



Smart
Internz



K.S.K COLLEGE OF ENGINEERING AND TECHNOLOGY

Department of Computer Science And Engineering

Completed the project named as

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

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ABSTRACT

This project aims to optimize user, group, and role management using ServiceNow by implementing Role-Based Access Control (RBAC) and automating workflows. The purpose of the project is to create a structured environment where user permissions are clearly defined, tasks are automatically assigned, and data security is maintained. Through ServiceNow's platform capabilities, the project demonstrates how automation, access control, and dashboards improve transparency and efficiency. The findings reveal that a well-configured RBAC system can significantly reduce manual work, prevent unauthorized actions, and improve collaboration among users.

INTRODUCTION

In organizations that handle multiple users, roles, and departments, maintaining a clear structure of responsibilities and permissions is essential for productivity and security. Without a centralized management system, users may face confusion about task ownership, leading to redundant work and data inconsistencies. ServiceNow provides a low-code platform that simplifies the creation of workflows, role-based access control, and process automation. This project focuses on using these capabilities to create a streamlined environment where each role has specific access and where workflows automatically update task statuses.

The implementation of this system benefits both managers and employees by ensuring that only authorized users perform certain operations. For instance, project managers can create and assign tasks, while team members can only view or update tasks assigned to them. This separation of duties not only enhances security but also improves accountability. The integration of dashboards and reports provides real-time insights into task completion and performance trends, ensuring that teams stay aligned with project objectives.

PROBLEM STATEMENT

Organizations often face challenges when managing users and roles manually. Without automated access control and workflows, there is a high risk of unauthorized actions, duplicated efforts, and poor visibility into project progress. Traditional management

systems require manual updates, which can lead to errors and wasted time. Furthermore, without role-based restrictions, sensitive data can be exposed to unintended users. The absence of workflow automation also affects team coordination. For instance, when a project manager assigns a task to a team member, the lack of an automated system means that the manager has to manually track progress. This can delay project execution. To overcome these limitations, this project proposes a solution built on ServiceNow that combines role-based access control with automated workflows to provide a transparent, efficient, and secure environment.

METHODOLOGY / SYSTEM DESIGN

The project follows a structured design and implementation approach using ServiceNow Studio, Flow Designer, and Platform Analytics. The methodology includes user creation, role definition, group setup, workflow automation, and dashboard reporting. Each step is integrated to form a comprehensive role-based system that automates task management.

- **Design Approach:** The system uses ServiceNow's modular structure, where each function—user creation, access control, workflow automation, and analytics—is handled separately. ServiceNow Studio is used to build a custom scoped application called Project Task Tracker, which serves as the main workspace for managing project tasks.
- **System Architecture:** The architecture is divided into three layers: User Layer, Application Layer, and Workflow Layer. The User Layer handles roles and permissions, the Application Layer manages task data using custom tables, and the Workflow Layer automates updates and notifications. Together, these layers ensure secure and smooth operations.
- **User Interface (UI) and User Experience (UX):** The application's forms and list layouts are designed for simplicity. The Project Manager view includes all tasks, while team members see only their assigned tasks. The interface includes dashboards that summarize ongoing work, pending tasks, and completed items using visual charts.

IMPLEMENTATION DETAILS

- **Platform Setup:** A ServiceNow instance is initialized, and users are created.

servicenow

AllFavoritesHistoryWorkspacesAdmin

Shared admin dashboard

Search

Welcome to Admin Home, System!

Manage, monitor, and discover all your day to day administrative actions and tools across the platform.

Track what's important to you

Shared admin dashboard

Open Incidents

No data available.

There is no data available for the selected criteria.

Open request items

No data available.

There is no data available for the selected criteria.

Problem...

14

Hardening compliance score

89%

Open P1 Incidents

Aging Incidents over 24 hrs

Request items over 24 hrs

Request items awaiting approval

Changes

5

Customer Actions

2

servicenow

AllFavoritesHistoryWorkspacesAdmin

User - alice p

Search

User - alice p

UpdateSet PasswordDelete

User ID

alice

First name

alice

Last name

p

Title

Department

Password

Password needs reset

Locked out

Active

Web service access only

Internal Integration User

Email

alice@gmail.com

Language

-- None --

Calendar integration

Outlook

Time zone

System (Etc/UTC)

Date format

System (yyyy-MM-dd)

Business phone

Mobile phone

Photo

Click to add...

Update

Set Password

Delete

The screenshot shows the ServiceNow user profile page for 'User - bob p'. The page has a dark header with the ServiceNow logo and navigation links: All, Favorites, History, Workspaces, Admin. A search bar and user profile icon are on the right. Below the header, the page title is 'User - bob p' with a back arrow and a hamburger menu icon. On the right side of the page, there are three buttons: 'Update', 'Set Password', and 'Delete'. The main content area is divided into two columns. The left column contains fields for 'User ID' (bob), 'First name' (bob), 'Last name' (p), 'Title' (empty), 'Department' (empty), and 'Password' (empty). Below these fields are checkboxes for 'Password needs reset' (unchecked), 'Locked out' (unchecked), 'Active' (checked), 'Web service access only' (unchecked), and 'Internal Integration User' (unchecked). The right column contains fields for 'Email' (bob@gmail.com), 'Language' (None), 'Calendar integration' (Outlook), 'Time zone' (System (Etc/UTC)), 'Date format' (System (yyyy-MM-dd)), 'Business phone' (empty), and 'Mobile phone' (empty). Below these fields is a 'Photo' field with a 'Click to add...' link. At the bottom of the page, there are three buttons: 'Update', 'Set Password', and 'Delete'.

Alice acts as the Project Member and Bob as the Team Member. Custom groups Project Members and Team Members are formed, and roles are assigned. This establishes the foundation for RBAC.

The screenshot shows the ServiceNow group profile page for 'Group - project team'. The page has a dark header with the ServiceNow logo and navigation links: All, Favorites, History, Workspaces, Admin. A search bar and user profile icon are on the right. Below the header, the page title is 'Group - project team' with a back arrow and a hamburger menu icon. On the right side of the page, there are three buttons: 'Update', 'Set Password', and 'Delete'. The main content area is divided into two columns. The left column contains fields for 'Name' (project team), 'Manager' (empty), and 'Description' (empty). The right column contains fields for 'Group email' (empty), 'Parent' (empty), and 'Description' (empty). Below these fields are two buttons: 'Update' and 'Delete'. Below the buttons, there is a section titled 'Roles' with two tabs: 'Group Members (2)' and 'Groups'. The 'Group Members (2)' tab is selected. Below the tabs, there is a table with the following data:

User	Search
bob p	
alice p	

At the bottom of the table, there is a pagination bar showing '1 to 2 of 2'.

servicenow All Favorites History Workspaces User - alice p Search

User alice p Update Set Password Delete

Internal Integration User ☐

Update Set Password Delete

Related Links
[View linked accounts](#)
[View Subscriptions](#)
[Reset a password](#)

Entitled Custom Tables Roles (3) Groups (1) Delegates Subscriptions User Client Certificates

Role Search Actions on selected rows... Edit...

User = alice p

Role	State	Inherited	Inheritance Count
u_project_table_user	Active	false	
u_task_table_user	Active	false	
project member	Active	false	

1 to 3 of 3

servicenow All Favorites History Workspaces User - bob p Search

User bob p Update Set Password Delete

Web service access only ☐

Internal Integration User ☐

Update Set Password Delete

Related Links
[View linked accounts](#)
[View Subscriptions](#)
[Reset a password](#)

Entitled Custom Tables Roles (2) Groups (1) Delegates Subscriptions User Client Certificates

Role Search Actions on selected rows... Edit...

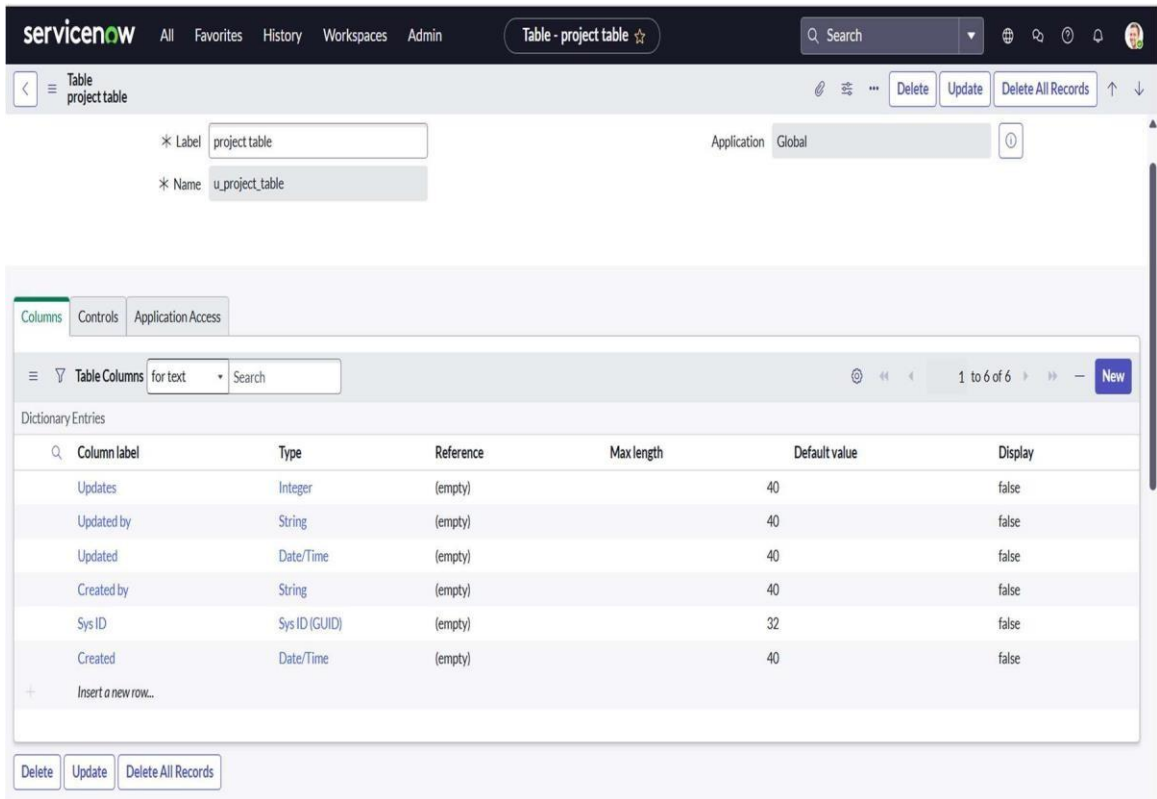
User = bob p

Role	State	Inherited	Inheritance Count
team member	Active	false	
u_task_table_user	Active	false	

1 to 2 of 2

- **Development and Customization:** In ServiceNow Studio, the Project Task Tracker application is created to manage and monitor project tasks efficiently. A custom table

named Project Table is designed with fields such as Task Name, Description, Status, Assigned To, Due Date, and Created By to store main project details.



Another custom table named Task Table is also created to handle individual tasks related to each project. It includes fields like Task ID, Task Name, Project Name (reference to Project Table), Assigned To, Priority, Start Date, End Date, and Task Status. These tables help in organizing project data and tracking task progress effectively within the application.

servicenow All Favorites History Workspaces Admin Table - task table

Table task table

* Label task table

* Name u_task_table

Application Global

Columns Controls Application Access

Table Columns for text Search

Dictionary Entries

Column label	Type	Reference	Max length	Default value	Display
Sys ID	Sys ID (GUID)	(empty)	32		false
Created	Date/Time	(empty)	40		false
Status	Choice	(empty)	40		false
Comments	String	(empty)	40		false
Updated by	String	(empty)	40		false
Due Date	Date	(empty)	40		false
Updates	Integer	(empty)	40		false
Updated	Date/Time	(empty)	40		false
Task Name	String	(empty)	40		false
Assigned To	String	(empty)	40		false
Created by	String	(empty)	40		false
Task ID	Integer	(empty)	40		false

Insert a new row...

Delete Update Delete All Records

In the Project Task Tracker application, table access was assigned to control user permissions. When a new table is created in ServiceNow, an application and module are automatically generated for that table. The Project Table application was configured by editing its module and assigning the Project Member role to ensure only authorized members can access and manage project-related information.

servicenow All Favorites History Workspaces Admin Application Menu - project table

Application Menu project table


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 

u_project_table_user

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

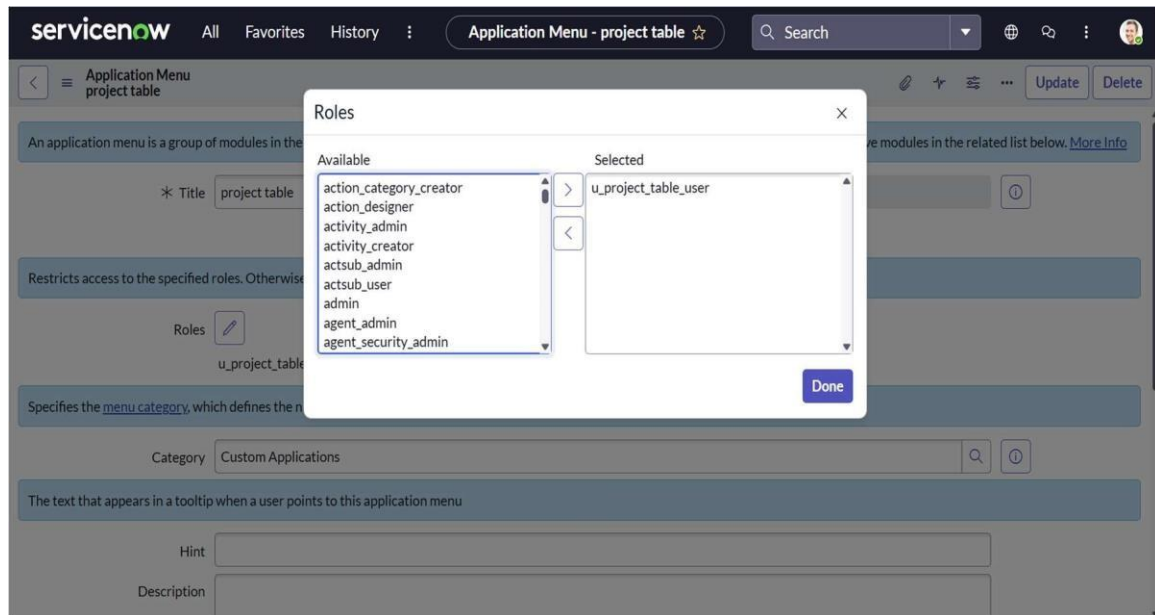
Update Delete

Modules Order Search

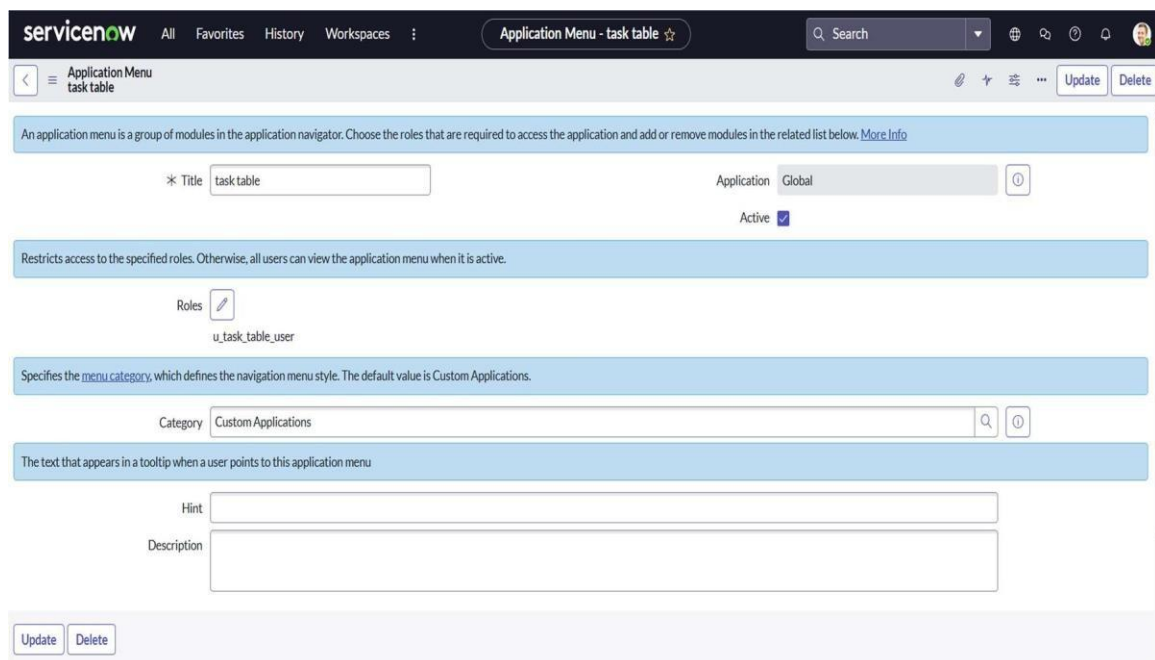
Application menu - project table

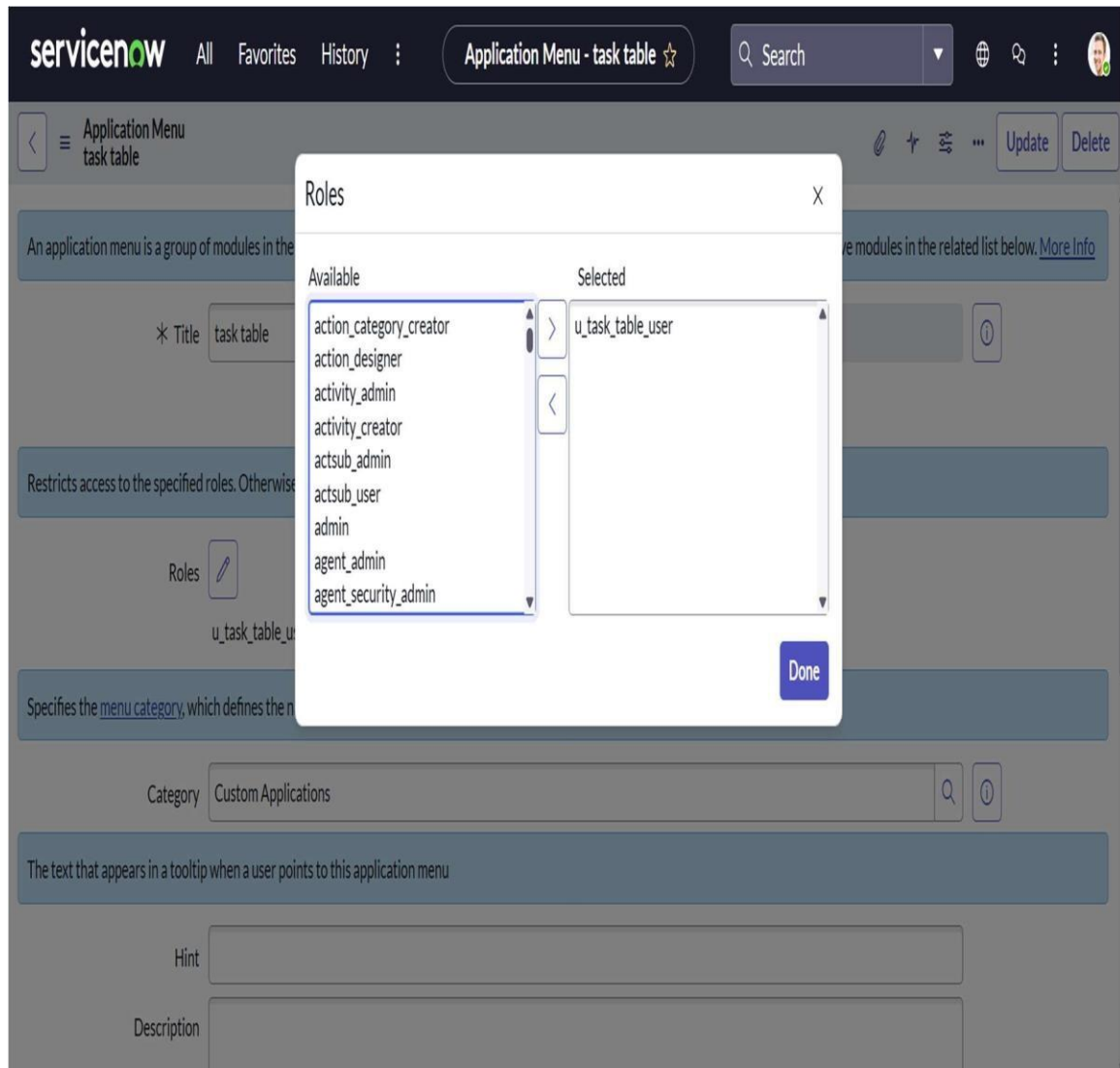
Table	Active	Filter	Order	Link type	Device type	Roles	Updated
project tables	project table [u_project_table]	true		List of Records		u_project_table_user	2025-10-24 16:41:09

1 to 1 of 1



Similarly, the Task Table application was customized by editing its application settings and assigning both Project Member and Team Member roles. This allows project members and team members to access, update, and track task details efficiently, ensuring proper rolebased access within the application.





Custom forms were created for task entry, and Access Control Lists (ACLs) were configured to ensure secure and role-based access to data. The Task Table was assigned the Team Member role, allowing members to view and update only their assigned tasks, while the Project Manager role was given full access to create, modify, and delete tasks. Four ACLs were created for key fields such as Task Name, Due Date, Assigned To, Status, and Comments to control edit permissions. This configuration ensures that only authorized users can make changes, maintaining data integrity and proper access control within the Project Task Tracker application.

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AllFavoritesHistoryWorkspacesAdmin

Access Control - u_task_table.u_task_id

Search

Access Control

u_task_table.u_task_id

Type

record

Application

Global

Operation

write

Active

☒

Decision Type

Allow If

Advanced

☐

Admin overrides

☒

Protection policy

-- None --

Name

u_task_table.u_task_id

Description

Applies To

No. of records matching the condition: 1
(empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.
1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.
[More Info](#)

Requires role

Role

team member

task table

servicenow

AllFavoritesHistoryWorkspacesAdmin

Access Control - u_task_table.u_due_date

Search

Access Control

u_task_table.u_due_date

Type

record

Application

Global

Operation

write

Active

☒

Decision Type

Allow If

Advanced

☐

Admin overrides

☒

Protection policy

-- None --

Name

u_task_table.u_due_date

Description

Applies To

No. of records matching the condition: 1
(empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.
1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.
[More Info](#)

Requires role

Role

task table

team member

servicenow

AllFavoritesHistoryWorkspacesAdmin

Access Control - u_task_table.u_assigned_to

Search

Access Control

u_task_table.u_assigned_to

Type

record

Application

Global

Operation

write

Active

☒

Decision Type

Allow If

Advanced

☐

Admin overrides

☒

Protection policy

--None--

Name

u_task_table.u_assigned_to

Description

Allow write for u_assigned_to in u_task_table, for users with roles (task table, team member).

Applies To

No. of records matching the condition: 1
(empty)

Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.
1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.
[More Info](#)

Requires role

1 to 2 of 2

Role
task table
team member

nowlearning-nlinst03409483-1h6hj-0001.lab.service-now.com/now/nav/ui/classic/params/target/sys_security_acl.do%3Fsys_id%3D3046d632ad45303210744ebddeda21339%26sysparm_record...

servicenow

AllFavoritesHistoryWorkspacesAdmin

Access Control - u_task_table.u_status

Search

Access Control

u_task_table.u_status

Type

record

Application

Global

Operation

write

Active

☒

Decision Type

Allow If

Advanced

☐

Admin overrides

☒

Protection policy

--None--

Name

u_task_table.u_status

Description

Allow write for u_status in u_task_table, for users with roles (team member, task table).

Applies To

No. of records matching the condition: 1
(empty)

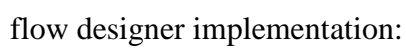
Conditions

Access Control Rules have two decision types, and these types will behave differently depending on conditions.
1. Allow Access: Allows access to a resource if all conditions are met.
2. Deny Access: Denies access to a resource unless all conditions are met.
[More Info](#)

Requires role

1 to 2 of 2

Role
team member
task table



Flow Designer in ServiceNow is used to automate processes and enhance workflow efficiency without the need for coding. In the Project Task Tracker application, Flow Designer was utilized to automate task updates and approvals. A new flow was created with the Task Table as the trigger, which activates whenever a task is assigned or updated.

The screenshot displays the ServiceNow Workflow Studio interface. At the top, there's a header with 'Workflow Studio' and a breadcrumb trail: 'Homepage > Operations > Integrations'. Below the header, there are tabs for 'Playbooks', 'Flows' (selected), 'Subflows', 'Actions', and 'Decision tables'. A 'New' button is visible in the top right of the main area.

The main area shows a list of flows. The table has columns: Name, Application, Status, Active, Updated, and Upd. The flows listed are:

Name	Application	Status	Active	Updated	Upd
Inbound Email Flow Example: logging a problem	Global	Draft	false	2019-02-19 18:17:24	adm
Inbound Email Flow Example: handling email replies	Global	Draft	false	2019-02-22 17:51:54	adm
Service Catalog item request	Global	Published	true	2020-01-31 04:12:14	adm
SLA notification and escalation flow	Global	Published	true	2020-04-23 12:42:08	adm
Default SLA flow	Global	Published	true	2020-04-23 12:42:24	adm
Register Business Application	Global	Published	true	2020-06-15 02:47:35	adm
KPI Signals Configuration Update Flow	Global	Published	true	2020-09-18 13:13:51	adm
Change - Normal - Implement	Global	Published	true	2020-09-23 11:23:59	adm
Change - Emergency - Implement	Global	Published	true	2020-09-23 12:06:26	adm
Change - Standard	Global	Published	true	2020-09-23 12:09:01	adm

On the right sidebar, there's a section 'Pick up where you left off' with cards for 'task table' (Last updated: 2 d. ago by System Admin...), 'Create Flow Data' (Last updated: a year ago by System Admin...), and 'Steps' (Last updated: a year ago by System Admin...). Below this is a 'Latest updates' section showing a list of updates by the System Administrator, including modifications to 'task table', 'Create Flow Data', and 'Steps'.

Workflow Studio

task table Flow

x

+

task table

Active

View: [Icons]

Test

Deactivate

Activate

Save

...

?

TRIGGER

task table Created where (Status is In Progress, and Comments is feedback, and Assigned To is bob)

ACTIONS

Select multiple

1 Update u_task_table Record

2 Ask For Approval

+ Add an Action, Flow Logic, or Subflow

ERROR HANDLER

If an error occurs in your flow, the actions you add here will run.

Data

Collapse All

>

Flow Variables

Trigger - Record Created

task table Record Record

task table Table Table

Run Start Time UTC DateTime

Run Start Date/Time DateTime

1 - Update Record

u_task_table Record Record

u_task_table Table Table

Action Status Object

2 - Ask For Approval

Approval State Choice

Action Status Object

Workflow Studio

task table Flow

x

+

task table

Active

View: [Icons]

Test

Deactivate

Activate

Save

...

?

TRIGGER

task table Created where (Status is In Progress, and Comments is feedback, and Assigned To is bob)

Trigger Created

* Table task table [u_task_table]

Condition All of these conditions must be met

AND

Status is In Progress

Comments is feedback

Assigned To is bob

or

New Criteria

Advanced Options

Delete

Cancel

Done

Data

Collapse All

>

Flow Variables

Trigger - Record Created

task table Record Record

task table Table Table

Run Start Time UTC DateTime

Run Start Date/Time DateTime

1 - Update Record

u_task_table Record Record

u_task_table Table Table

Action Status Object

2 - Ask For Approval

Approval State Choice

Action Status Object

The flow includes several actions to define the automation steps. The first action checks if the Assigned To field is not empty. If true, the next Update Record action automatically changes the Status field to In Progress. Following this, an Ask for Approval action is added to request approval from the Project Manager once the task reaches completion. This ensures that every task is reviewed and approved before being marked as completed.

The screenshot shows the Workflow Studio interface for a flow named 'task table'. The main workspace displays the first action, 'Update u_task_table Record'. The configuration for this action is as follows:

- Action:** Update Record
- * Record:** Trigger - Rec... → task table Re...
- * Table:** task table [u_task_table]
- * Fields:** Status (set to Completed)

Buttons for 'Delete', 'Cancel', and 'Done' are visible at the bottom right of the action configuration. A second action, 'Ask For Approval', is partially visible below the first one.

On the right side, the 'Data' panel is expanded, showing the following variables:

- Flow Variables:**
 - Trigger - Record Created
 - task table Record (Record)
 - task table Table (Table)
 - Run Start Time UTC (Date/Time)
 - Run Start Date/Time (Date/Time)
 - 1 - Update Record
 - u_task_table Record (Record)
 - u_task_table Table (Table)
 - Action Status (Object)
 - 2 - Ask For Approval
 - Approval State (Choice)
 - Action Status (Object)

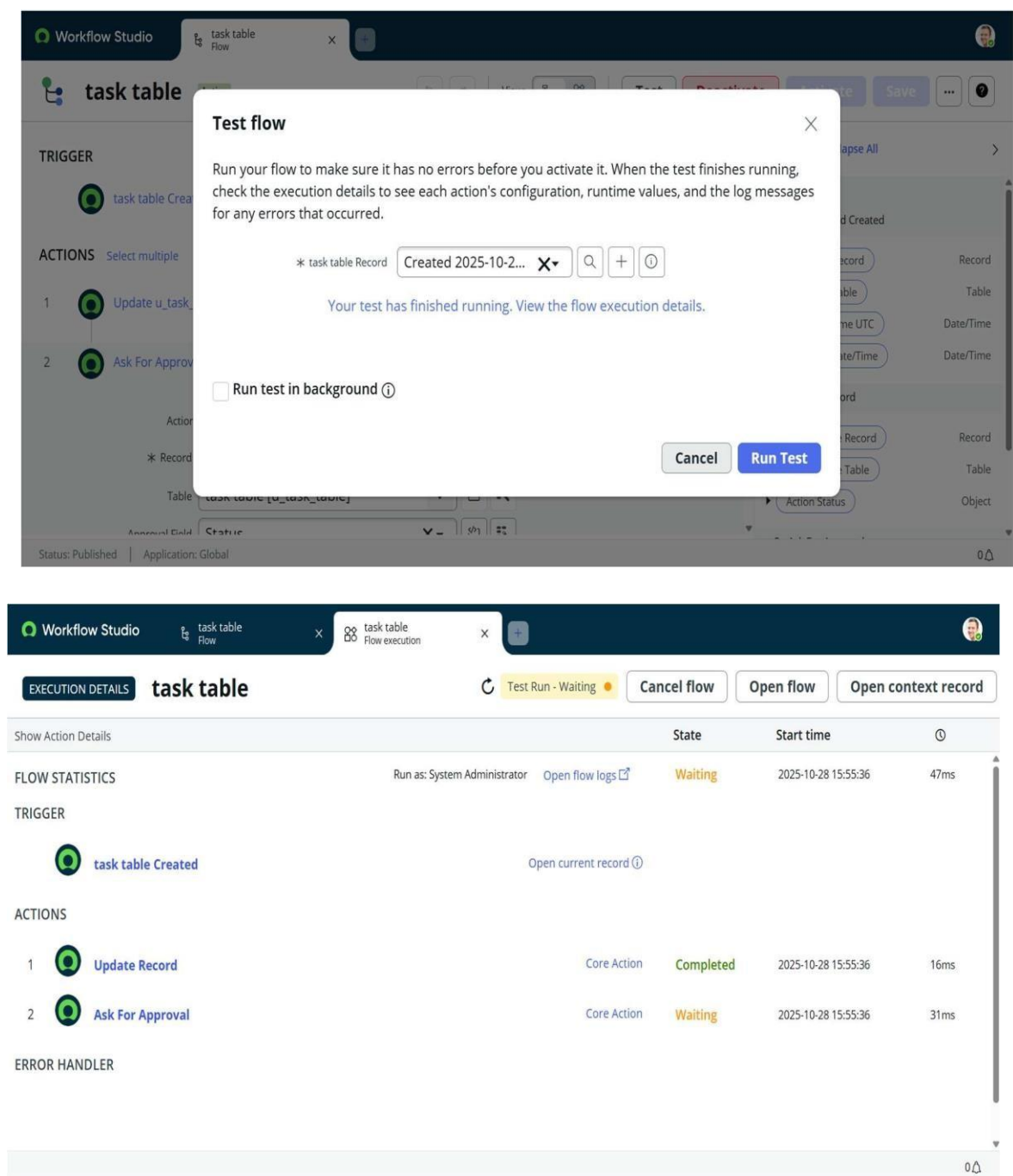
The screenshot shows the Workflow Studio interface for the same 'task table' flow, now displaying the second action, 'Ask For Approval'. The configuration for this action is as follows:

- Action:** Ask For Approval
- * Record:** Trigger - Rec... → task table Re...
- Table:** task table [u_task_table]
- Approval Field:** Status
- Journal Field:** Select a field
- * Rules:**
 - Approve (dropdown)
 - When: All users approve (dropdown) → alice p X (text input)
 - Buttons: OR, AND
- Due Date:** None

Buttons for 'Delete', 'Cancel', and 'Done' are visible at the bottom right of the action configuration.

The 'Data' panel on the right is identical to the one in the previous screenshot, showing the same variables and their types.

The Test feature in Flow Designer was used to validate the workflow. A sample record was selected from the Task Table to confirm that the flow triggered correctly, updated the record automatically, and sent the approval request as expected. This automation improves accuracy, ensures timely approvals, and reduces manual intervention in the task management process.



CONCLUSION AND FUTURE SCOPE

The ServiceNow-based role management system successfully demonstrates how access control and workflow automation can transform traditional project management practices. The system ensures that tasks are securely assigned, monitored, and updated without manual intervention. Managers benefit from real-time analytics and dashboards that provide visibility into project performance, while team members gain clarity in their assigned responsibilities.

In the future, this system can be expanded to include integrations with collaboration tools such as Microsoft Teams, Slack, and Jira. Machine learning features can be added to predict task delays and recommend workload balancing. The automation logic can be further improved to include escalations and approvals. By continuously refining the workflows, organizations can achieve even greater productivity and security through the ServiceNow platform.