is stored, and
- How it flows between these parts.

  In the Optimizing User, Group, and Role Management with Access Control and Workflows project:

  - User/Admin inputs user details, roles, and group information into the system.
  - The ServiceNow System processes access control rules and workflows based on defined roles and groups



ACCESS CONTROL LIST

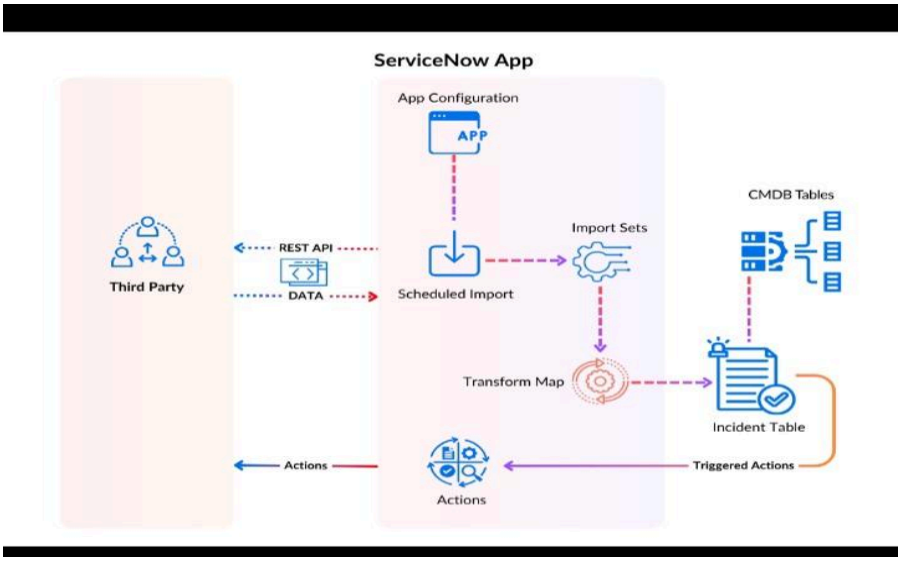
FLOW

Technology Stack:

Date	
Team Id	
Project Name	
Maximum Marks	

Architecture of ServiceNow:

The **architecture of ServiceNow** is designed as a scalable, **cloud-based** platform built to support enterprise-level IT service management and business process automation.



4.PROJECT DESIGN

Date	
Team Id	
Project Name	
Maximum Marks	

Proposed Solutions:

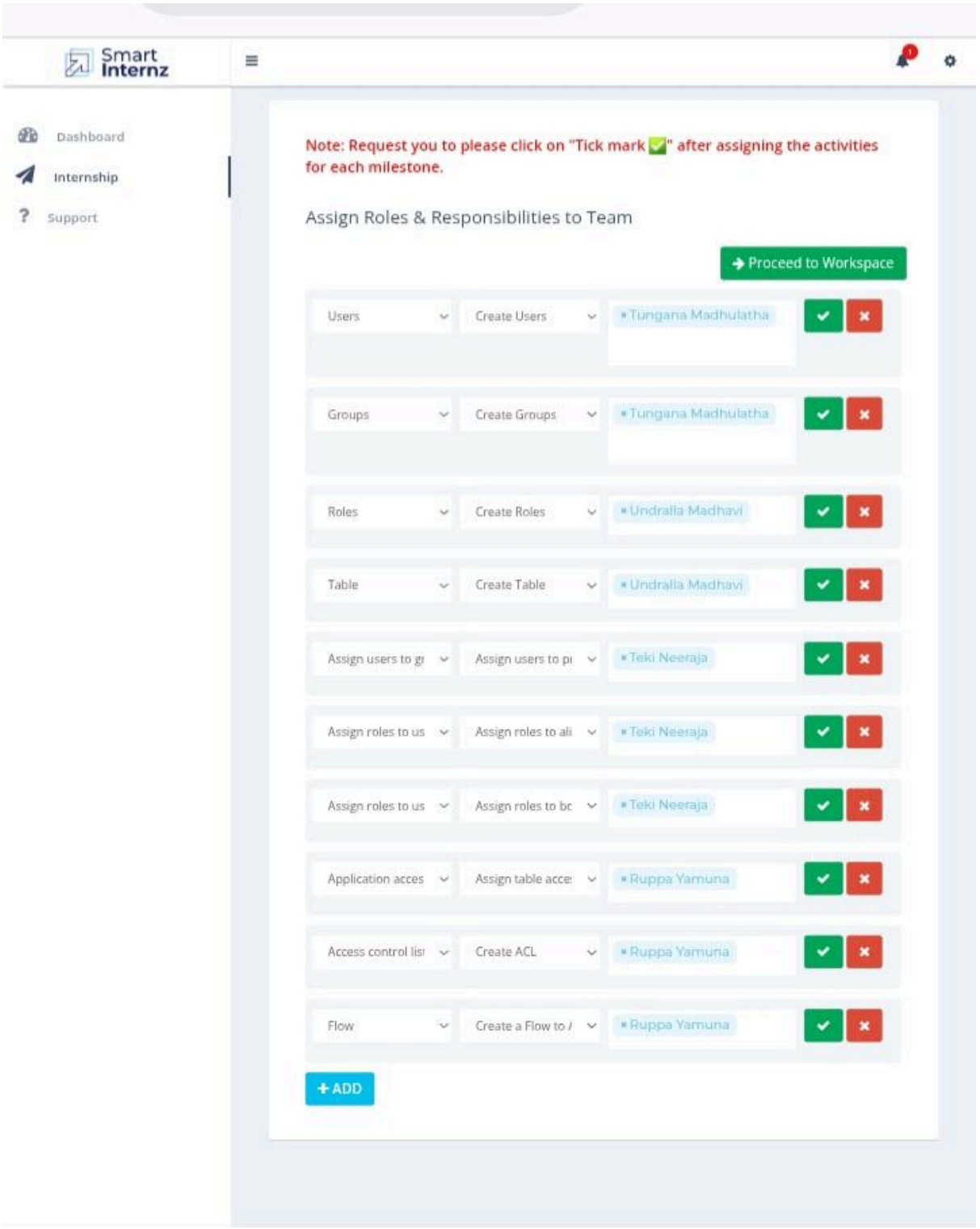
S.No	Parameter	Description
1	**Problem Statement**	**I**n a small project management team consisting of a Project Manager (Alice) and a Team Member (Bob), there is a need to efficiently manage project tasks and ensure accountability throughout

		the project lifecycle. The current system lacks clear role definitions, access controls, and a structured workflow, leading to confusion regarding task assignments and progress tracking**.**
2	**Idea/Solution Description**	**p**roject involves designing and implementing a streamlined system within ServiceNow that automates and optimizes the management of users, groups, and roles, while enforcing access control and triggering appropriate workflows.
3	**Novelty/Uniqueness**	**U**niqueness points: 1.Access ControlVisualization Too 2.lRole Expiry & Review Workflows 3.Custom Role Hierarchies 4.Dynamic Role Assignment Automation
4	**Social Impact/Customer Satisfaction**	**E**nhances both security and satisfaction, benefiting internal users (employees) and external customers by making systems faster, safer, and smarter.
5	**Business Model**	**I**t supports scalable role-based access for enterprise systems, reducing manual effort and improving compliance.
6	**Scalability of the**	**I**t highly scalable due to

	solution	ServiceNow's cloud-native, multi-instance architecture, allowing seamless handling of increasing users

5.PROJECT PLANNING & SCHEDULING

Assigned tasks to the group members



Functional	User Story	No.Of Activities	Team Members

Requirement			
USERS	**A**s an administrator, I want to create and manage user accounts in ServiceNow so that users can access the required applications and perform their tasks.	**1**	T.Madhu Latha
GROUPS	**A**s a system administrator, I want to create and manage user groups in ServiceNow so that I can organize users and assign roles or responsibilities efficiently.	**1**	T.Madhu Latha
ROLES	**A**s a system administrator, I want to create and assign roles in ServiceNow so that users have the appropriate access to perform their tasks	**1**	U.Madhavi
TABLES	**A**s a ServiceNow developer or admin, I want to create and manage custom tables so that I can store and organize application-specifi c data effectively	**1**	U.Madhavi

ASSIGN USERS TO GROUPS	**A**s a ServiceNow administrator, I want to assign users to groups so that they inherit group roles and can participate in group-based workflows and assignments.	**1**	T.Neeraja
ASSIGN ROLES TO USERS	**A**s a ServiceNow administrator, I want to assign roles to users so that they have the appropriate access to perform their tasks in the platform.	**2**	T.Neeraja
APPLICATION ACCESS	**A**s a ServiceNow administrator, I want to control application access so that only authorized users can access specific applications and perform tasks securely.	**1**	R.Yamuna
ACCESS CONTROL LIST	**A**s a ServiceNow administrator, I want to create and configure Access Control Rules (ACLs) so that only authorized users can view or modify specific data in the system.	**1**	R.Yamuna
FLOW	**A**s a ServiceNow administrator or	**1**	R.Yamuna

	developer, I want to create automated flows using Flow Designer so that repetitive tasks and processes can be streamlined without writing code.		

6. FUNCTIONAL & PERFORMANCE TESTING

PROJECT: Optimizing User, Group, and Role Management with Access Control and Workflows

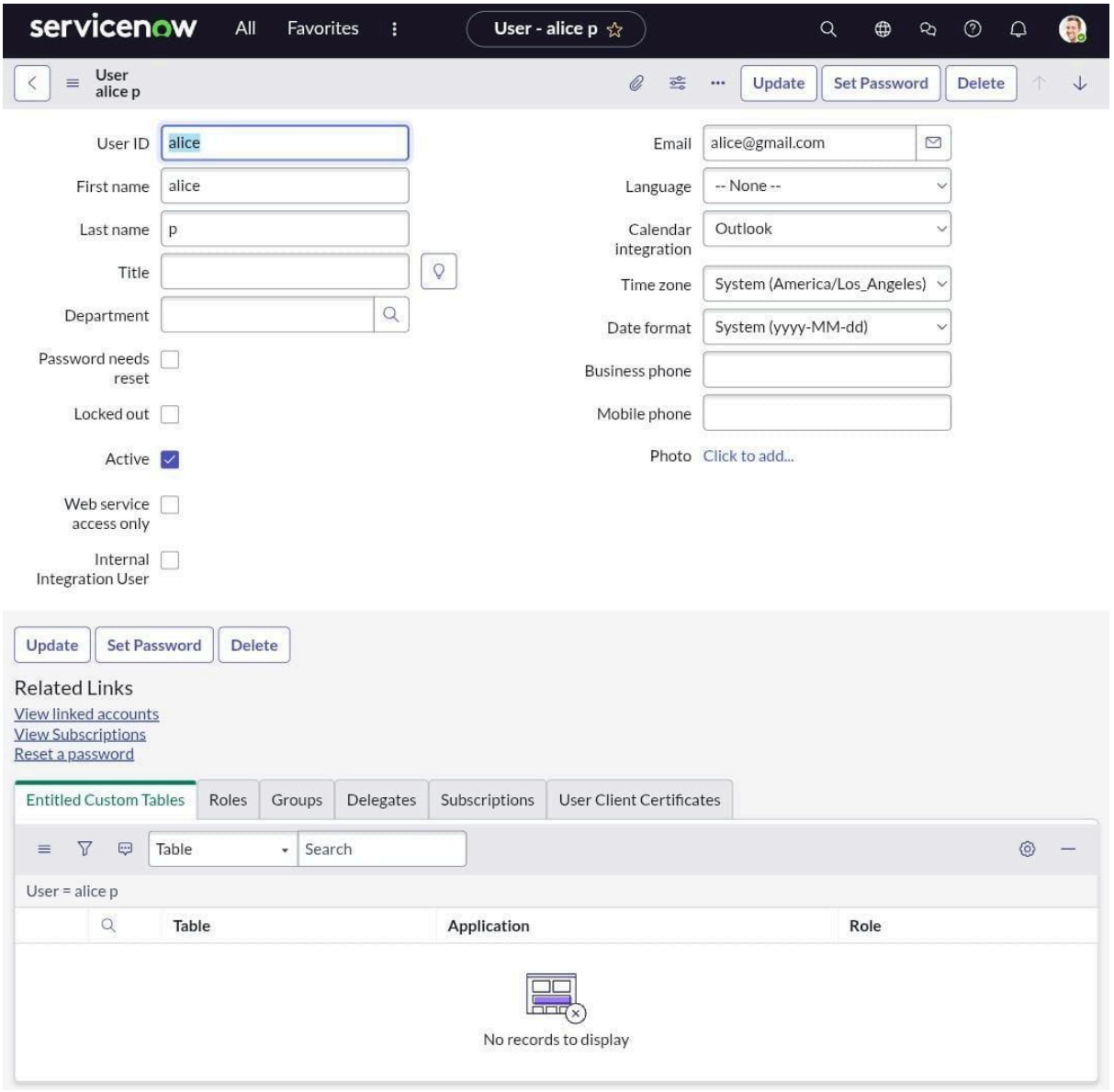
MILESTONE-1: USERS

USERS: User represents an individual who has access to the platform.

PURPOSE: User purpose is defined by the roles assigned to a user, which determine what they can see and do within the platform.

Activity-1:Create Users

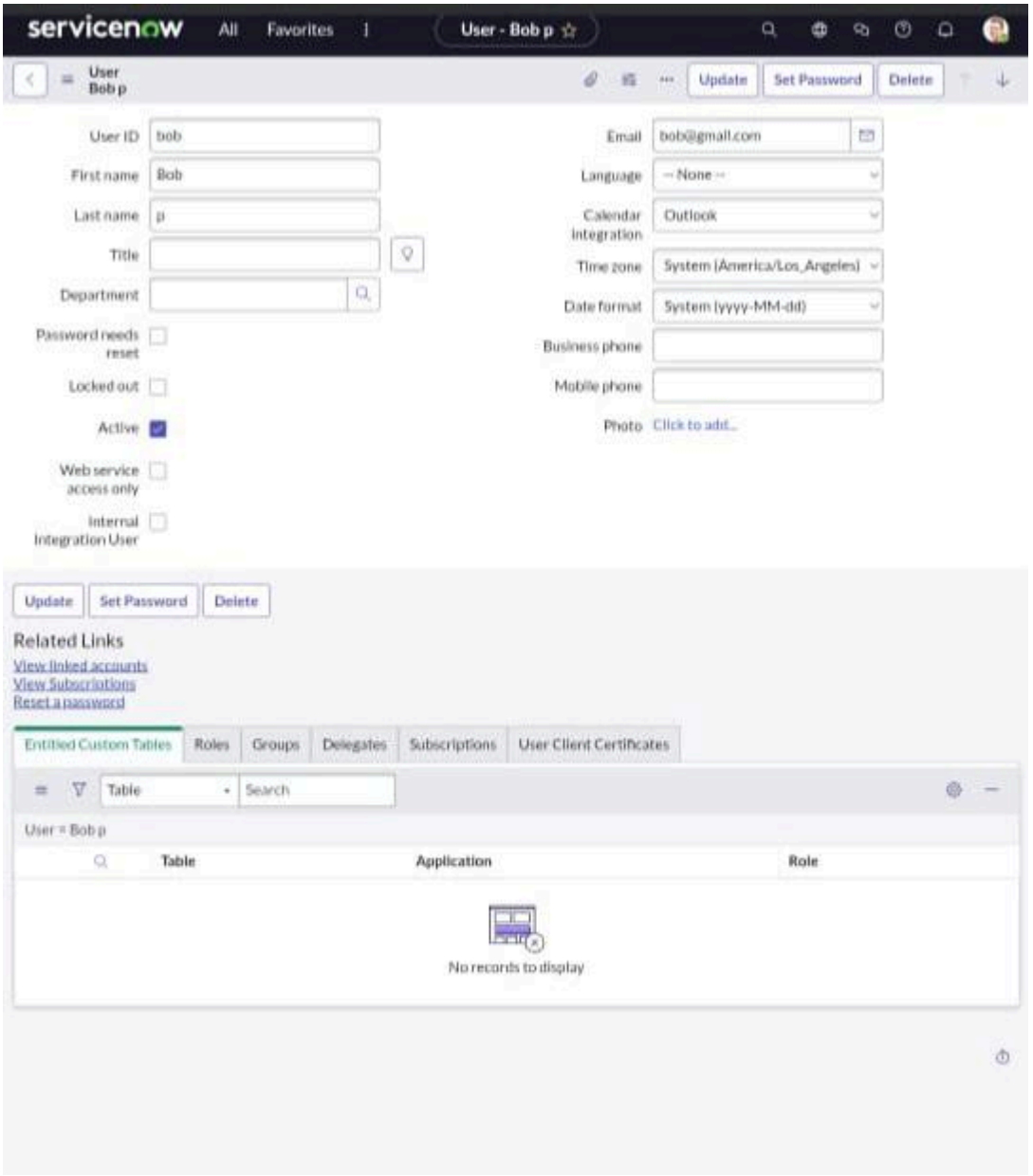
1. Open service now
2. Click on All >> search for users
3. Select Users under system security
4. Click on new
5. Fill the following details to create a new user
6. Click on submit



7.Create one more user:

8.Create another user with the following details

9.Click on submit



MILESTONE-2:GROUPS

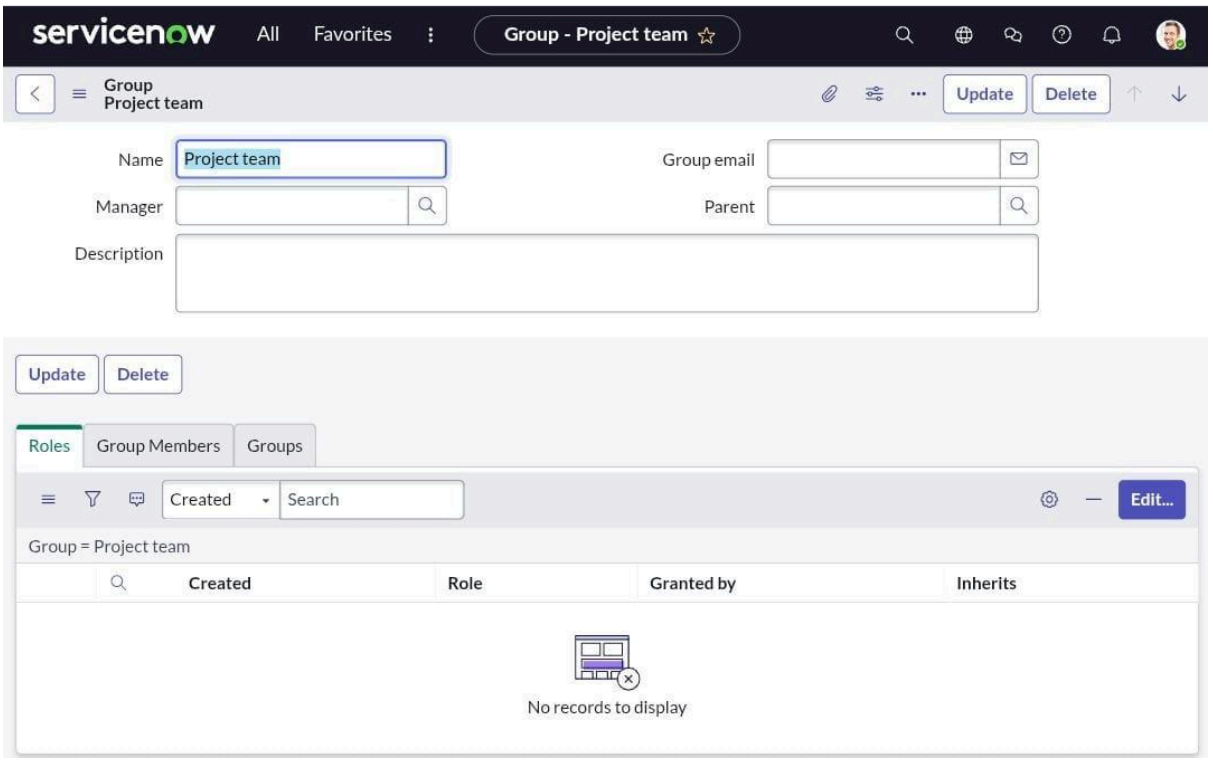
GROUPS: Group is a set of users who share a common purpose. Groups may perform tasks such as approving change requests, resolving incidents, receiving email notifications, or performing work order tasks.

PURPOSE: Groups are designed to organize users based on their roles, responsibilities, or functions within an organization.

Activity-1:Create Groups

1. Open service now.

2. Click on All >> search for groups
3. Select groups under system security
4. Click on new
5. Fill the following details to create a new group
6. Click on submit



MILESTONE-3:ROLES

ROLES: Roles define the access and permissions users have within the platform.

PURPOSE: Roles are used to grant users specific permissions and access to different features and functionalities within the platform

Activity-1:Create Roles

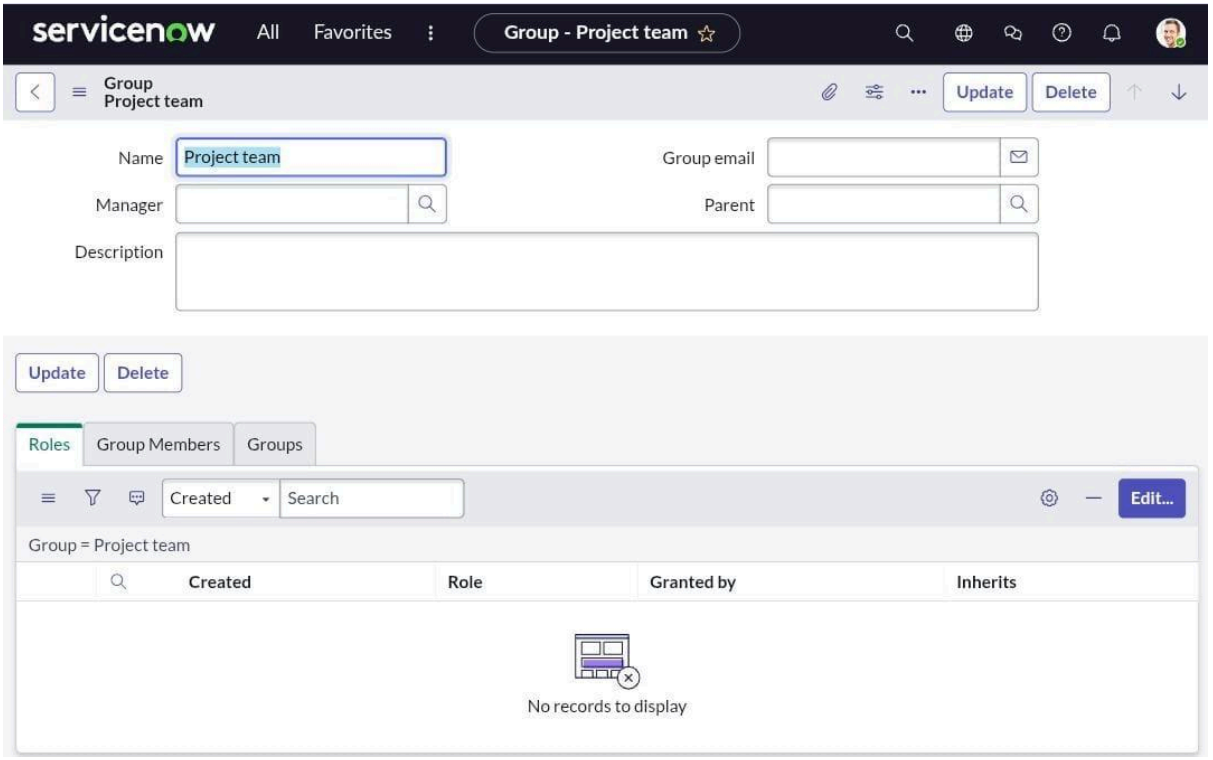
Activity 1: Create roles

1. Open service now,
2. Click on All search for roles

3. Select roles under system security

4. Click on new

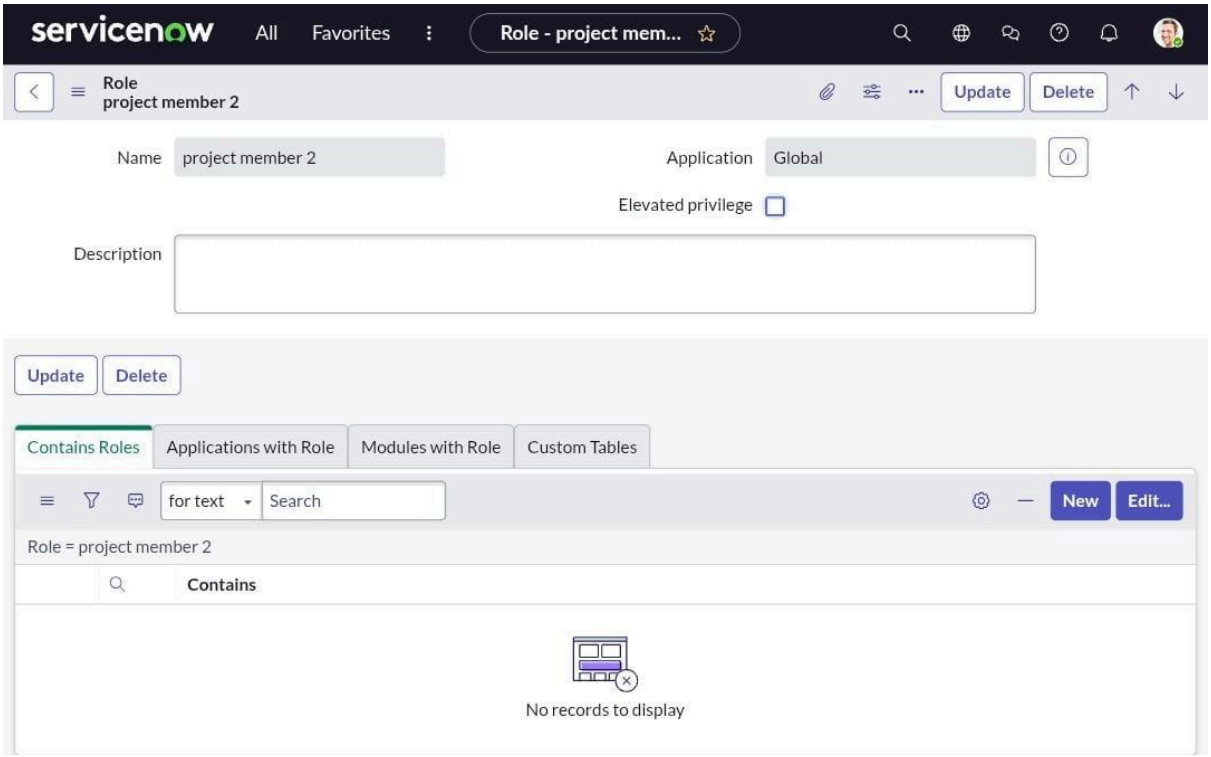
5. Fill the following details to create a new role



Create one more role:

7.Create another role with the following details

8.Click on submit



MILESTONE-4: TABLE

TABLE: Tables are the fundamental structures for storing and organizing data

PURPOSE: Tables serve as the fundamental building blocks for organizing and managing data

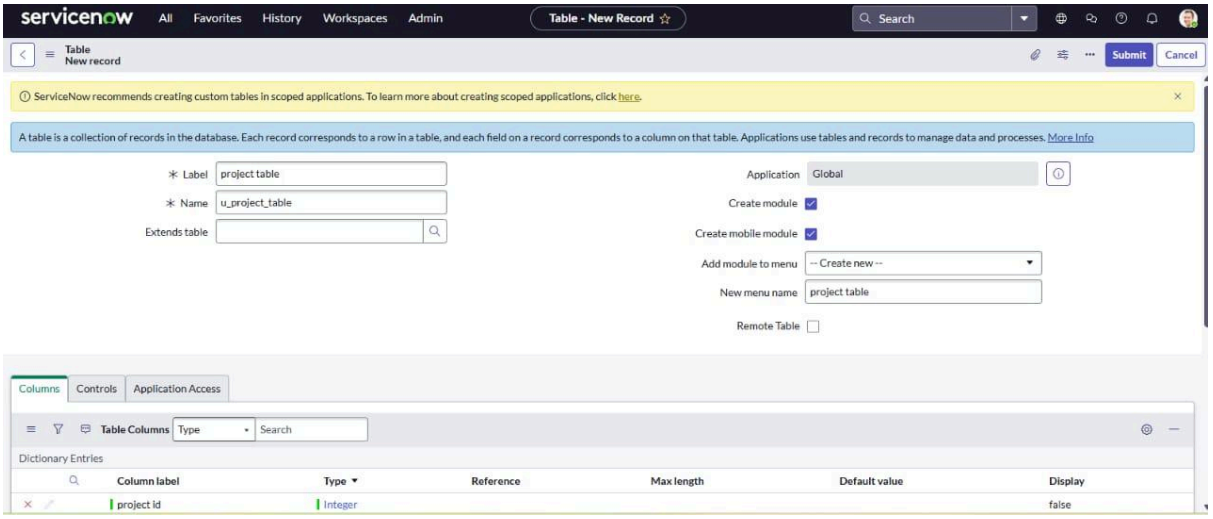
Activity-1:Create Table

1. Open service now.
2. Click on All >> search for tables
3. Select tables under system definition
4. Click on new
5. Fill the following details to create a new table

Label: project table

Check the boxes Create module & Create mobile module

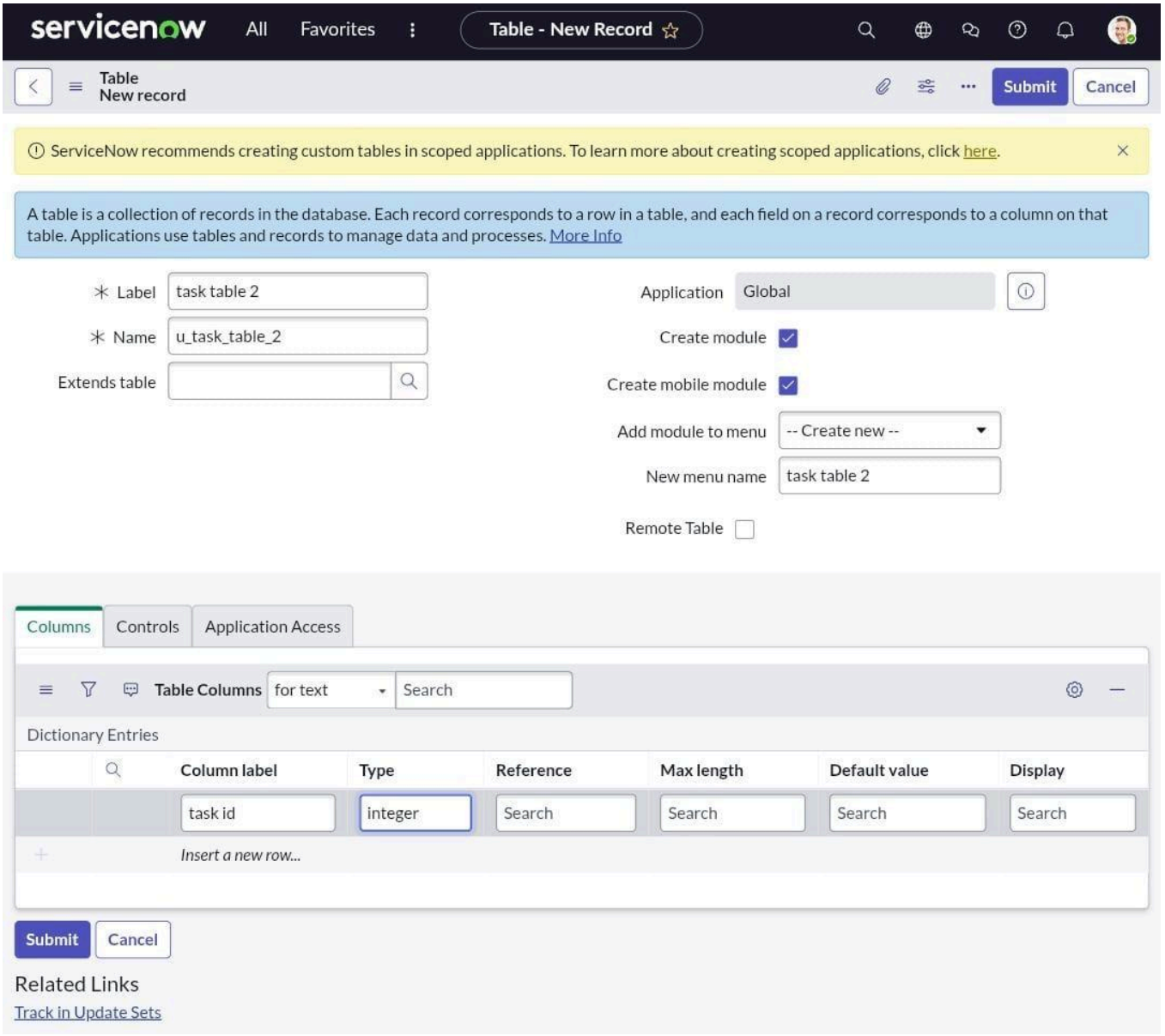
6. Under new menu name: project table
7. Under table columns give the columns



Create one more table:

9.Create another table as task table 2 and fill with following details.

10. Click on submit



MILESTONE-5:ASSIGN USERS TO GROUPS

PURPOSE: Assigning roles to groups streamlines access management by granting permissions to multiple users simultaneously

Activity 1: Assign users to project team group

1.Open service now.

2.Click on All >> search for groups

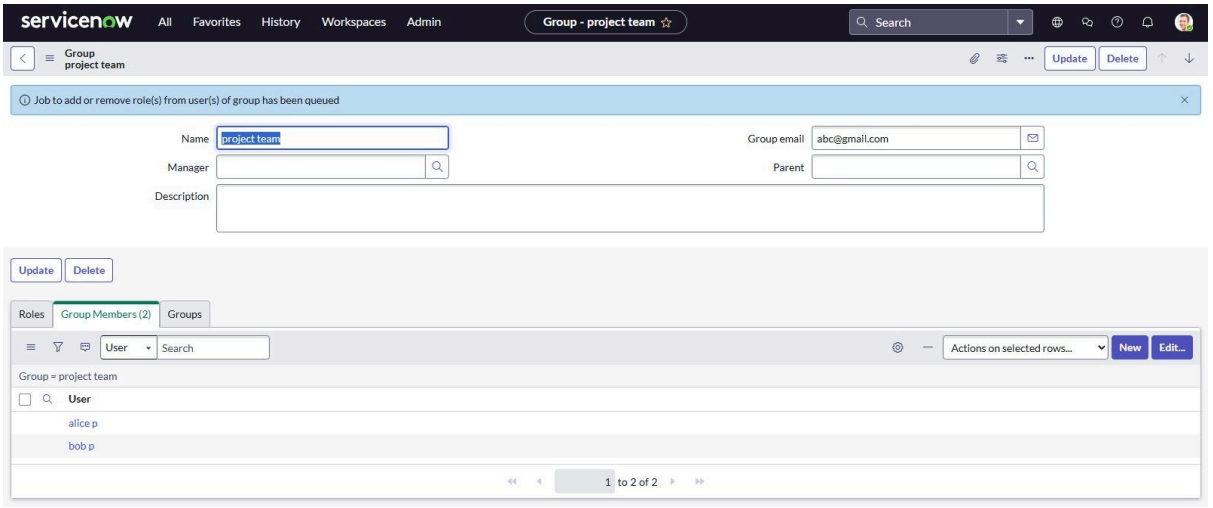
3.Select tables under system definition

4. Select the project team group

5. Under group members

6.Click on edit

7.Select alice p and bob p and save



MILESTONE-6:ASSIGN ROLES TO USERS

PURPOSE: Assigning roles to users determines their access permissions and what they can do within the platform

Activity-1:Assign Roles to Alice User

1.Open servicenow.Click on All >> search for user

2.Select tables under system definition

3. Select the project manager user

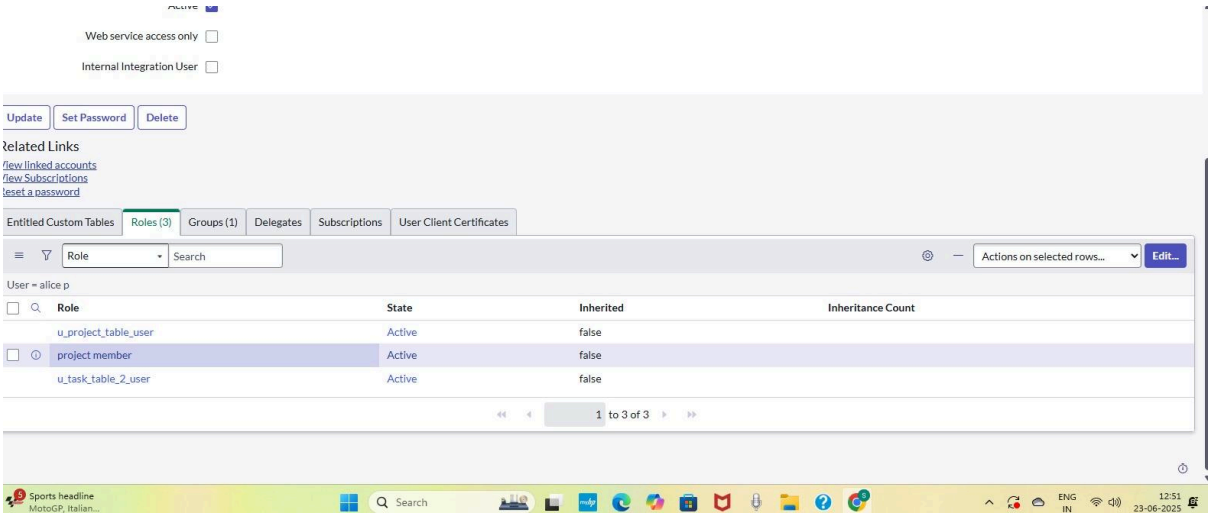
4. Under project manager

5. Click on edit

6. Select project member and save

7.click on edit add u_project_table role and u_task_table role

8. click on save and update the form.



Activity-2:Assign roles to bob user

1.Open servicenow.Click on All >> search for user

2.Select tables under system definition

3.Select the bob p user

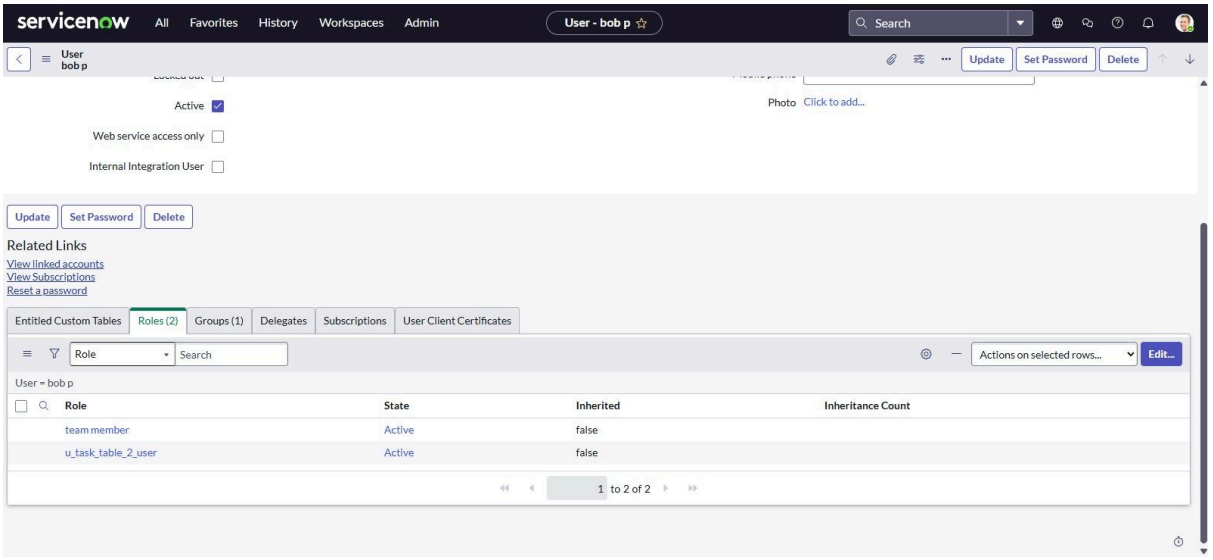
4.Under team member

5.Click on edit

6.Select team member and give table role and save

7.Click on profile icon Impersonate user to bob

8.We can see the task table2.



MILESTONE-7:APPLICATION ACCESS

APPLICATION ACCESS: The mechanism that controls which applications and users can access specific tables and their data

PURPOSE: Application access settings control which applications and users can interact with the data and functionality of a specific application.

Activity-1:Assign table access to application

1.while creating a table it automatically create a application and module for that table

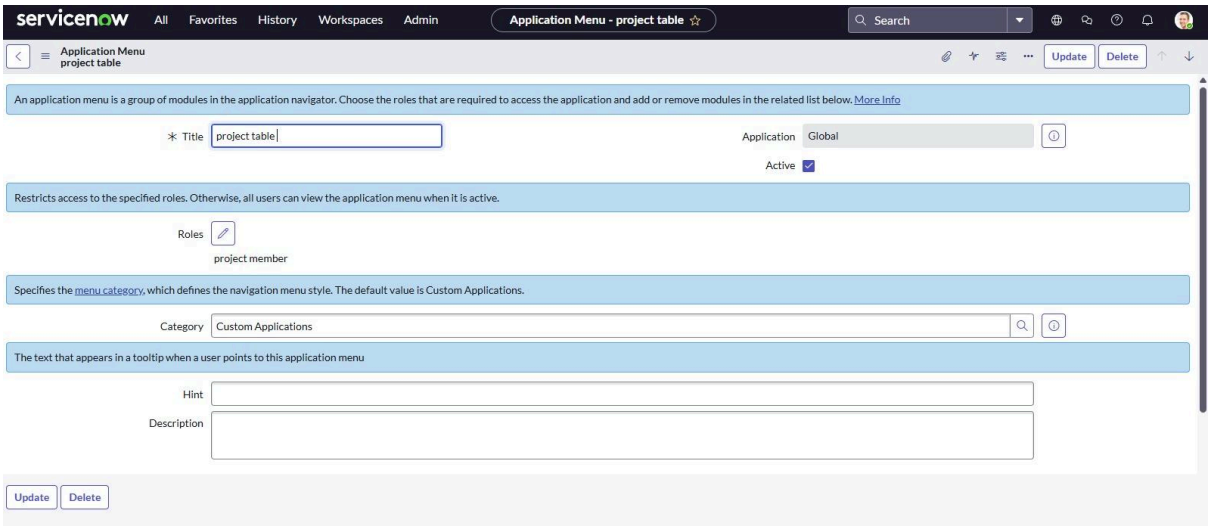
2.Go to application navigator search for search project table application

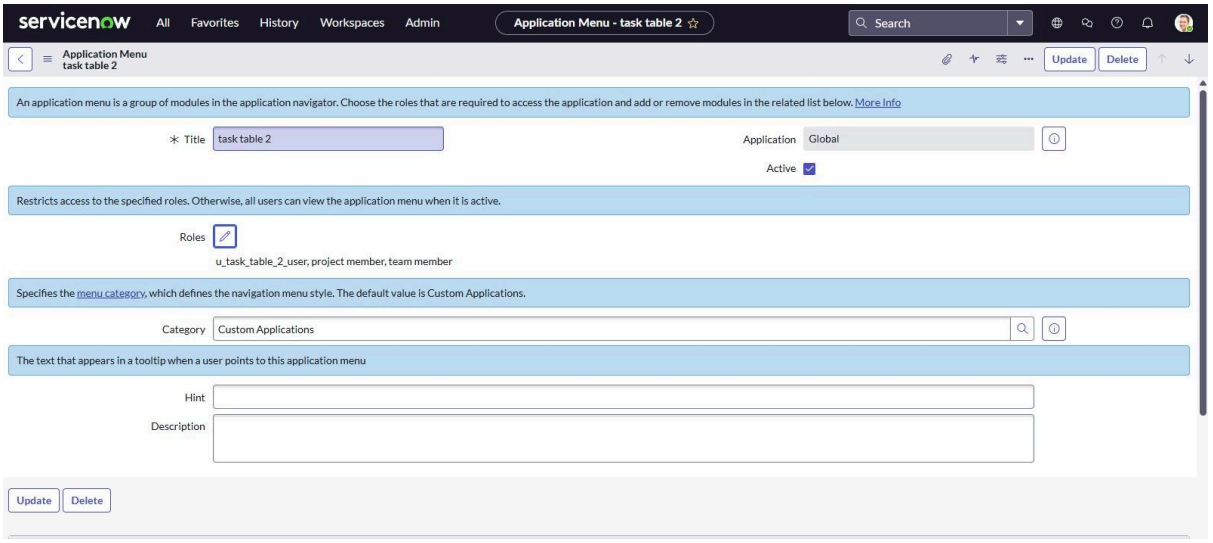
3.Click on edit module

4.Give project member roles to that application

5.Search for task table2 and click on edit application.

6.Give the project member and team member role for task table 2 application





MILESTONE-8:ACCESS CONTROL LIST

ACL: It is a security rule that controls user access to platform resources, such as tables, fields, and even scripts

PURPOSE: Access Control Lists (ACLs) are used to manage and restrict user access to data within the platform.

Activity-1:Create ACL

1.Open service now.

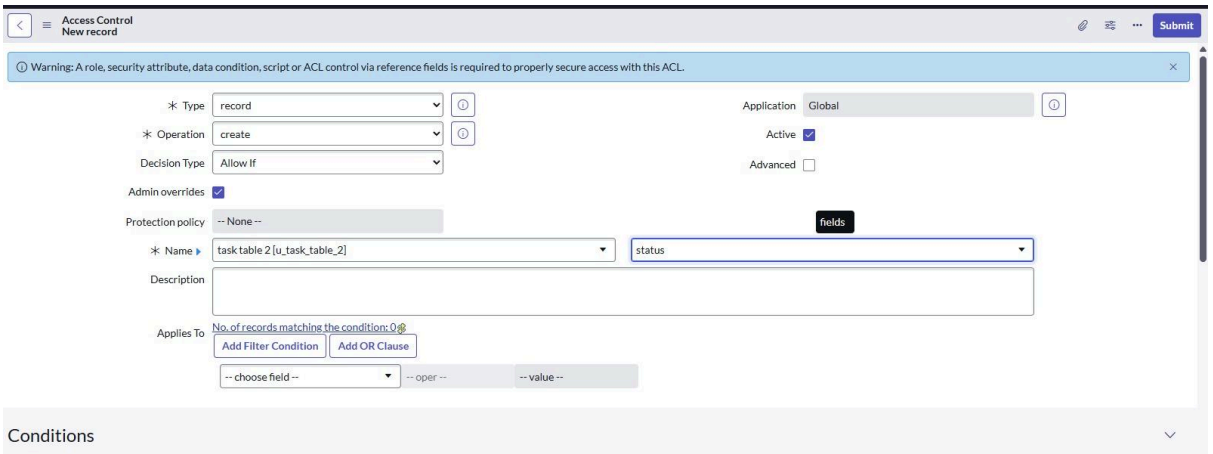
2.Click on All >> search for ACL

3.Select Access Control(ACL) under system security

4.Click on elevate role

5.Click on new

6.Fill the following details to create a new ACL



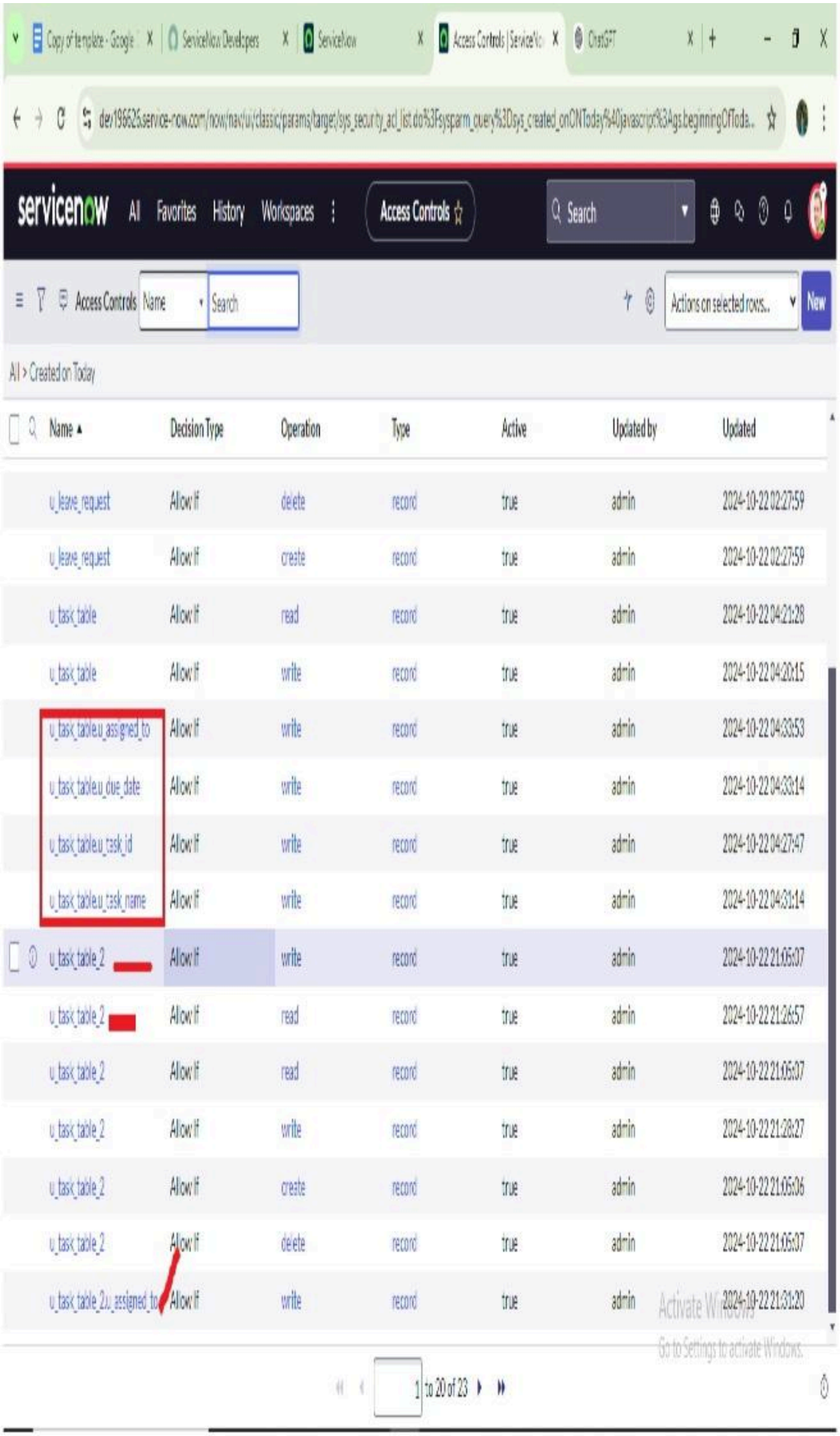
7.Scroll down under requires role

8.Double click on insert a new row

9.Give task table and team member role

10.Click on submit

11.Similarly create 4 acl for the following fields


servicenow
All
Favorites
History
Workspaces
Access Controls
Search
Access Controls
Name
Search
Actions on selected rows...
New
All > Created on Today
Name
Decision Type
Operation
Type
Active
Updated by
Updated
u_leave_request Allow If delete record true admin 2024-10-22 02:27:59
u_leave_request Allow If create record true admin 2024-10-22 02:27:59
u_task_table Allow If read record true admin 2024-10-22 04:21:28
u_task_table Allow If write record true admin 2024-10-22 04:20:15
u_task_table.u_assigned_to Allow If write record true admin 2024-10-22 04:33:53
u_task_table.u_due_date Allow If write record true admin 2024-10-22 04:33:14
u_task_table.u_task_id Allow If write record true admin 2024-10-22 04:27:47
u_task_table.u_task_name Allow If write record true admin 2024-10-22 04:31:14
u_task_table_2 Allow If write record true admin 2024-10-22 21:05:37
u_task_table_2 Allow If read record true admin 2024-10-22 21:26:57
u_task_table_2 Allow If read record true admin 2024-10-22 21:05:37
u_task_table_2 Allow If write record true admin 2024-10-22 21:28:27
u_task_table_2 Allow If create record true admin 2024-10-22 21:05:36
u_task_table_2 Allow If delete record true admin 2024-10-22 21:05:37
u_task_table_2.u_assigned_to Allow If write record true admin 2024-10-22 21:31:20
1 to 20 of 23

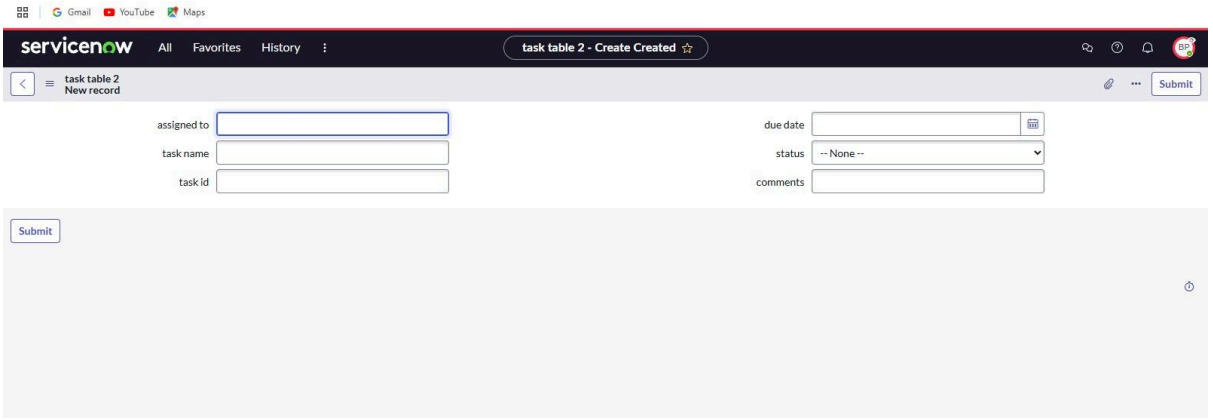
12.Click on profile on top right side

13.Click on impersonate user

14.Select bob user

15.Go to all and select task table2 in the application menu bar

16.Comment and status fields are have the edit access



MILESTONE-9:FLOW

FLOW: Flow is a visual representation of an automated process.

PURPOSE:The purpose of a flow is to automate business processes by orchestrating a series of actions and logic.

Activity-1:Create a Flow to Assign operations ticket to group

1.Open service now.

2.Click on All >> search for Flow Designer

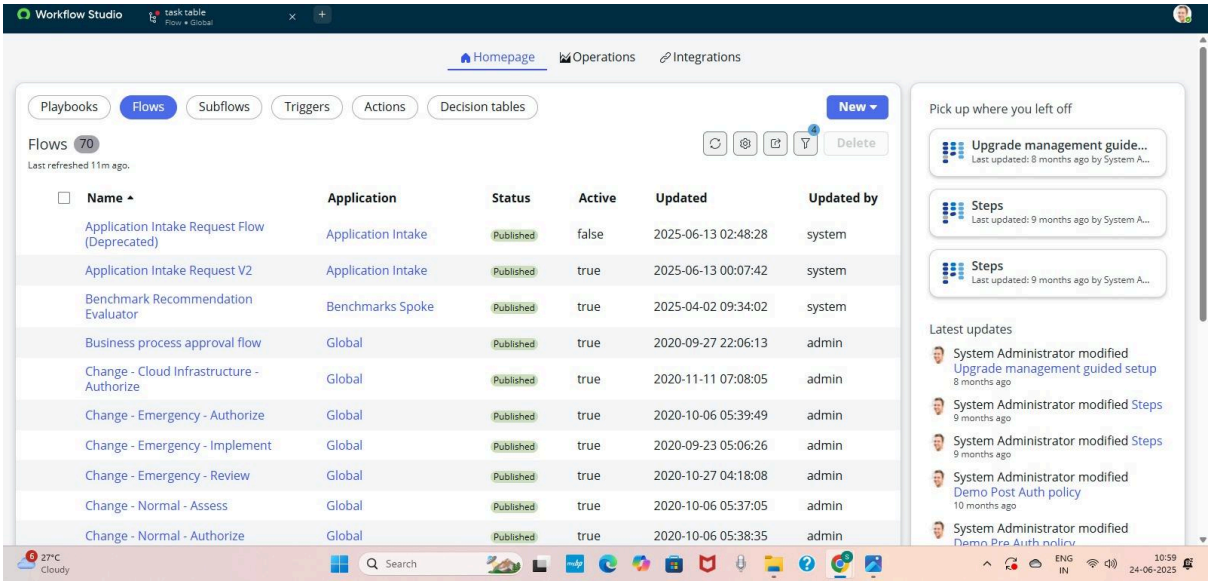
3.Click on Flow Designer under Process Automation.

4.After opening Flow Designer Click on new and select Flow.

5.Under Flow properties Give Flow Name as “ task table”.

6.Application should be Global.

7.Click build flow.



next step:

1.Click on Add a trigger

2.Select the trigger in that Search for “create record” and select that.

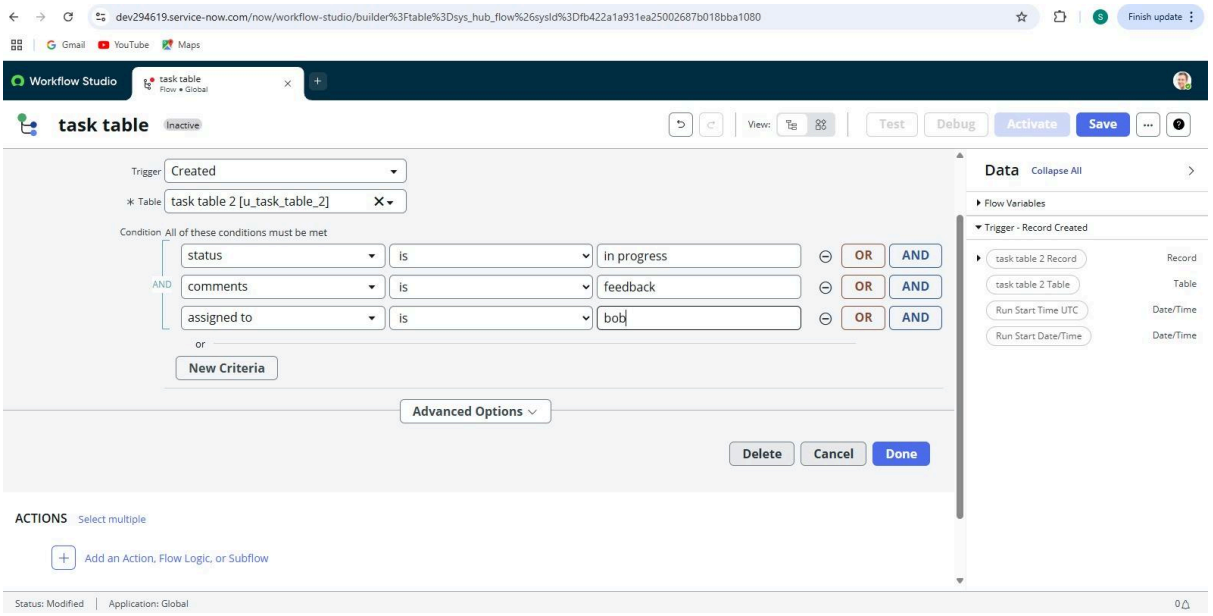
3.Give the table name as “ task table ”.

4.Give the Condition as Field : status Operator :is Value : in progress

Field : comments Operator :is Value : feedback

Field : assigned to Operator :is Value : bob

5. After that click on Done



Next step:

1.Click on Add an action.

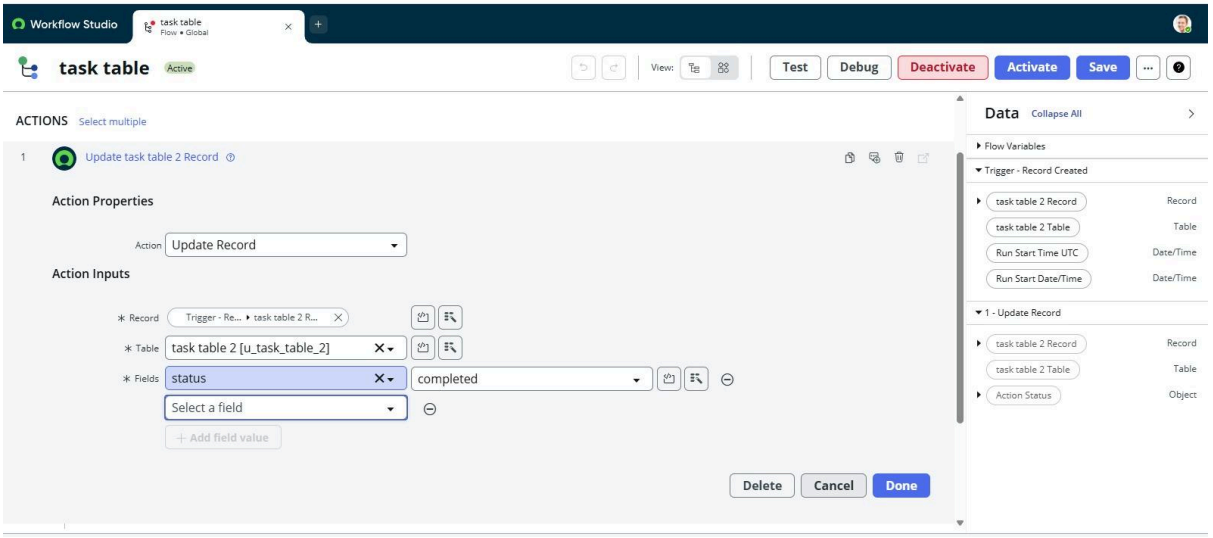
2.Select action in that ,search for " update records".

3.In Record field drag the fields from the data navigation from Right Side(Data pill)

4.Table will be auto assigned after that

5.Add fields as "status" and value as "completed"

6.Click on Done.



Next step:

1.Now under Actions.

2.Click on Add an action.

3.Select action in that ,search for “ ask for approval ”.

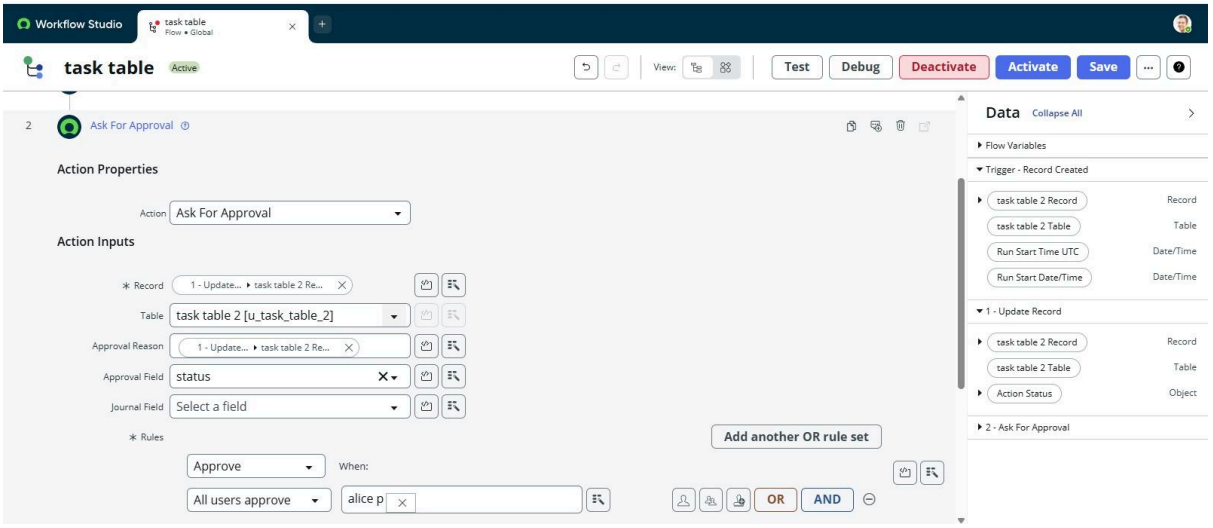
4.In Record field drag the fields from the data navigation from Right side

5.Table will be auto assigned after that

6.Give the approve field as “ status”

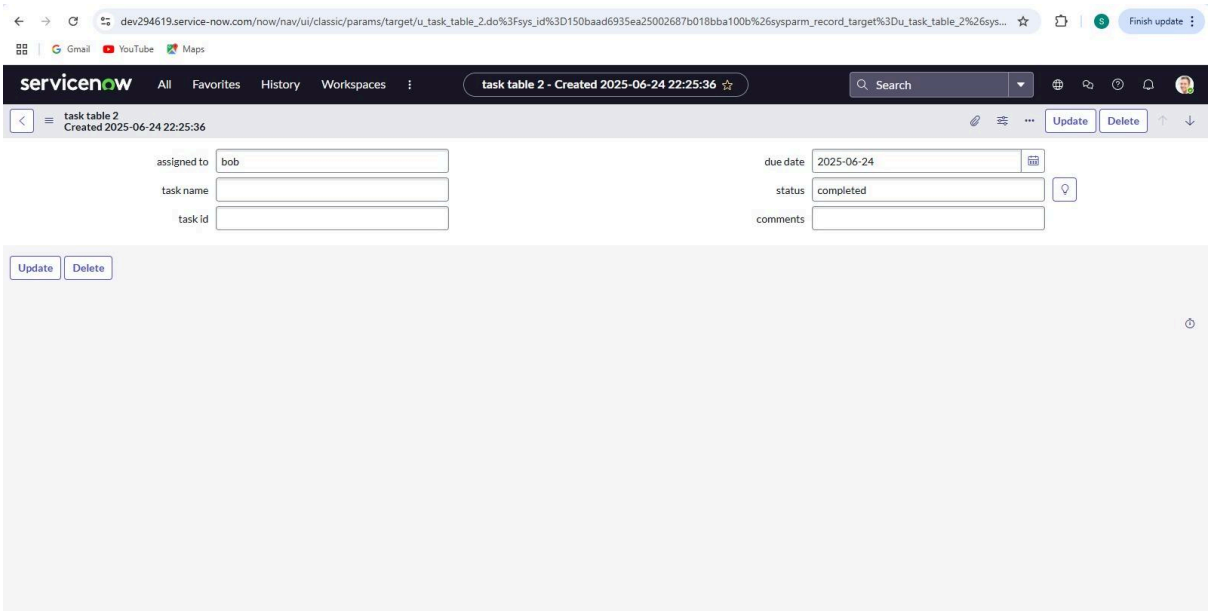
7.Give approver as alice p

8.Click on Done.



1.Go to application navigator search for task table.

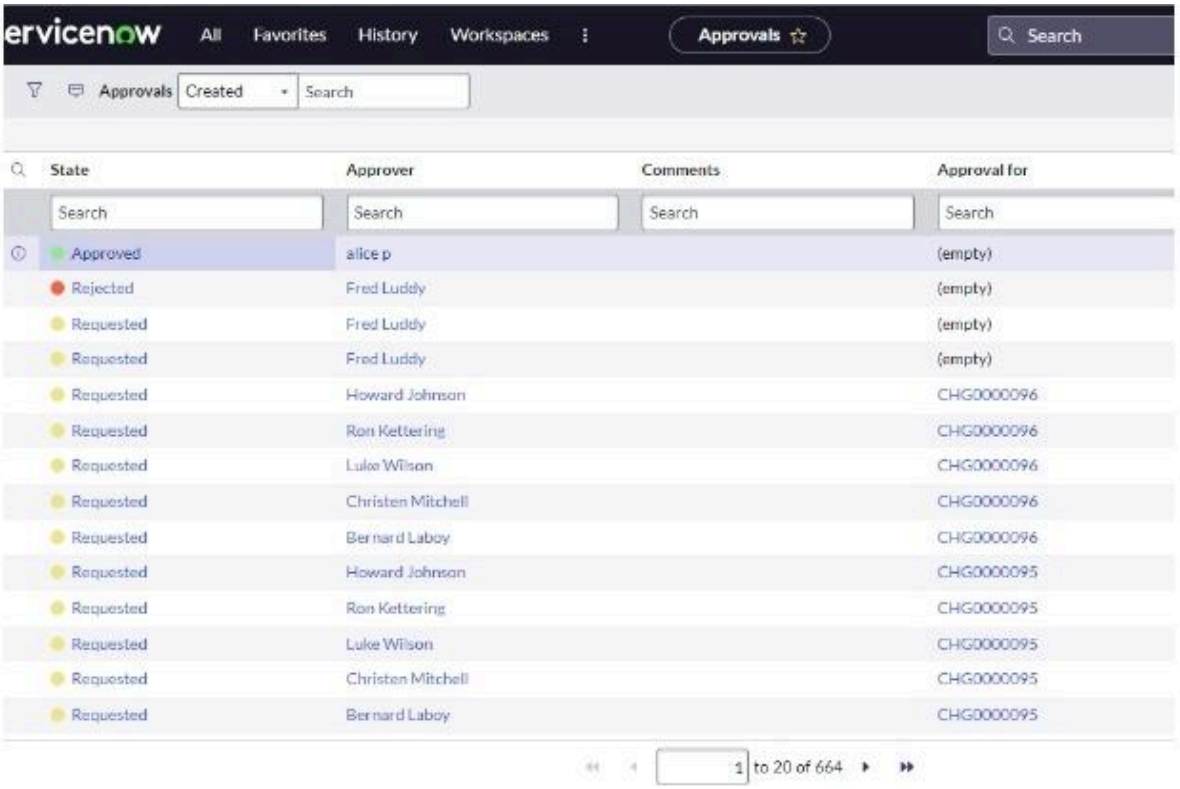
2.It status field is updated to completed

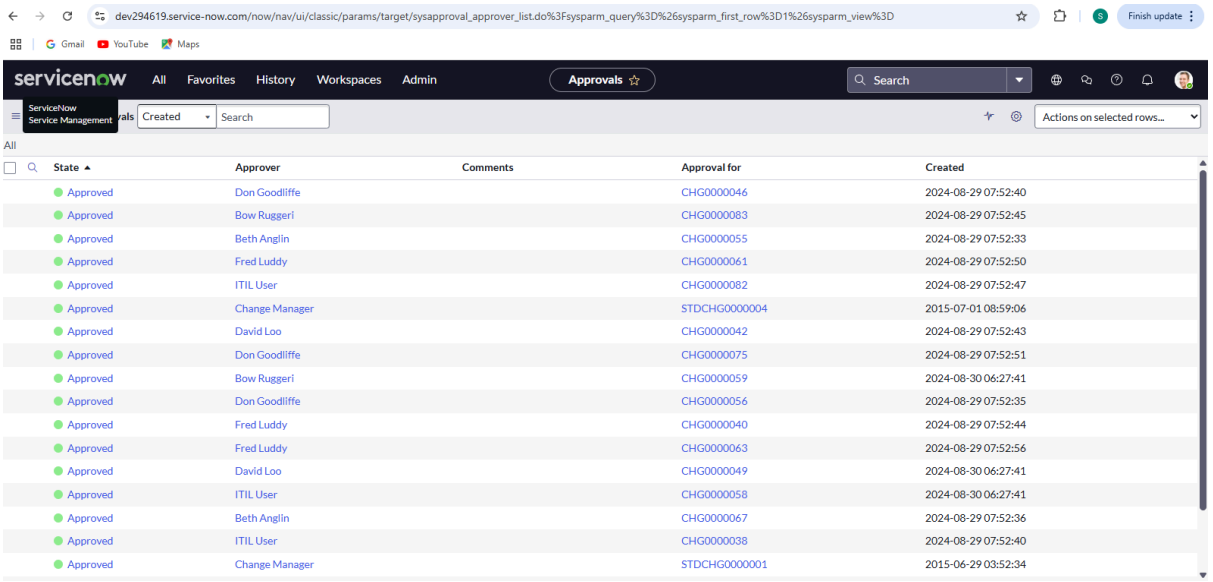


1.Go to application navigator and search for my approval

2.Click on my approval under the service desk.

3.Alice p got approval request then right click on requested then select approved

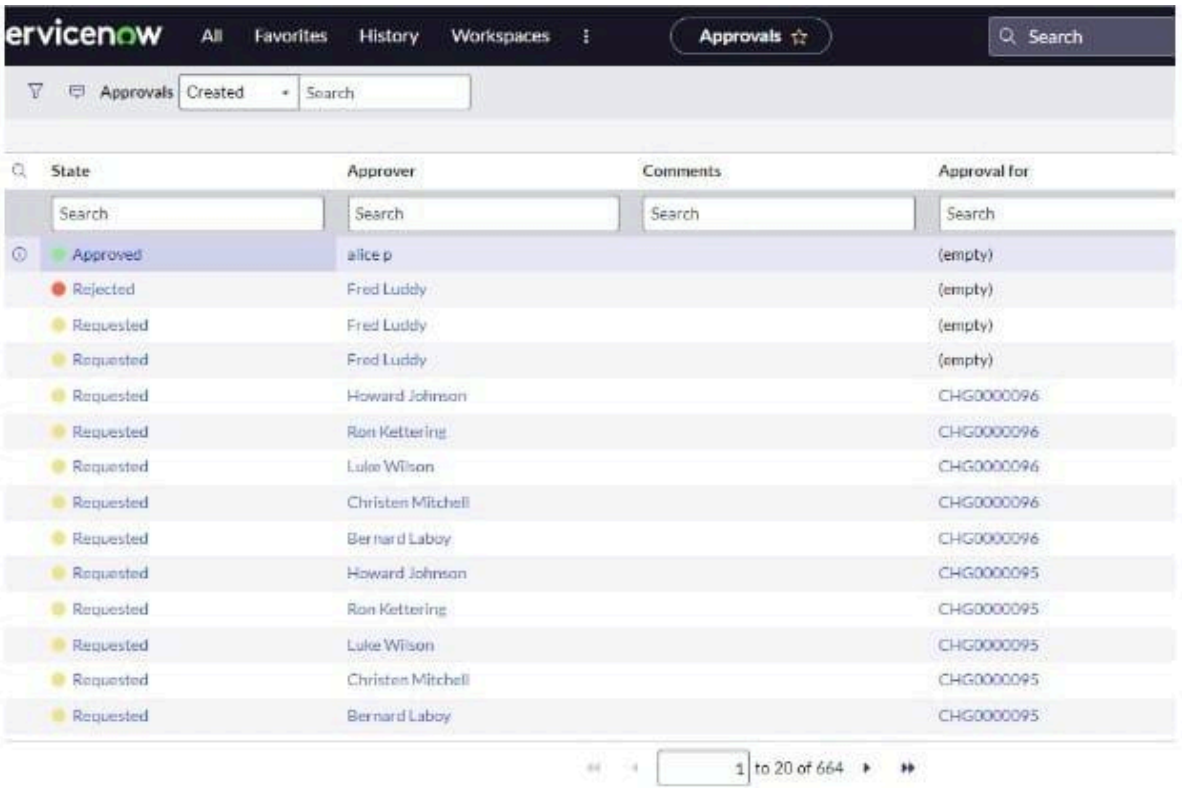


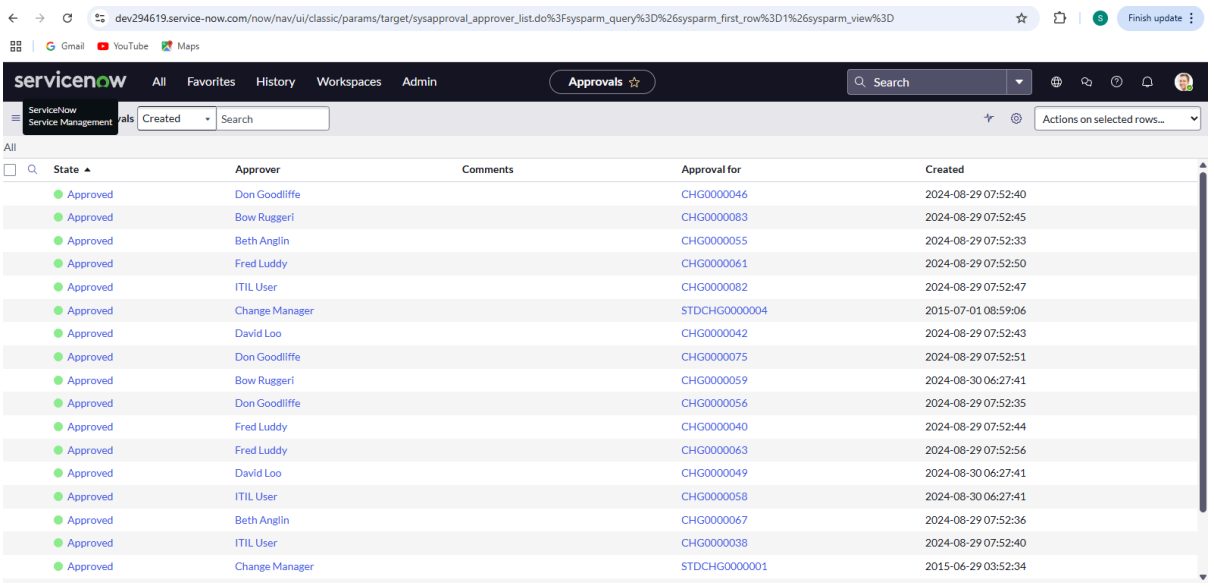


9.RESULT :

The project should demonstrate a complete and secure access management system built in ServiceNow, capable of:

- Preventing unauthorized access
- Ensuring role-based task visibility
- Streamlining user onboarding and access provisioning





ADVANTAGES AND DISADVANTAGES

ADVANTAGES:

- Granular control over user access using roles, groups, and ACLs.Reduces risk of unauthorized access to data and applications.
- Saves time by automating user-role assignments and access control.
- Easy to manage a large number of users via group and role hierarchy.
- Gives hands-on experience with ServiceNow administration.
- Teaches real-world ITSM (IT Service Management) best practices

DISADVANTAGES:

- Understanding ACLs, workflows, and role hierarchies can be confusing initially.
- If roles or ACLs are not defined properly, users may get more access than needed (violating the Principle of Least Privilege).
- As users and roles change over time, regular updates are needed to keep the system secure and efficient.
- Initial configuration of users, groups, roles, ACLs, and workflows can be time-intensive.

10. CONCLUSION :

The project "Optimizing User, Group, and Role Management with Access Control and Workflows" successfully demonstrated how to efficiently manage users, groups, and roles within the ServiceNow platform. Through structured workflows and the implementation of Access Control Lists (ACLs), the system ensures secure and scalable access management across applications and data tables.

By dividing the project into key modules—such as user creation, role assignment, group management, application access control, and ACL configuration—the project

achieved its core goal: to enhance administrative efficiency while maintaining strict security and data integrity.