

Optimizing ServiceNow Knowledge Management with Automated Publishing and Secure Access Control

A CAPSTONE PROJECT REPORT

Submitted by

Bishanka Krishna Shrestha(RA2211003012076)

Sandesh Pandey(RA2211003012080)

Vikkesh P(RA2211003012005)

Under the guidance of

Dr. M. UMA

Associate professor, Department of Computational Intelligence

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**SCHOOL OF COMPUTING
COLLEGE OF ENGINEERING AND TECHNOLOGY
SRM INSTITUTE OF SCIENCE AND TECHNOLOGY
KATTANKULATHUR - 603203**

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SRM INSTITUTE OF SCIENCE & TECHNOLOGY COLLEGE
OF ENGINEERING & TECHNOLOGY
S.R.M. NAGAR, KATTANKULATHUR – 603 203

BONAFIDE CERTIFICATE

Certified that this project report "**Optimizing ServiceNow Knowledge Management with Automated Publishing and Secure Access Control**" is the bonafide work of **Bishanka Krishna Shrestha (RA2211003012076)**, **Sandesh Pandey (RA2211003012080)**, **Vikkesh P(RA2211003012005)** of III Year/V Sem B.Tech (CSE) who carried out the capstone project work under my supervision for the course 21IPE416T- Scripting and Application Development Fundamentals in SRM Institute of Science and Technology during the academic year 2024-2025 (ODD sem).

SIGNATURE

Dr. M. Uma

Associate professor

Department of Computational Intelligence

SIGNATURE

Dr. Niranjana G

Professor & Head

Department of Computing Technologies

ABSTRACT

This project centers on enhancing knowledge management within the ServiceNow platform by creating a dedicated Knowledge Base (KB) category designed to support internal requesters and fulfillers. As modern enterprises become more data-driven and process-intensive, the ability to access accurate information quickly is paramount. This project will populate a new, structured KB category with two comprehensive articles addressing common issues and procedural guidance to reduce dependency on live support and empower employees with self-service resources. By doing so, it aims to streamline request fulfillment and improve overall productivity. The primary focus of this initiative is to enhance the accessibility, relevance, and security of information. With the creation of this new KB category, the project will apply strict, role-based access controls to comply with company-specific security protocols. By ensuring information remains accessible solely to authorized personnel, this initiative will prevent the unintentional sharing of sensitive data, upholding organizational compliance and confidentiality standards. Security is a foundational aspect of the project, encompassing user roles and permissions to control information access based on job function and necessity. These protocols safeguard data integrity and minimize potential security risks associated with broad, unrestricted data access. This initiative is anticipated to improve response times for internal requests, reduce workload on support teams, and empower users by making critical information available when needed. As more resources become accessible through the Knowledge Base, employees can find answers independently, fostering a culture of self-reliance and reducing the need for live assistance. In turn, this shift allows support teams to focus on more complex, high-priority issues, enhancing productivity across the organization. Overall, the project aims to transform the ServiceNow Knowledge Base into a proactive, user-friendly tool that aligns with the organization's strategic objectives of efficiency, security, and user empowerment. By combining role-based access controls with automated publishing and retirement processes, this initiative ensures that information remains both secure and current. These enhancements are expected to deliver a streamlined, responsive, and secure knowledge-sharing environment, driving greater productivity and satisfaction among users while reinforcing the importance of secure, efficient knowledge management practices.

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ABBREVIATIONS

KB	Knowledge Base
IT	Information Technology
RBAC	Role Based Access Controls
CI	Configuration item
CSS	Cascading style sheets
HTML	Hypertext Markup Language
ACL	Access control list
SVM	Support Vector Machine
UI	User Interface
PDI	Personal developer instance

CHAPTER 1

INTRODUCTION

1.1 Introduction:

This project focuses on advancing the ServiceNow Knowledge Base (KB) to better support internal requesters and fulfillers by establishing a dedicated category with focused, accessible information. Designed to address common queries and enhance workflow efficiency, the project introduces two carefully curated articles within this new category, providing targeted solutions and guidance for frequently encountered issues. By reducing the need for direct support, this approach empowers employees to find answers independently, fostering a more self-sufficient and efficient work environment.

Security is a central element of the project, with role-based access controls strictly enforced to ensure sensitive information is only available to authorized personnel. This layer of security safeguards data confidentiality and aligns with organizational protocols, ensuring that knowledge-sharing practices are compliant with company standards. By establishing controlled access, the project aims to maintain the integrity and security of information within the KB.

Additionally, the project will implement automated publishing workflows for the IT Knowledge Base. This automation eliminates the need for manual intervention in updating or retiring articles, thereby ensuring the KB remains current and relevant. Through these workflows, the project introduces a dynamic, up-to-date KB environment that evolves with the organization's needs.

Overall, this initiative seeks to enhance productivity and improve the user experience on the ServiceNow platform by providing easily accessible resources, reducing support dependency, and maintaining a secure and optimized KB that adapts to the evolving demands of the organization.

1.2 User Story:

Abraham, a member of the "Android Users" group, regularly accesses the "Android Development Knowledge Base" to troubleshoot recurring issues and improve his productivity as an Android developer. By having a dedicated knowledge base focused on Android development, Abraham can independently find solutions to frequent challenges without needing to reach out to support teams. This streamlined access to information allows Abraham to efficiently resolve

issues, enhancing his workflow and enabling him to spend more time on complex development tasks.

Beth, the knowledge manager responsible for maintaining the Android Development Knowledge Base, is focused on ensuring that all content is current, relevant, and accessible to the right users. Beth understands that manually managing updates can lead to delays in providing developers like Abraham with the latest resources, which could hinder their productivity. To address this, Beth implements automated publishing and retirement workflows for articles within this knowledge base, so that information is continuously refreshed without requiring manual intervention. By automating these processes, Beth ensures that Abraham and other developers always have access to up-to-date and accurate information, allowing them to tackle issues efficiently.

Security is a priority for the organization, especially when it comes to internal resources like the Android Development Knowledge Base. To maintain strict data confidentiality, the organization enforces role-based access controls, ensuring that only members of the "Android Users" group can view or contribute to the knowledge base. This controlled access supports compliance with security protocols, ensuring that information remains secure and accessible to only those with relevant roles.

By enhancing the Android Development Knowledge Base with automation, focused content, and robust security measures, Beth supports a responsive and productive knowledge-sharing environment. This project enables Abraham and other Android developers to work more effectively, fostering a self-sufficient development community while upholding organizational standards for data security and efficient knowledge management.

1.3 Objective:

- Populate the ServiceNow Knowledge Base with a new category that contains two articles to support internal users.
- Apply security protocols to restrict access, ensuring only authorized personnel can view the content.
- Enable automatic publishing for the IT Knowledge Base, leveraging workflows to streamline the publishing and retirement processes for each article.
- Promote a self-service approach within the organization, reducing the dependency on live

support.

- Enhance the ServiceNow Knowledge Base as a robust tool for knowledge management, supporting improved response times and productivity.

1.4 Scope and Application

The scope of this task involves creating a new category within the ServiceNow Knowledge Base

Scope:

This project focuses on:

- Setting up a new category within the ServiceNow Knowledge Base for internal users.
- Creating and implementing articles specific to common requests and procedural instructions.
- Establishing role-based access control to protect sensitive information.
- Automating publishing processes within the IT Knowledge Base to ensure content remains current and managed efficiently.

Applications:

- **IT Support and Operations:** Streamlined access to procedural information and solutions enables faster response times for IT support teams.
- **Internal Training and Onboarding:** Knowledge Base articles serve as a training resource, providing new employees with critical information and reducing onboarding time.
- **Knowledge Management:** This structured approach enhances the organization's knowledge management capabilities, supporting continuous process improvement and operational efficiency.

1.5 Application checklist:

- **Knowledge Base Category Setup:** Configured a dedicated category for internal requesters and fulfillers within ServiceNow.
- **Content Creation:** Developed two specific articles to address common internal requests and procedural guidance.

- **Security Protocols Application:** Enforced role-based access to restrict visibility to authorized users only, ensuring data confidentiality.
- **Workflow Setup:** Enabled automatic publishing through ServiceNow's workflow functionality for timely article updates and retirements.
- **Testing and Validation:** Conducted testing to verify that only authorized users could access the new articles and that automatic publishing worked as intended.
- **User Feedback Collection:** Collected preliminary feedback from internal users to ensure the articles met user needs and expectations.

1.6 Software Requirements specification:

- **Platform:** ServiceNow, leveraging the Knowledge Management application.
- **Instance Details:** A dedicated ServiceNow instance with role-based access configured for internal users, administrators, and support staff.
- **Version:** Washington DC
- **Workflow Configuration:** Automated workflows are used to handle the publishing and retirement of knowledge articles, ensuring that content management is streamlined and consistent.
- **Security Configuration:** Role-based access control configured to restrict Knowledge Base category visibility to authorized personnel only.

CHAPTER 2

APPLICATION DESIGN

2.1 Front end (UI) Design

In ServiceNow, the front end is designed primarily through portals, user interfaces, and forms that provide an intuitive and user-friendly experience for end-users, admins, and developers. ServiceNow offers several front-end design tools and customizable components to tailor the user experience to different needs. Here's an overview of key elements in ServiceNow's front-end design:

- Service Portal**

- The Service Portal is a customizable front-end interface that allows users to interact with the ServiceNow platform for activities like submitting requests, viewing incidents, or accessing knowledge articles.
- ServiceNow provides a drag-and-drop Page Editor to design portal pages, incorporating widgets like search bars, request submission forms, and catalogs. Administrators can build pages with HTML, CSS, and JavaScript to customize widgets or create custom widgets for specific business requirements.

- Catalog Items and Record Producers**

- These are user-friendly forms for submitting specific types of requests, such as ordering items or requesting services.
- In the Service Catalog, CIs are created with variables and templates to capture information from users. UI Policies and Scripts are used to make forms dynamic by showing or hiding fields, setting default values, and validating inputs based on conditions.

- Now Experience UI Framework (Agent Workspace)**

- The Now Experience UI Framework provides a modern, component-based architecture to build responsive, custom UI applications within ServiceNow.
- It uses customizable components built with HTML, CSS, and JavaScript, and it leverages the Component Framework to integrate widgets or components from the ServiceNow library. This framework provides flexibility in designing interfaces like Agent Workspace,

which consolidates various dashboards and queues for efficient agent operations.

- **Workflows and Flow Designer**

- Flow Designer allows for building workflow processes without coding, which defines the back-end logic but influences the front-end experience.
- Workflows determine how a request or task moves through its lifecycle. Flow Designer provides a visual editor to drag and drop logic elements and create approval steps, notifications, and task assignments.

2.2 Backend (Database) Design

The backend in ServiceNow is designed to handle data management, workflows, process automation, and integration, enabling a robust and flexible foundation for the platform's applications and services. Key components of ServiceNow's backend include:

- **Database and Tables**

- ServiceNow uses a relational database with tables to store all data. Each table holds records related to specific processes, such as Incidents (incident table), Users (sys_user table), and Requests (sc_request table).
- Administrators can extend base tables or create custom tables. Table schema can be managed via the Table Editor, where fields, relationships, and access controls are defined.

- **Business Rules**

- Business Rules are server-side scripts that execute when records are displayed, inserted, updated, or deleted. They enforce data consistency and trigger actions based on certain conditions.
- These rules are coded in JavaScript and can be set to run before or after specific database operations, allowing admins to automate workflows, perform calculations, or initiate events in response to record changes.

- **Scheduled Jobs and Events**

- Scheduled Jobs are tasks that run on a set schedule to perform routine maintenance, data archiving, or automated updates. Events allow ServiceNow to trigger specific actions in response to system or user-generated actions.
- Admins can define events and associate them with Business Rules, so certain actions (like

sending notifications) are triggered automatically. Scheduled Jobs are created in the System Scheduler and can run daily, weekly, or at custom intervals.

- **ACLs (Access Control Rules)**

- Access Control Lists (ACLs) determine which users can view, create, or edit records. They ensure data security and control access to sensitive information.

- ACLs are configured at the field, table, and record levels, and can be defined with conditions and scripts to enforce granular access controls based on roles or attributes.

- **Notifications and Email Management**

- Notifications are automated messages triggered by specific events or changes in records.

- Notifications are managed via Email Notification settings, where admins specify triggers, recipients, and message templates. Notifications can include detailed information, links, and actions, keeping users informed of key updates.

CHAPTER 3

STEP BY STEP PROCESS AND SNAPSHOT

Section 1: Instance Preparation

STEP 1: Log in to ServiceNow as system administrator.

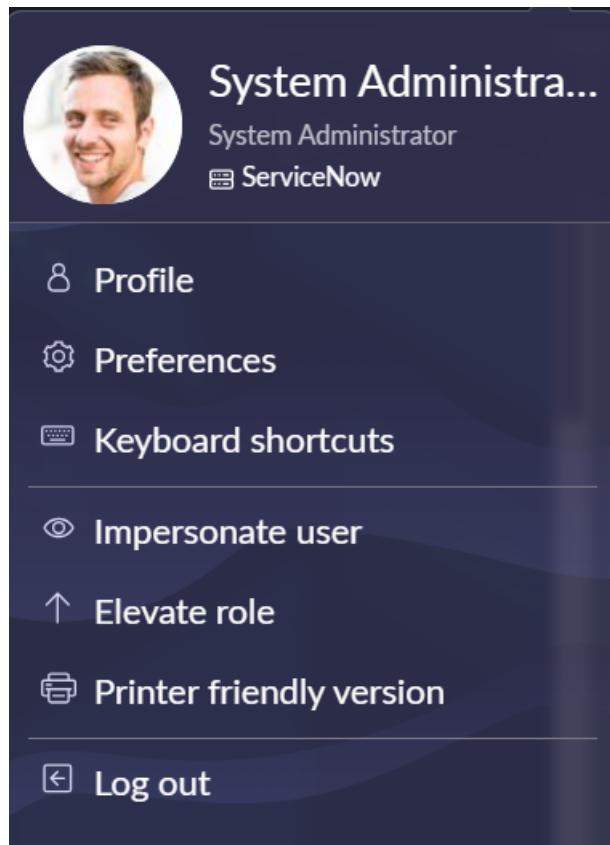


Fig 1.1. User icon menu

Section 2: Create new group (Android Developer)

STEP 1: Navigate to Groups

- Go to All > Users and Groups > Group

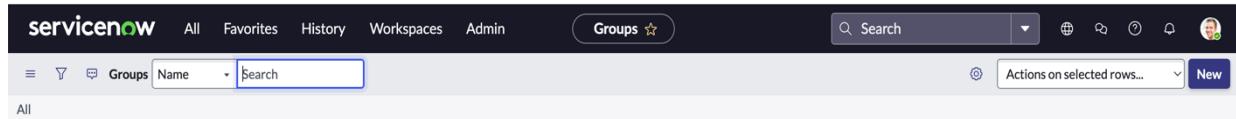


Fig 2.1. HomePage Banner

STEP 3: Create a New Group:

- Click on the New button.
- Fill in the following:
 - Name: Android Developer
 - Manager: Beth Anglin
 - Description: This is group of passionate Android Developer

A screenshot of the 'Group - New Record' form. The top navigation bar shows 'Group - New Record'. The form fields include: Name (Android Developer), Manager (Beth Anglin), Group email (empty), Parent (empty), and Description (This is group of passionate Android Developer). At the bottom left is a 'Submit' button.

Fig 2.2. Form for creating new group

Step 4: Click Save

Step 5: Select the Group Members tab.

Step 6: Select Edit

The screenshot shows the ServiceNow interface for managing groups. The top navigation bar includes 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and a search bar. The title bar says 'Group - Android Developer'. Below the title, there are fields for 'Name' (Android Developer), 'Manager' (Beth Anglin), 'Group email' (empty), and 'Parent' (empty). A description field contains the text: 'This is group of passionate Android Developer'. At the bottom of this section are 'Update' and 'Delete' buttons. Below this, there are tabs for 'Roles', 'Group Members' (which is selected), and 'Groups'. A search bar and filter options ('Created', 'Search') are also present. The main content area is titled 'Group = Android Developer' and lists 'Role', 'Granted by', and 'Inherits' columns. It displays a note: 'No records to display'.

Fig 2.3. Group Members tab for Android Developer group

Step 7: Add **Abel Tuter** and **Abraham Lincoln** to the Group Members list.

The screenshot shows the 'Edit Members' page for the 'Android Developer' group. The top navigation bar and title bar are similar to Fig 2.3. The main area has 'Add Filter' and 'Run filter' buttons. Below is a search bar and filter dropdowns for 'Collection' and 'Group Members List'. The 'Collection' list on the left contains names like Adela Cervantsz, Aileen Mottern, etc. The 'Group Members List' on the right contains Abel Tuter and Abraham Lincoln, with Abel Tuter highlighted. Navigation arrows between the lists are visible. At the bottom are 'Cancel' and 'Save' buttons, and a note: 'Name Abraham Lincoln'.

Fig 2.4. Adding two members in the group(Android Developer)

Step 8: Save

Section 3: Assign a New Role to Android Developer

Step 1: Select the Roles tab, then select Edit...

Step 2: Add the knowledge_manager role to the Roles list.

Step 3: Add the approver_user role to the Roles list.

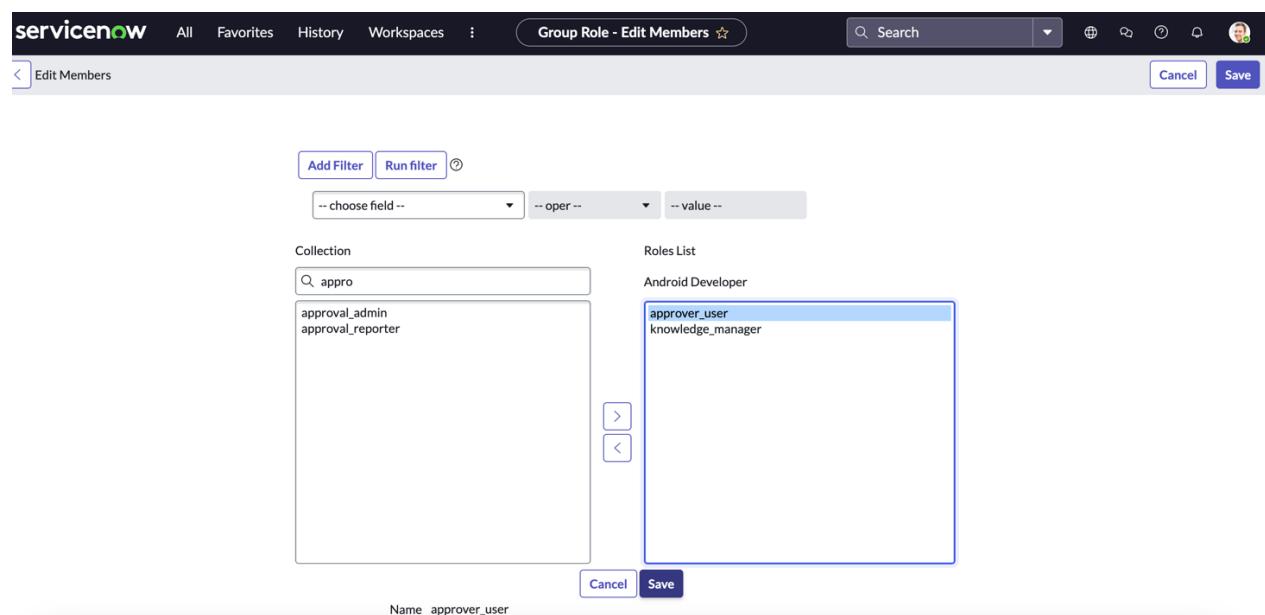


Fig 3.1. Adding two roles to group (Android Developer)

Step 4: Select Save and Submit

Section 4: Add New knowledge base

Step 1: Navigate to All > Knowledge > Administration > Knowledge Bases

Step 2: Select New

Step 3: Fill the form as following:

- Title: Android Development Knowledge Base
- Owner: Beth Anglin
- Publish workflow: Knowledge – Instant Publish
- Retire workflow: Knowledge – Instant Retire
- Description: This is resources for Android Development.

The screenshot shows the ServiceNow interface for creating a new Knowledge Base record. The top navigation bar includes 'servicenow', 'All', 'Favorites', 'History', 'Workspaces', and a search bar labeled 'Knowledge Base - New Record'. Below the header, the page title is 'Knowledge Base' and the sub-page title is 'New record'. The main form contains the following fields:

- Title:** Android Development Knowledge Base
- Article Validity:** (empty field)
- Icon:** Click to add...
- Disable commenting:**
- Disable suggesting:**
- Disable category editing:**
- Disable rating:**
- Disable mark as helpful:**
- Checklist:** (empty field)
- Description:** This is resources for Android Development
- Application:** Global
- Owner:** Beth Anglin
- Managers:** (empty field)
- Publish workflow:** Knowledge - Instant Publish
- Retire workflow:** Knowledge - Instant Retire
- Active:**

At the bottom of the form, there is a section for 'Set default knowledge field values' with dropdown menus for 'choose field' and 'value'.

Fig 4.1. Form for creating new Knowledge Base

Step 4: Select Save

Step 5: Select the Can Contribute tab and select New

Step 6: Populate the form as follows:

Name: Android Developer

Groups: Android Developer

User Criteria may be used to restrict access to records in Change Models, Service Catalog and Knowledge

Name: Android Developer

Application: Global

Active:

Users:

Groups:

Roles:

Companies:

Locations:

Departments:

Select target record:

Advanced:

Match All:

Submit

Fig 4.2. Form for user criteria

Step 7: Select Submit

Step 8: Select Knowledge Category tab and select New

Step 9: Populate the form as follow:

-Label: Java

Knowledge Category

Java

* Label: Java

Value:

Parent ID: Knowledge Base: Android Developme

Active:

Update **Delete**

Fig 4.3. Form for new category

Section 5: Creating two knowledge article and publishing

Step 1: Impersonate Abel Tuter

Step 2: Navigate to All > Knowledge > Articles > Import Articles

Step 3: From the Knowledge Base drop-down list, select Android Development Knowledge Base.

Step 4: Select Java as Category.

Step 5: Add doc files.

Step 6: Select Import

The screenshot shows a web-based form titled "Import Articles". At the top, there are two dropdown menus: "Knowledge Base" set to "Android Development Knowledge Base" and "Category" set to "Java". Below these is a large input field with a dashed border, containing an upward arrow icon and the text "Drag and drop DOC or DOCX files here or Browse Files". Underneath this field, it says "Article 1" and "Java". Below that, it says "Imported Document: Java.DOCX". In the bottom right corner of the form area, there is a large blue rectangular button with the word "Import" in white.

Fig 5.1. Form for importing new article

Step 7: Select Continue.

Step 8: Select Record Number link and open in new tab

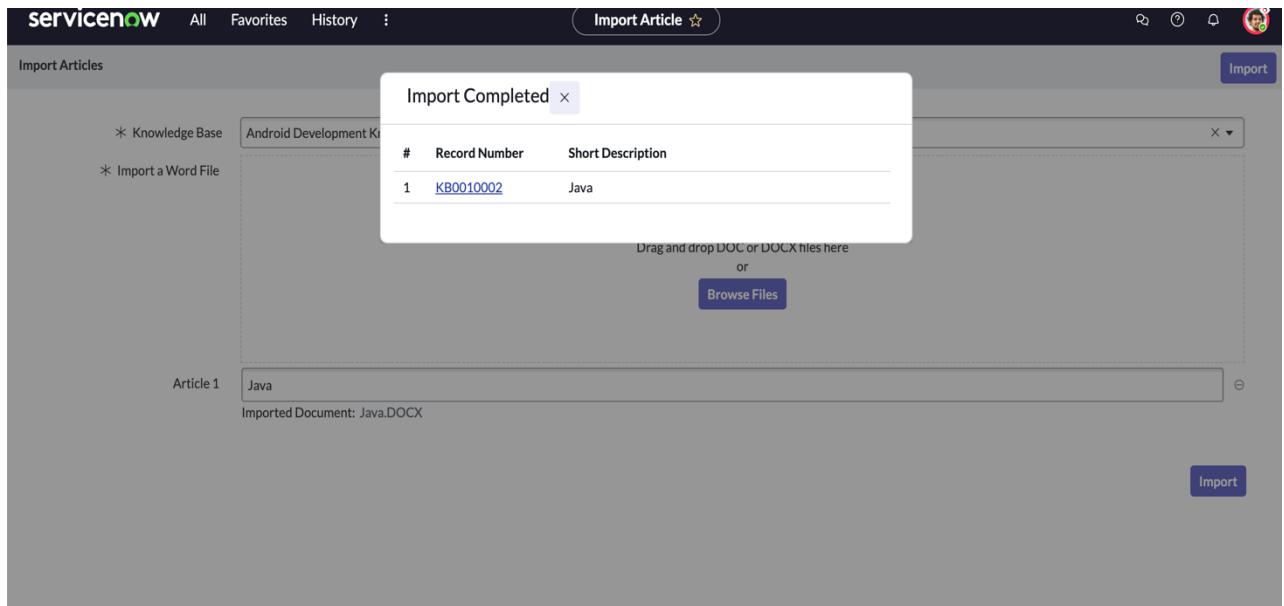


Fig 5.2. Display window for import completion

Step 9: Select Edit

A screenshot of a Knowledge Article titled 'Java'. The article ID is KB0010002 (Draft) with 1 view. It is categorized under 'Question Bank - 21ECO106J-Unit-3'. The article content is as follows:

Part-A

1. This function sets the serial communications speed.
Serial.begin(speed)
Serial.read()
Serial.write(val)
Serial.println(val, format)

2. In parallel communication, to transmit 8-bit data with clock signal, _____ wires are used.
8
9
10
11

3. Example of a serial interface, transmitting one bit every clock pulse. Just ___ wires required.
1
2
3
4

4. Data is transferred with ___ first in serial communication.
Least-Significant Bit (LSB)
Most-significant bit (MSB)
ODD bits first EVEN bits next.
EVEN bits first ODD bits next.
5. One of the more common baud rates, is

Fig 5.3. Knowledge article

Step 10: Select Publish

The screenshot shows a web-based form for publishing a knowledge article. At the top, there's a header with a back arrow, a title 'Knowledge KB0010002 v0.01', and several action buttons: Publish, Update, Search for Duplicates, and Delete.

Below the header, there are several input fields:

- Number:** KB0010002
- * Knowledge base:** Android Development Knowledge Base (selected)
- Category:** Java
- Scheduled publish date:** (empty field)
- Valid to:** 2100-01-01
- Version:** 0.01
- Article type:** HTML
- Workflow:** Draft
- Source Task:** (empty field)
- Attachment link:** (checkbox)
- Display attachments:** (checkbox)

There's also a section for a short description with the word 'Java' entered.

The main content area is titled 'Article body' and contains a rich text editor toolbar with various styling options like font, size, bold, italic, etc. Below the toolbar, the actual article content is displayed:

```
Question Bank - 21ECE106J-Unit-3
Part-A
1. This function sets the serial communications speed.
Serial.begin(speed)
Serial.read()
Serial.write(data)
```

The rich text editor shows some placeholder text and code snippets. At the bottom right of the editor, it says '064 words'.

Fig 5.4. Form for publishing the knowledge article

Step 11: Again Navigate to All > Knowledge > Articles > Import Articles

Step 12: From the Knowledge Base drop-down list, select Android Development Knowledge Base.

Step 13: Select Java as Category.

Step 14: Add doc files. Name: Java-Part2

Step 15: Select Import

Step 16: Select Continue

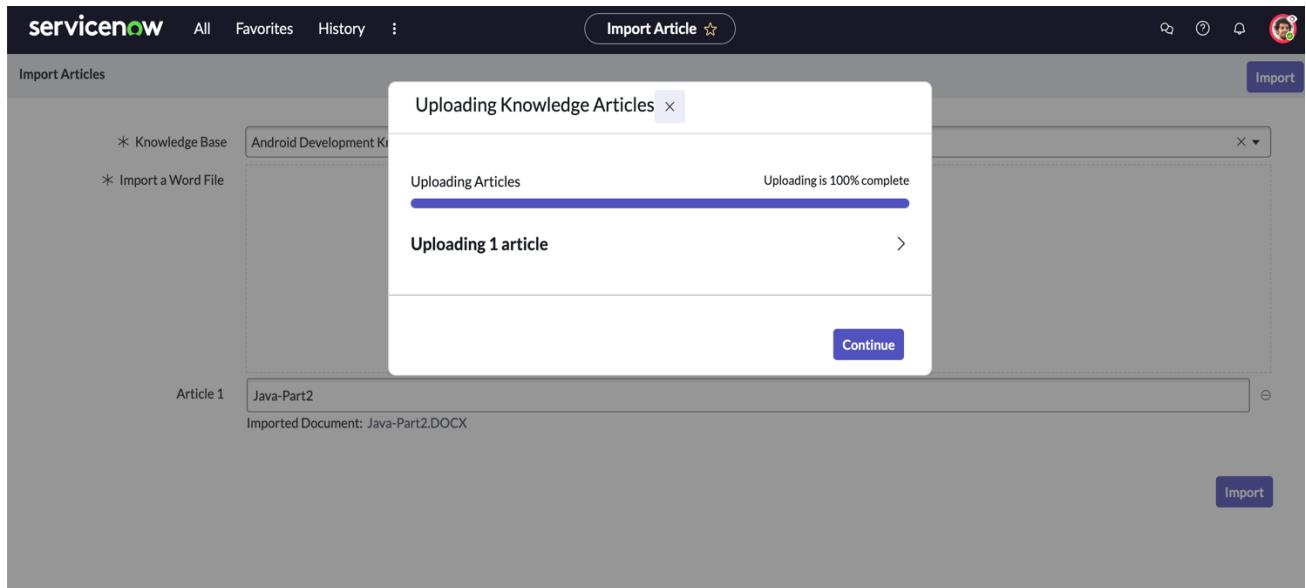


Fig 5.5. Display window for uploading

Step 17: Select record number link

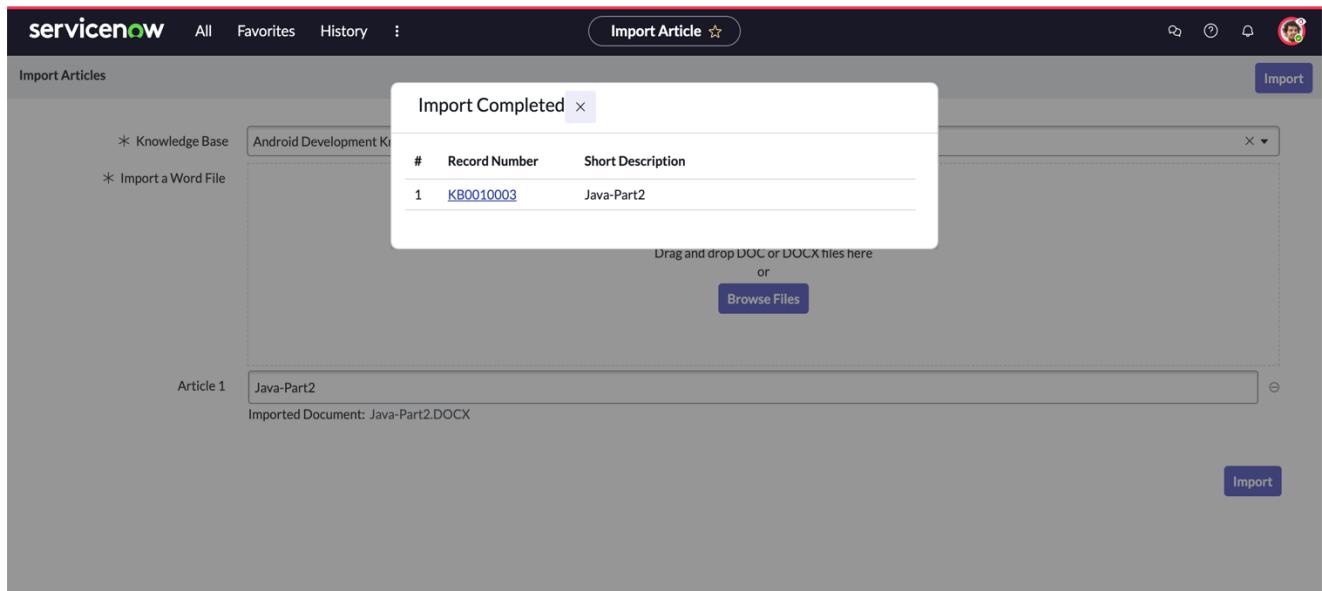


Fig 5.6. Display window for import completion

Step 18 :Select Edit.

Step 19: Select Publish.

Knowledge KB0010003 v0.01

Manage Attachments (1): [rename][view]

Number	KB0010003	Version	0.01
* Knowledge base	Android Development Knowledge Base	Article type	HTML
Category	Java	Workflow	Draft
Scheduled publish date		Source Task	
Valid to	2100-01-01	Attachment link	<input type="checkbox"/>
Display attachments <input type="checkbox"/>			
* Short description Java-Part2			
Article body			
<p>Verdana 8pt Paragraph</p> <p>Question Bank - 21ECO106J-Unit-4</p> <p>Part-A</p> <p>1. An IO port consists of ____ bits, typically.</p> <p>A. Eight</p> <p>B. Seven</p> <p>C. Six</p>			

Fig 5.7. Form for publishing the knowledge article

CHAPTER 7

TESTING AND VERIFICATION

Step 1: Impersonate **Abraham Lincoln**

Step 2: Navigate to All > Self Service > Knowledge

Step 3: Verify **Android Development Knowledge Base** is visible.

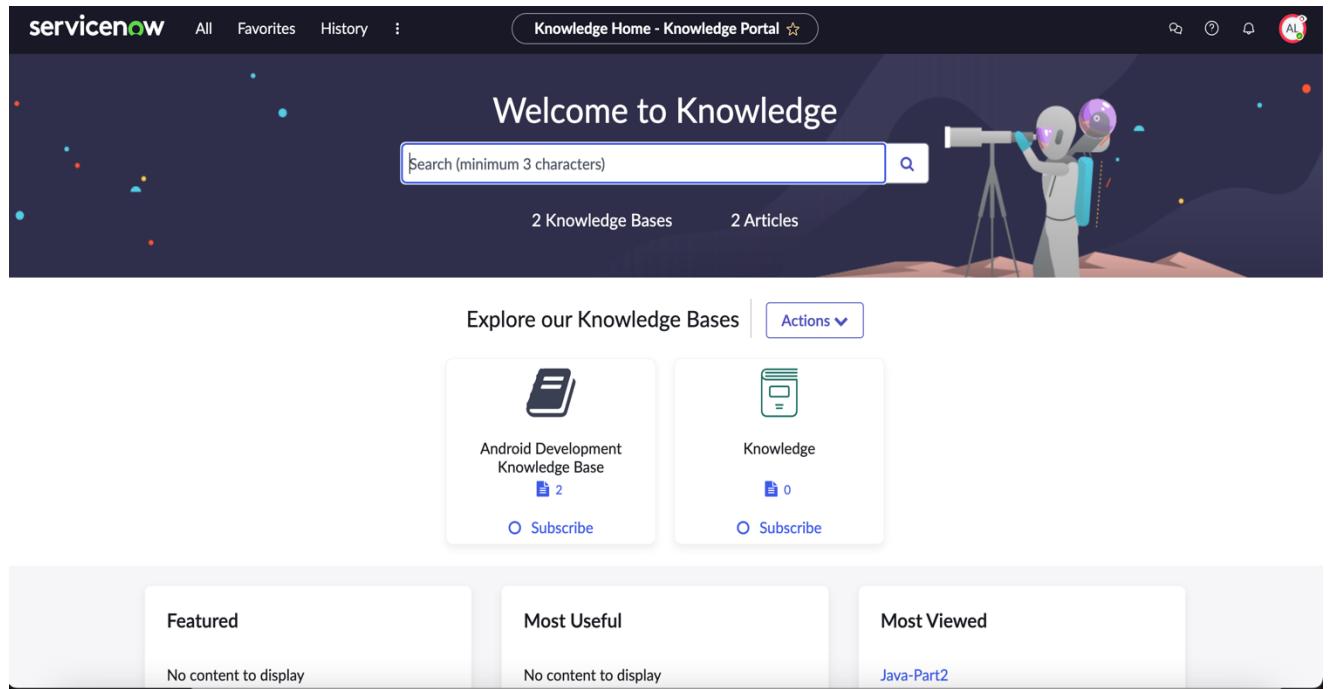


Fig 6.1. Knowledge Base

CHAPTER 8

CONCLUSION

This project significantly enhances the ServiceNow platform by creating a streamlined, secure, and up-to-date Android Development Knowledge Base. By introducing a dedicated category with focused content, the project empowers users like Abraham to find solutions independently, reducing reliance on direct support and fostering a culture of self-sufficiency. The implementation of role-based access controls ensures that sensitive information is accessible only to authorized members of the "Android Users" group, reinforcing the organization's commitment to data security and confidentiality.

Automated publishing and retirement workflows further optimize knowledge management by keeping content current without manual intervention. This automation ensures that users always have access to accurate and relevant information, improving response times and overall productivity. For knowledge managers like Beth, these automated processes reduce the administrative burden, enabling a more agile and responsive knowledge base.

In conclusion, this project enhances efficiency, empowers users, and upholds security standards within the ServiceNow platform. By establishing a dynamic, accessible, and secure knowledge base, the initiative strengthens the organization's knowledge-sharing capabilities, supports productive development workflows, and ensures that resources align with both user needs and security protocols.

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