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

NAAN MUDHALVAN REPORT

Submitted by

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in partial fulfillment for the award of the degree

Of

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BONAFIDE CERTIFICATE

Certified that this project report "**OPTIMIZING USER, GROUP AND ROLE MANAGEMENT WITH ACCESS CONTROL AND WORKFLOWS**" is the Bonafide work of "**AHASH MICHEAL (953422104003) ARUN KRISHNA PRAKASH M(953422104013), ARUN SOUNDHARA PANDIAN T (953422104013),BALAKRISHNAN J (953422104024),BALA VIGNESH G (953422104013)"**who carried out the naan mudhalvan project work under my supervision.

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Submitted for the viva-voce held on ----------

Internal Examiner

External Examiner

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1. INTRODUCTION

1.1 PROJECT OVERVIEW

The project **"Optimizing User, Group, and Role Management with Access Control and Workflows"** focuses on enhancing security, efficiency, and automation in managing user access within an organization using ServiceNow. In many organizations, managing users, assigning them to groups, and defining roles are often done manually through spreadsheets or email requests. This manual approach can lead to inconsistencies, unauthorized access, and delays in onboarding or offboarding employees.

Using **ServiceNow's Role-Based Access Control (RBAC)** and **workflow automation**, this project introduces a structured and automated system to manage users, groups, and roles effectively. The system ensures that each user receives the right level of access based on their job function or department. When a new user is added, the workflow automatically assigns them to the appropriate group and roles, routes the request to the manager for approval, and updates records in real-time. Similarly, when users change departments or leave the organization, their access is modified or revoked automatically.

This project highlights how ServiceNow's **Access Control Rules**, **Approval Workflows**, and **Automation Policies** can be utilized to streamline identity and access management. It ensures compliance, reduces administrative workload, and enhances data security by maintaining proper authorization at every step of the process.

1.2 PURPOSE

The main purpose of this project is to automate and optimize the management of users, groups, and roles in ServiceNow by implementing Access Control and workflow automation. This ensures that the right people have the right access at the right time, improving security and efficiency.

Objectives:

- Automate user, group, and role creation and updates.
- Implement approval workflows for controlled access requests.
- Apply Access Control Rules (ACLs) to secure data and permissions.
- Minimize manual administrative effort through workflow automation.

Benefits:

1. **Enhanced Security:** Ensures users only access data and applications relevant to their roles.
2. **Operational Efficiency:** Automates role assignments and access approvals, minimizing manual intervention.
3. **Transparency:** All access-related actions are logged and traceable within the ServiceNow platform.
4. **Faster Onboarding/Offboarding:** New users get the necessary access quickly, and departing users are automatically deactivated.
5. **Centralized Management:** Administrators can easily monitor, review, and audit user permissions, ensuring compliance and consistency across the system.

2. IDEATION PHASE

2.1 PURPOSE

The main purpose of this project is to automate and streamline the management of users, groups, and roles within ServiceNow using Access Control and workflow automation. This ensures that every user receives appropriate access based on their responsibilities, improving security, consistency, and operational efficiency across the organization.

By utilizing ServiceNow's automation capabilities, the project aims to create a digital workflow where access requests are systematically recorded, reviewed, and approved. Each request is routed to the appropriate authority for validation and implemented without manual intervention.

2.2 GOALS AND CHALLENGES:

Goals:

- To automate and simplify user, group, and role management within ServiceNow.
- To ensure secure and controlled access through Access Control and approval workflows.
- To improve operational efficiency and maintain compliance across the organization.

Challenges:

1) Ensuring accurate role assignments and avoiding excessive access permissions.

2) Managing complex approval workflows and maintaining proper authorization levels.

3) Integrating Access Control with existing systems without disrupting operations.

Pain Points:

- Repetitive manual work.
- Delayed responses.
- Lack of centralized record keeping.

Needs:

- Secure Access
- Automation
- Compliance

2.3 BRAINSTROMING

Ideas Generated:

- Design a centralized module in ServiceNow for managing **Users, Groups, and Roles**.
- Add mandatory fields: User Name, Department, Role Type, Access Level, and Approval Status.
- Create a **Flow Designer workflow** to automate role assignment and approval routing.
- Enable automatic **email notifications** for role assignment, access approval, and revocation.
- Provide a **dashboard** for administrators to monitor user access requests, approvals, and activity logs.

Key Questions:

1. Who should authorize the creation or modification of user roles?
2. How should administrators be notified about pending access requests?
3. Should the system include automated deactivation for inactive or offboarded users?

3. REQUIREMENT PHASE

3.1 OBJECTIVE

To design and implement a **User, Group, and Role Management System** in ServiceNow that automates access provisioning, approval workflows, and access control enforcement to ensure data security and compliance

Current Challenges:

- MaManual user and role assignments leading to inconsistent permissions.
- Lack of transparency in access approvals and change history.
- Difficulty in tracking user access during onboarding and offboarding

Expected Outcomes:

1. Centralized platform for managing users, groups, and roles.
2. Automated access approval workflows and real-time notifications.
3. Enhanced compliance and visibility into access control operations.

Scope:

- User and role creation and management.
- Access Control Rules (ACL) configuration.
- Automated approval and notification workflows.
- Integration with HR or identity systems for onboarding/offboarding.
- Role-based reporting and audit tracking.

Stakeholders:

1. Employees (Access Requesters)
2. Managers (Approvers)
3. System Administrators (Access Controllers)
4. IT Security Team (Auditors and Reviewers)

Success Metrics:

- 90% reduction in manual access management tasks.
- 100% tracking of all access requests and approvals.
- Access provisioning time reduced by at least 70%.

3.2 SOLUTIONS REQUIREMENTS

Functional Requirements:

- Create a centralized module for managing Users, Groups, and Roles.
- Automate workflow routing for access approval and role assignment.
- Enable real-time notifications for user creation, modification, or revocation.
- Provide dashboards for monitoring access requests and activity logs.

Non-Functional Requirements:

- Simple and responsive design.
- 24/7 accessibility via Service Portal.
- Secure access with proper role-based permissions.

Technical Requirements:

1) Use of ServiceNow modules: **Flow Designer, Access Control Rules, Notifications.**

2) Configuration via **Update Sets** for version control and migration.

3)Integration with **User, Group, and Role tables** for automation and reporting.

3.3 FLOW DIAGRAM

Employee (User)
↓
Submit Access Request Form
↓
Approval by Manager
↓
Access Provisioning by Administrator
↓
Notification to User
↓
Access Review by Security Team

This logical flow ensures controlled access, clear accountability, and complete traceability of user and role management activities.

3.4 TECHNOLOGY STACK:

Platform: ServiceNow ITSM

Automation: Flow Designer, Workflow Editor, and Business Rules

Notification: Email, ServiceNow Alerts, and In-App Notifications

Scripting: JavaScript and Glide Scripting for server-side and client-side logic

Access Control: Role-Based Access Control (RBAC) using ACLs, Groups, and Roles for secure data and function management

4. PROJECT DESIGN

4.1 TECHNOLOGY STACK

Core Platform: ServiceNow ITSM

Workflow Automation: Flow Designer

Notification System: Email Templates

Database: ServiceNow Tables

Security: Role-based Access Control

4.2 PROPOSED SOLUTION

The solution focuses on automating **User, Group, and Role Management** in ServiceNow to streamline access control processes. It enables the automatic routing of access requests through defined approval workflows, ensuring that only authorized users receive the correct level of access.

Benefits :

- Reduces manual workload for administrators and managers.
- Improves transparency in access approvals and modifications.
- Provides real-time status updates and complete access history.
- Enhances scalability and security across organizational departments.

4.3 SOLUTION ARCHITECTURE

1. Define User Roles (Requester, Approver, Administrator, Security Auditor).
2. Build Access Request Form for users.
3. Develop Approval Workflow in Flow Designer.
4. Configure Access Control Rules and Notifications.
5. Test and validate all approval and access scenarios.
6. Deploy to Service Portal for end-user accessibility.

5. PROJECT PLANNING & SCHEDULING

PHASE	DURATION
Requirement Analysis	1 Hour
Form and Role Configuration	1 Hour
Workflow Development	2 Hours
Notification Setup	1 Hour
Access Control Setup	30 Minutes
Testing & Debugging	2 Hours
Documentation	1 Hour

6. FUNCTIONAL AND PERFORMANCE TESTING

6.1 PERFORMANCE TESTING

- Test workflow execution time and access assignment speed.
- Verify system stability under multiple concurrent access requests.
- Ensure smooth performance during heavy load conditions.

6.2 FUNCTIONAL TESTING

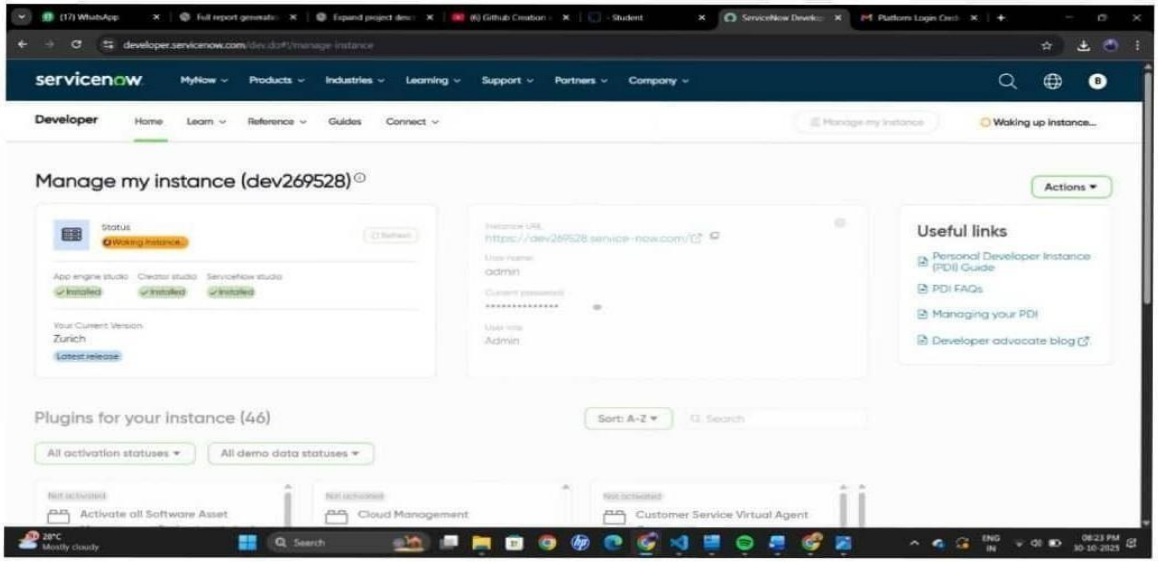
- **Validate user and role creation forms.**
- **Verify approval routing and access modification workflows.**
- **Ensure notifications trigger correctly for each action.**
- **Confirm that administrators can view and manage access logs accurately.**
-

7. RESULTS

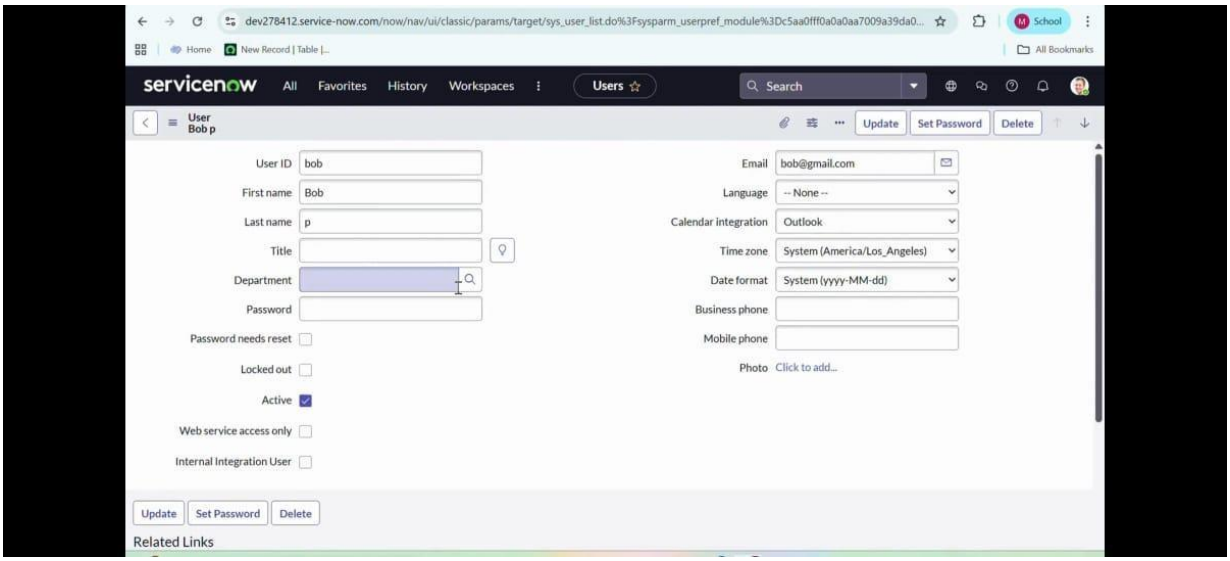
Output Screens:

- Creation of users.
- Creation of Groups.
- Creation of roles.
- Assigning Roles to user.
- Assign table access to application.
- Creation of Access control list (ACL).
- Create a flow to assign operations Tickets to group
- Testing the Flow

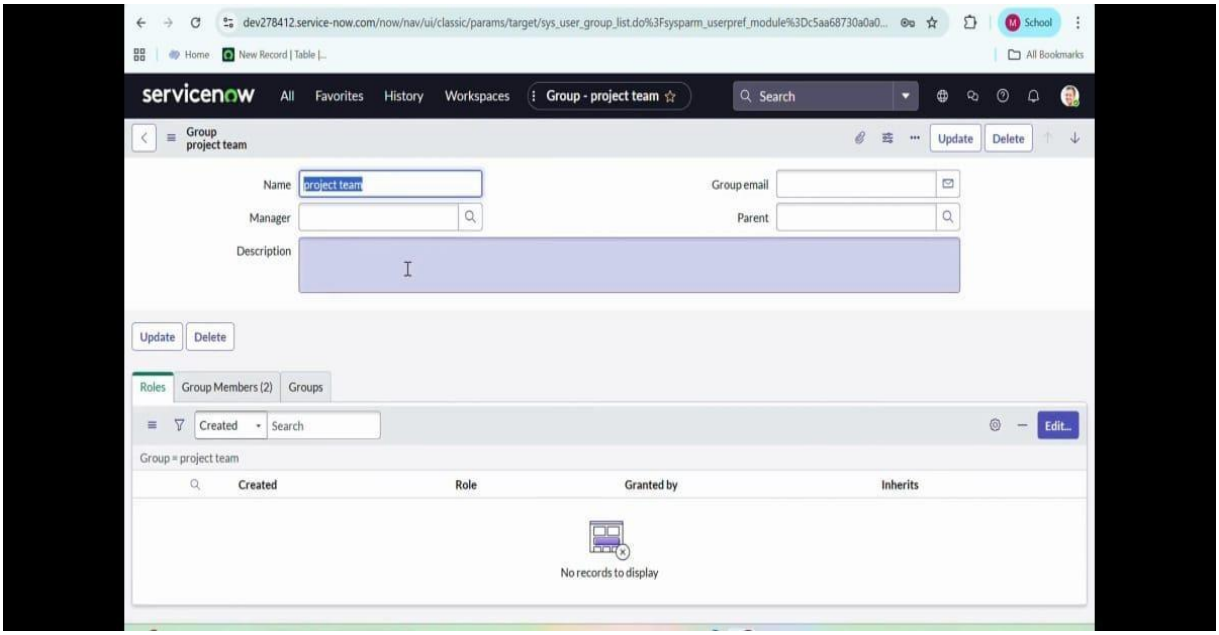
7.1 SETTING UP SERVICE NOW INSTANCE



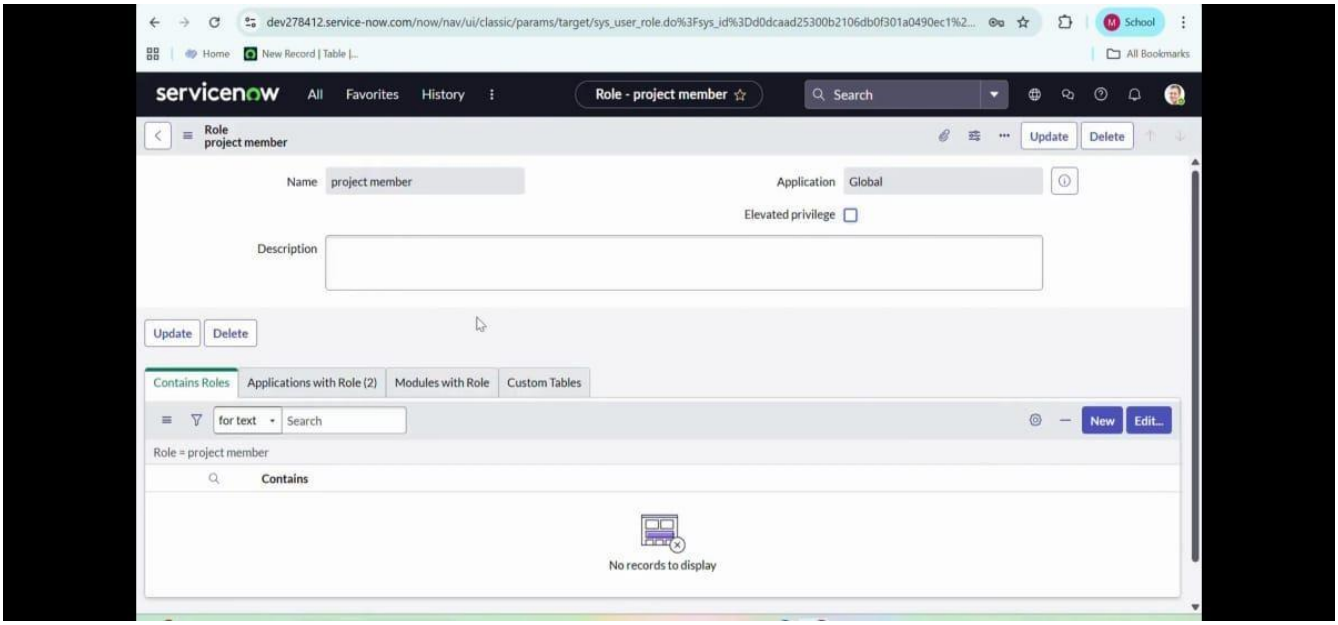
7.2 CREATION OF USER

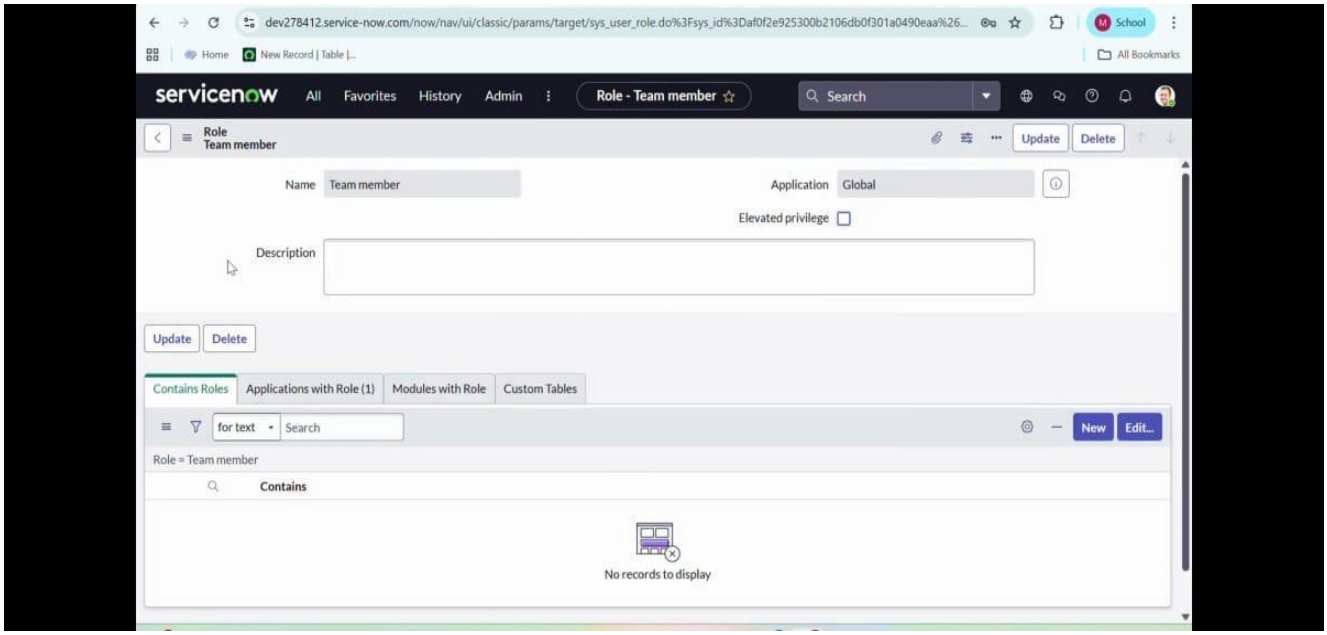


7.3 CREATION OF GROUPS

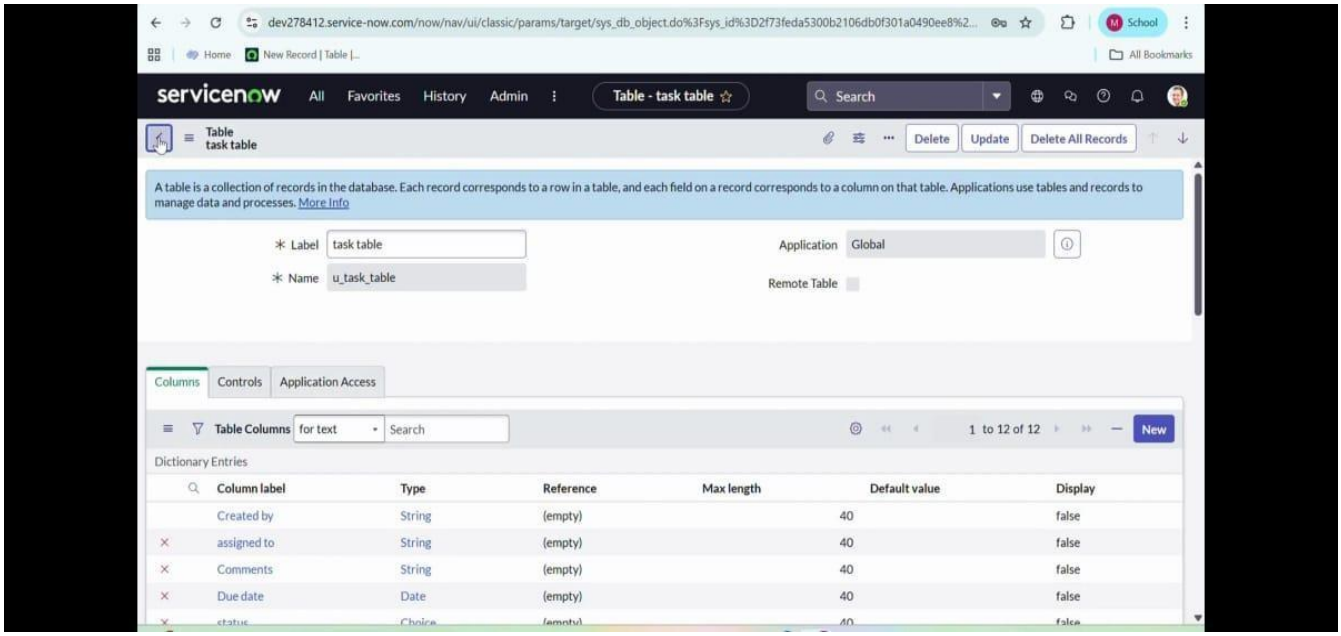


7.4 CREATION OF ROLES:

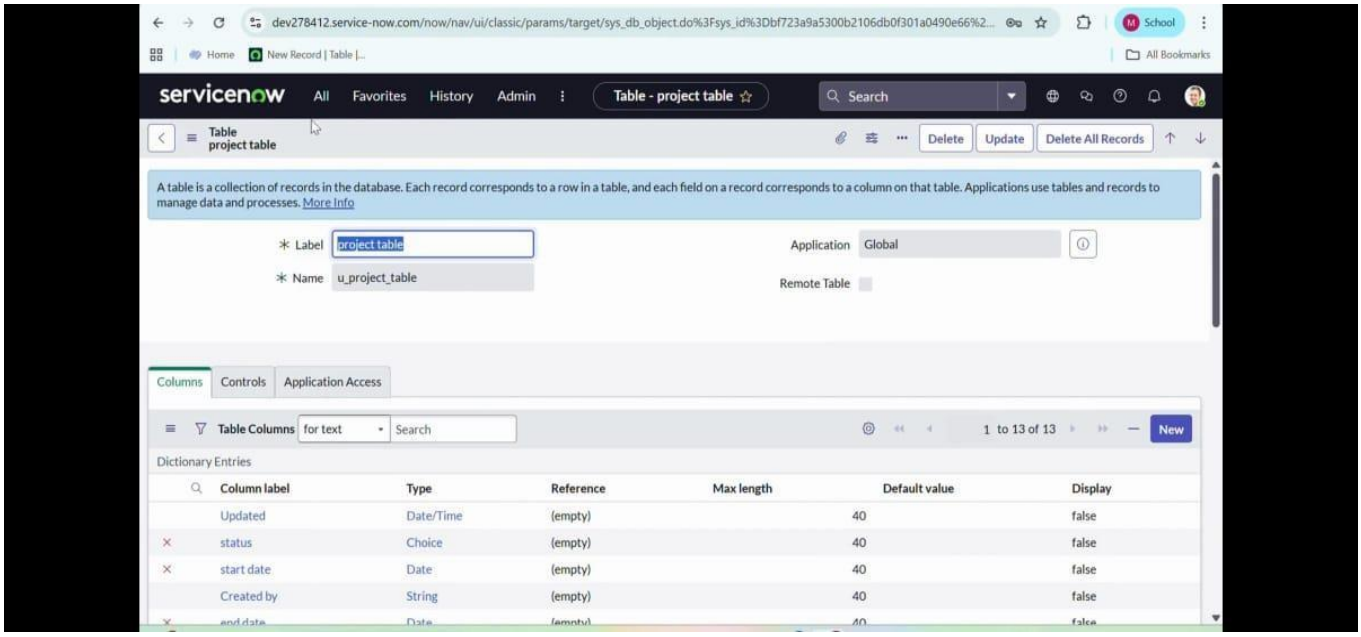


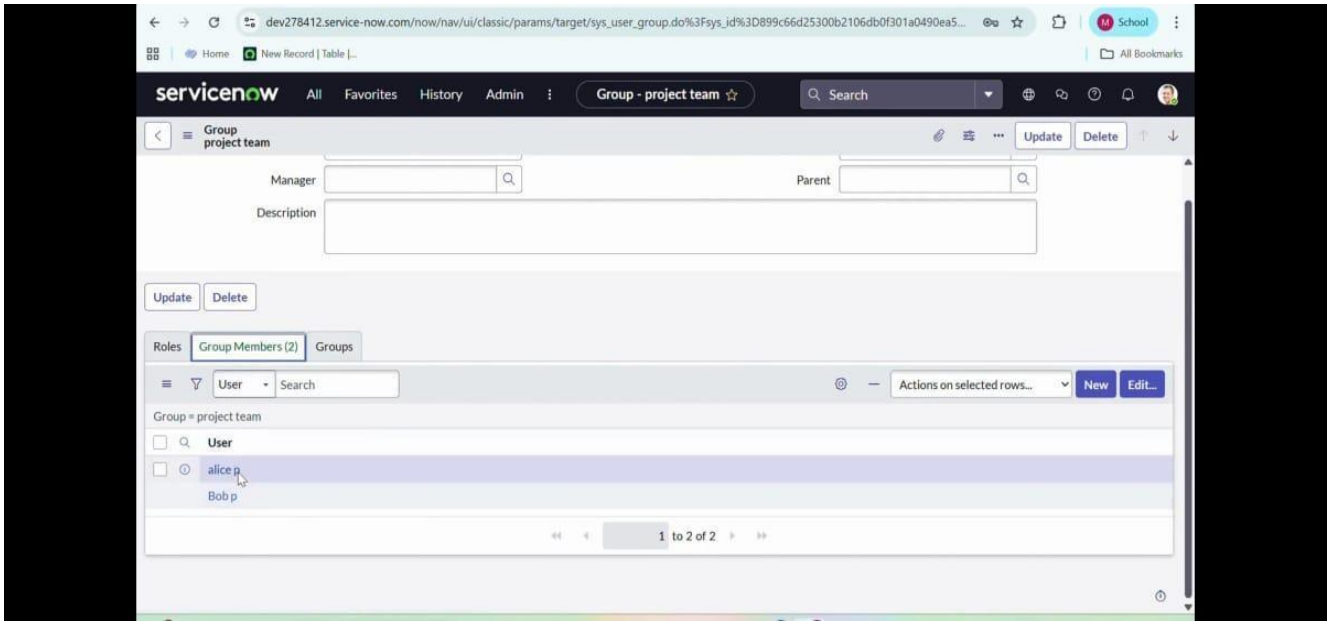


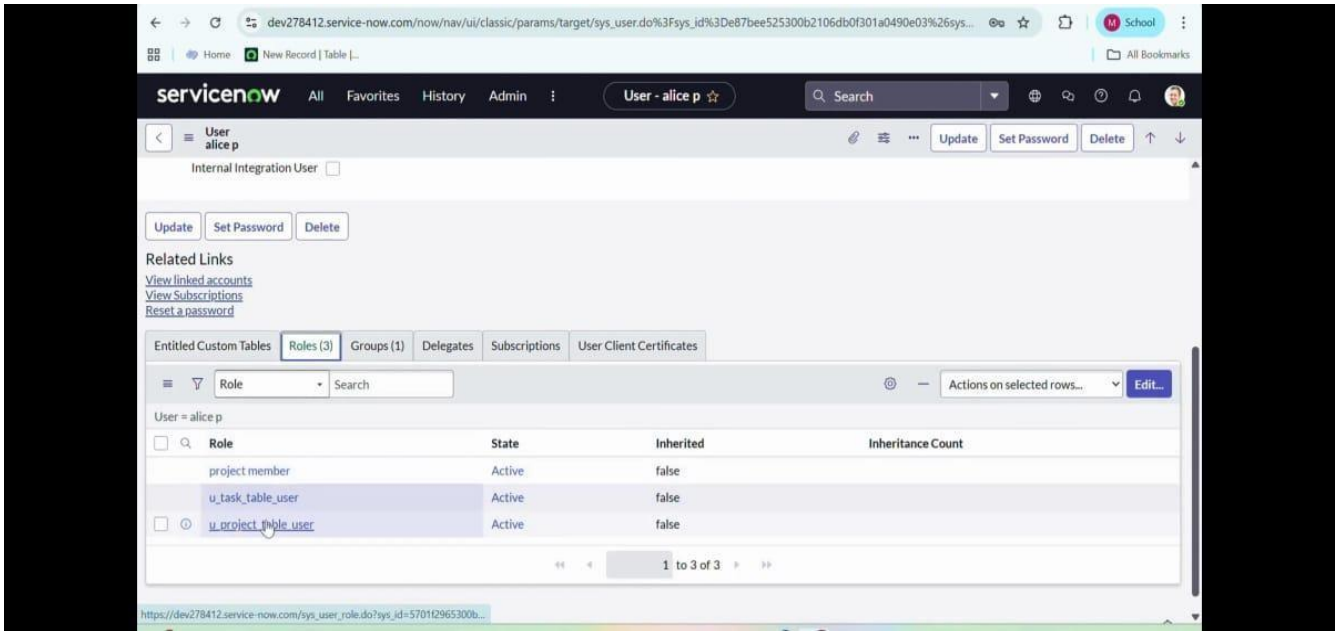
7.5 ASSIGNING ROLES TO USER:



7.6 ASSIGN TABLE ACCESS TO APPLICATION:



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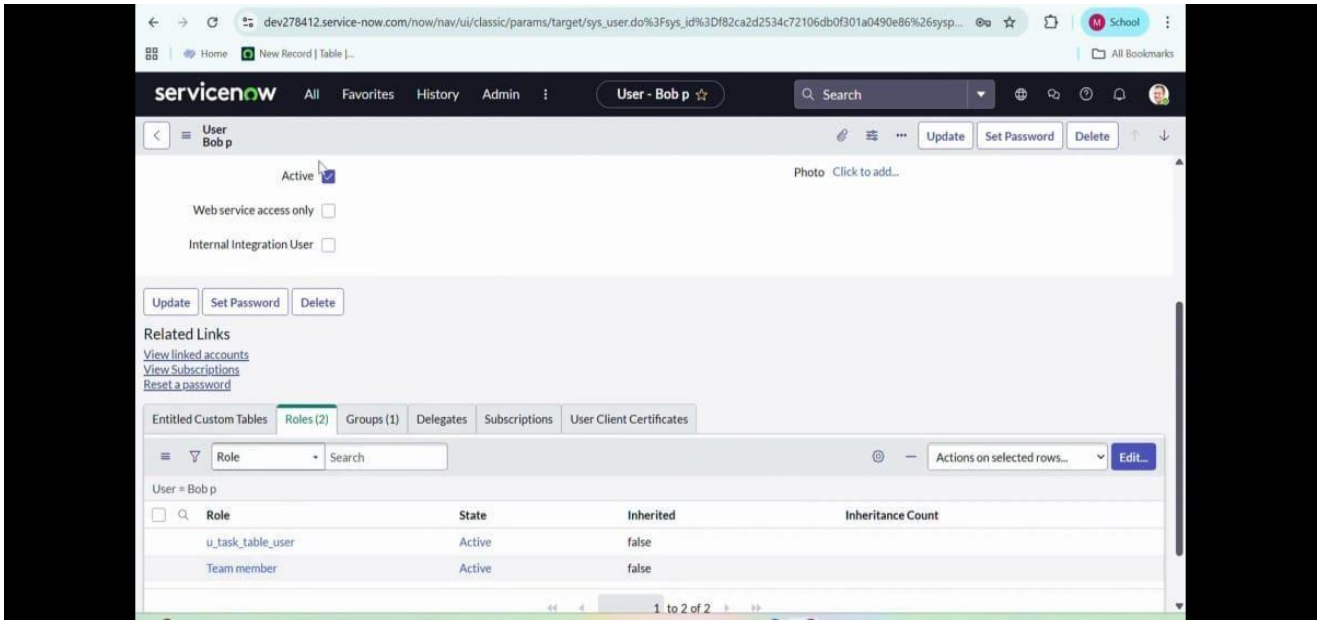
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View Subscriptions
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Team member
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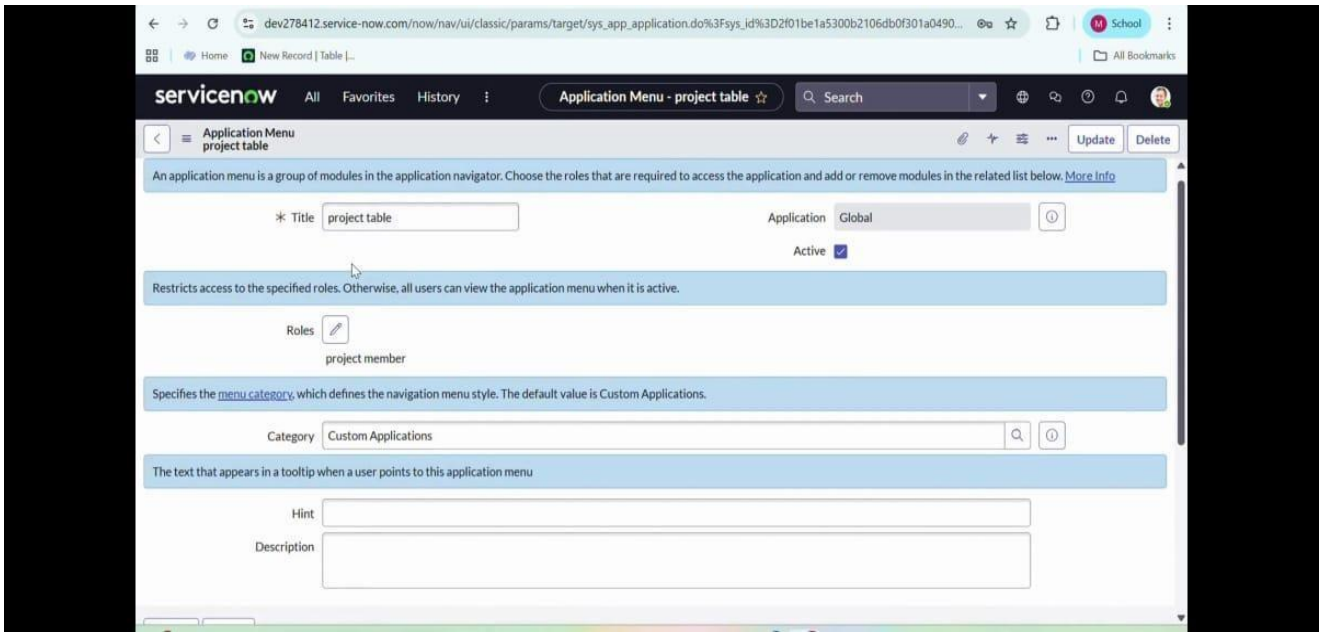
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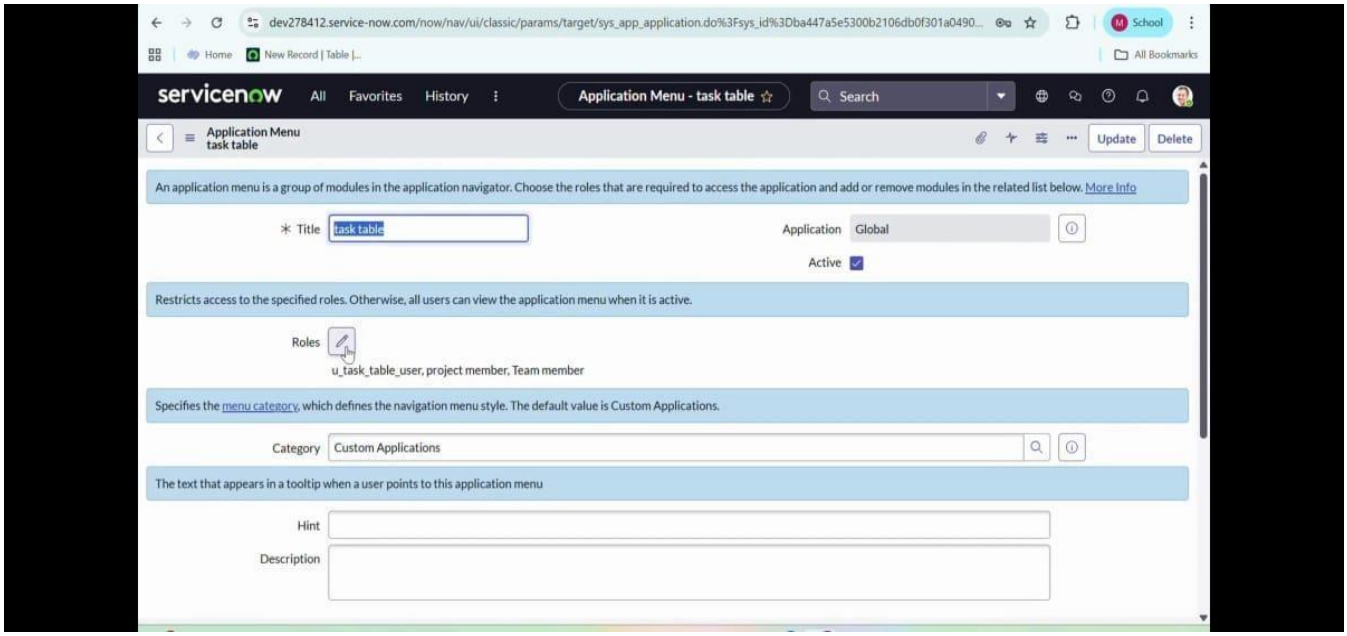
servicenow
All
Favorites
History
Application Menu - project table
Search
Application Menu
project table
Update
Delete
An application menu is a group of modules in the application navigator. Choose the roles that are required to access the application and add or remove modules in the related list below. More Info
Title
project table
Application
Global
Active
Restricts access to the specified roles. Otherwise, all users can view the application menu when it is active.
Roles
project member
Specifies the menu category, which defines the navigation menu style. The default value is Custom Applications.
Category
Custom Applications
The text that appears in a tooltip when a user points to this application menu
Hint
Description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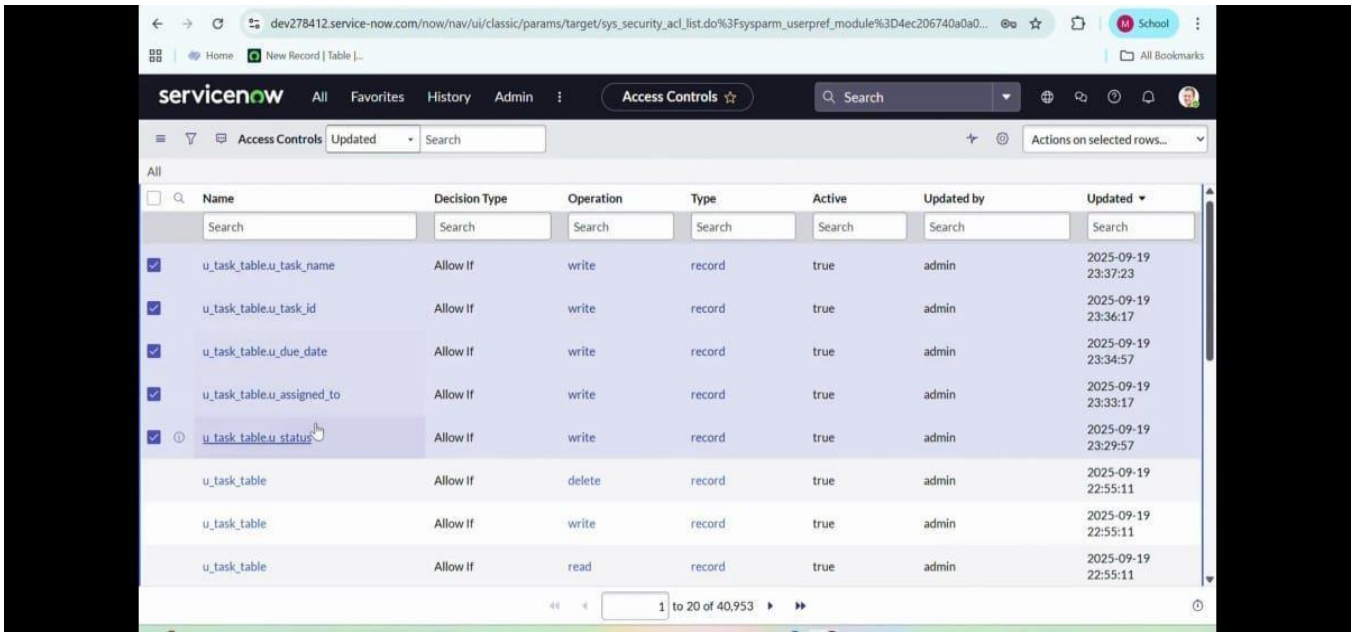
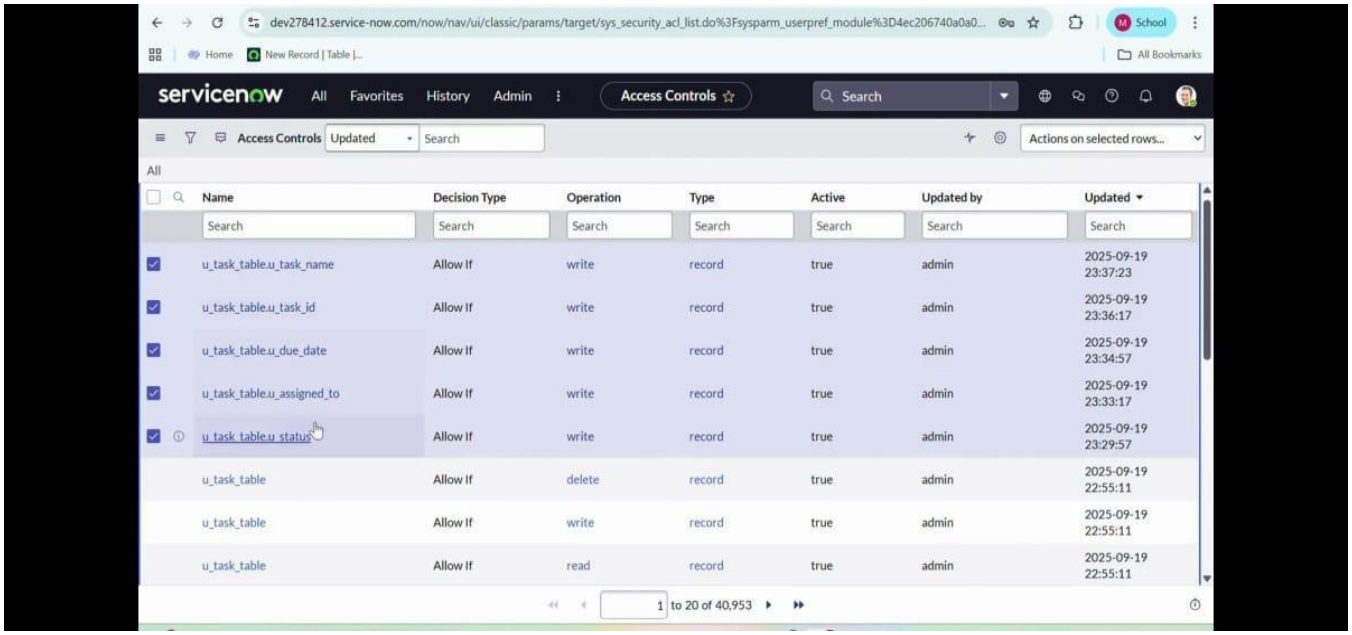
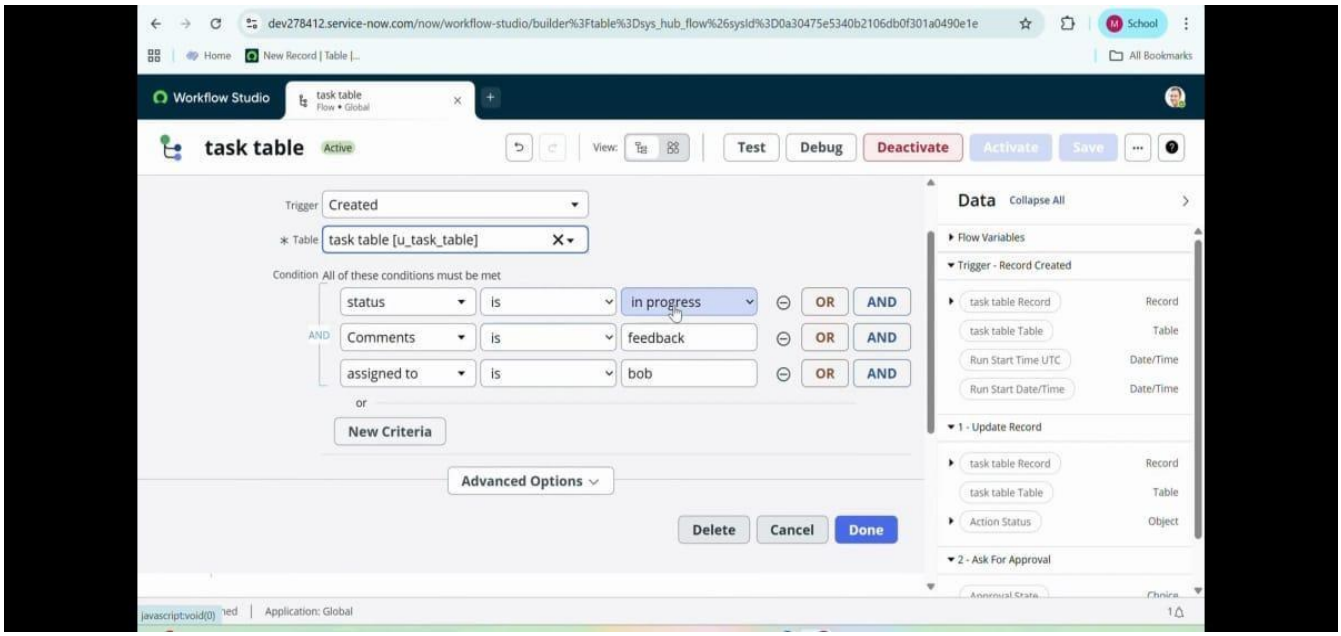
All
Favorites
History
Application Menu - task table
Search
Application Menu
task table
Update
Delete
An application menu is a group of modules in the application navigator. Choose the roles that are required to access the application and add or remove modules in the related list below. More Info
Title
task table
Application
Global
Active
Restricts access to the specified roles. Otherwise, all users can view the application menu when it is active.
Roles
u_task_table_user, project member, Team member
Specifies the menu category, which defines the navigation menu style. The default value is Custom Applications.
Category
Custom Applications
The text that appears in a tooltip when a user points to this application menu
Hint
Description

7.7 CREATION OF ACCESS CONTROL LIST(ACL):



7.8 CREATE A FLOW TO ASSIGN OPERATION TICKETS TO GROUPS:

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Record
task table Table
Table
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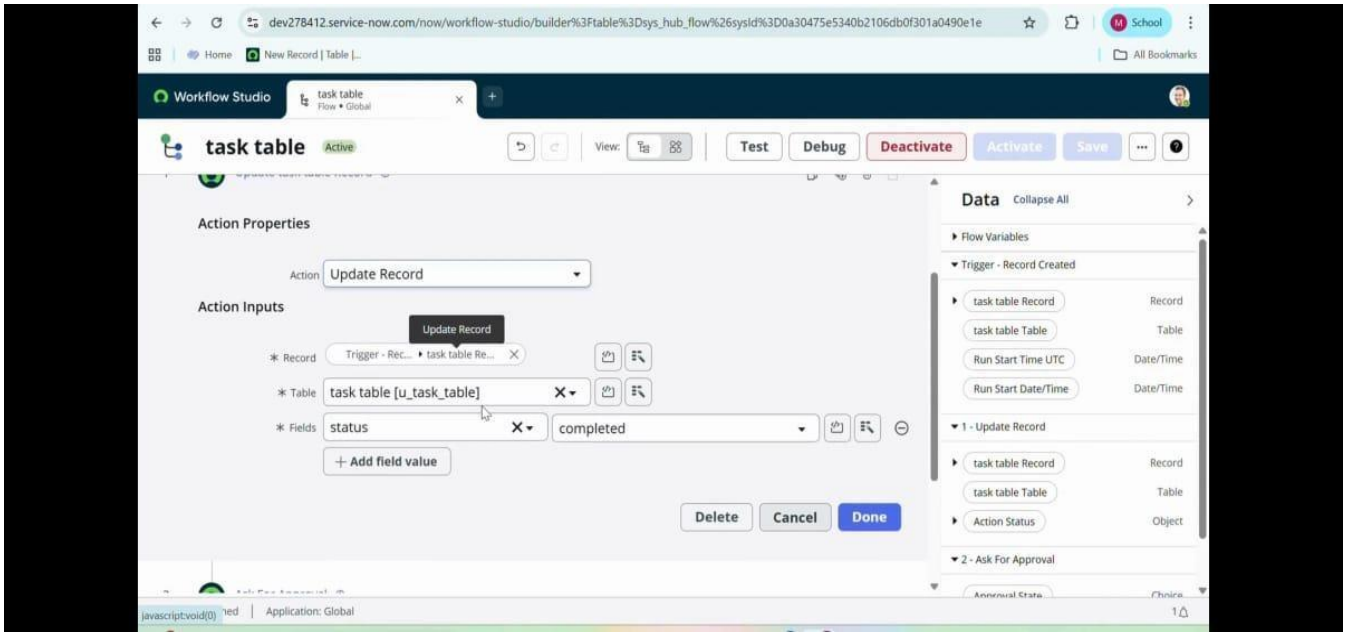
Table
Action Status
Object
2 - Ask For Approval
Application: Global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Data
Collapse All
Flow Variables
Trigger - Record Created
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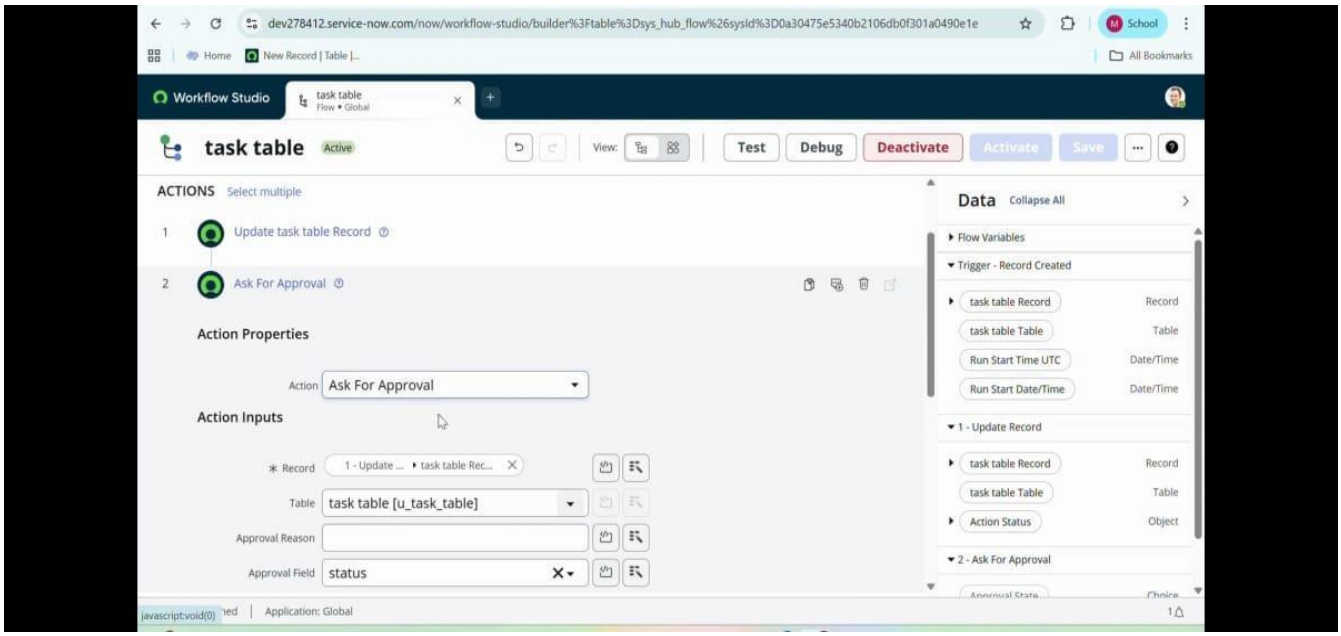
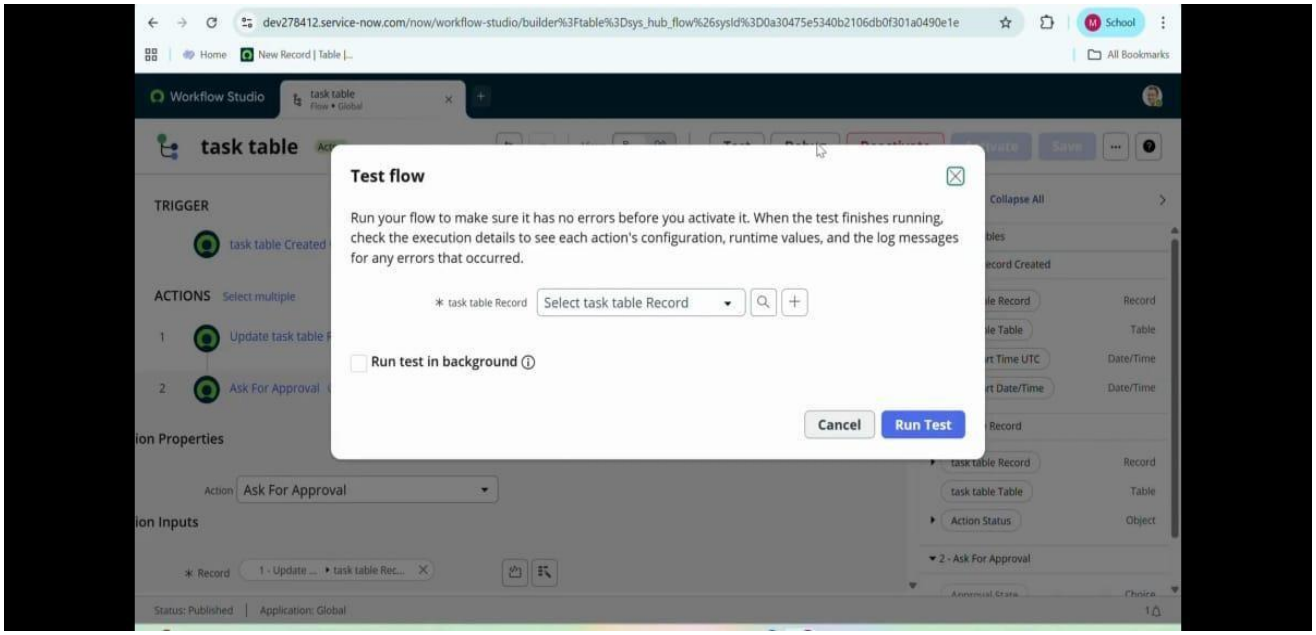
Action Status
Object
2 - Ask For Approval
Application: Global



7.9 TESTING THE FLOW:



8. ADVANTAGES AND DISADVANTAGES

Advantages:

1)Improved Security

2)Centralized Management

3) Automated Workflows

4) Time Efficiency

5)Scalability

6)Audit and Compliance

Error Reduction

Disadvantages:

1)Complex Setup

2)Maintenance Overhead

3)Performance Issues

4)User Frustration

9. CONCLUSION:

Optimizing user, group, and role management enhances security and efficiency through automation and access control. It minimizes errors and ensures proper authorization across systems. Though complex initially, it offers lasting benefits for modern organizations.

10. FUTURE SCOPE

1)Future developments may include AI-driven access control for smarter role assignments.

2)Integration with cloud-based identity platforms will enhance scalability and security.

3) Automation and analytics will predict and prevent unauthorized access.

4) Overall, the focus will shift toward adaptive, intelligent, and zero-trust security systems.

11. APPENDIX:

Source Code: No source code; used ServiceNow Platform

Dataset Link: Not applicable

Git hub : https://github.com/Arunkrish7788/-Optimizing-User-Group-and-Role-Management-with-Access-Control-https://github.com/Arunkrish7788/-Optimizing-User-Group-and-Role-Management-with-Access-Control-and-Workflows.git

Demo: