



Northwind CAPM Project Document

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Table of content :

Northwind CAPM Project Document.....	1
1. Introduction.....	4
1.1 Project Overview.....	4
1.2 Project Purpose.....	4
2. Database Design.....	5
2.1 Entity Sets.....	5
2.2 Relationship Diagram.....	5
3. Table Creation.....	5
3.1 Step-by-Step Guide.....	5
4. Merging Tables into Single UI Screen.....	7
5. Implementing Charts with Data from Different Entity Sets.....	9
5.1 Integration of Charts:.....	9
5.2 Implementation Steps:.....	9
5.3 Example - Unified UI Screen:.....	10
6. KPI Microchart Tiles Implementation.....	10
6.1 Home Tab Overview:.....	10
6.2 Benefits:.....	11
6.3 Implementation Steps:.....	11
6.4 Example - Home Tab Dashboard:.....	11
7. Quick View Cards for Employee Contact Details.....	11
7.1 Overview:.....	11
7.2 Team Contributions:.....	11
Two Team Members - Clickable Employee Names:.....	11
Three Team Members - Quick View Card Implementation:.....	11
7.3 Implementation Steps:.....	12
7.4 Example - Quick View Cards in Action:.....	12
8. Validation on Import Functionality for Mandatory ID Fields.....	13
8.1 Overview:.....	13
8.2 Team Contribution:.....	13
Team Member - Node.js Validation Implementation:.....	13
8.3 Implementation Steps:.....	13
8.4 Example - Validation in Action:.....	13
9. SAP Build Process Automation Workflow for Product Approval.....	14
9.1 Overview:.....	14
9.2 CONFIGURATION SEND EMAIL IN SAP PROCESS AUTOMATION BY GMAIL:.....	16
9.3 CONFIGURE DESTINATION AND HTML5 APPLICATION.....	16



10. Alert Notifications for Low Units in Stock.....	18
10.1 Overview.....	18
11. References.....	20
12. GitHub Repository.....	20

1. Introduction

1.1 Project Overview

The Northwind CAPM Application is designed to streamline project management processes by leveraging a robust database structure. In this document, we will guide you through the process of creating tables for various entity sets within the Northwind CAPM database. Each table will be equipped with essential functionalities, including CRUD operations (Create, Read, Update, Delete), import, export, and search capabilities.

1.2 Project Purpose

This document aims to provide a comprehensive guide for developers and database administrators to effectively create and manage tables in the Northwind CAPM Application. By following the instructions outlined here, you will be able to implement essential CRUD operations and enhance the overall functionality of the database.

1.3 BTP Services Used

- **BTP Build Process** – This service is used for BTP based custom workflow approvals.
- **BTP Decision Tables/Rules** – This service is used for BTP process workflow internal logics.
- **BTP Destination service** – This service is used for accessing REST and OData services across the Northwind application..
- **HTML5 repository Service**- This service used for storing static web content and managing the app router for frontend application.
- **Business Application Studio** – This is a cloud-based IDE for CAP and UI5 development on BTP. Used for overall application development of Northwind Application.
- **BTP Alert Notification Service** – By implementing automatic email alerts, the team aims to facilitate quick responses to low stock situations.

2. Database Design

2.1 Entity Sets

The Northwind CAPM database comprises several key entity sets, including Employees, Products, Customers, Orders, Suppliers etc. Each entity set represents a crucial aspect of project management.

2.2 Relationship Diagram

Before diving into table creation, it's essential to understand the relationships between different entity sets. A clear relationship diagram will serve as a guide throughout the database design process.

3. Table Creation

3.1 Step-by-Step Guide

Follow these steps to create tables for the core entity sets:

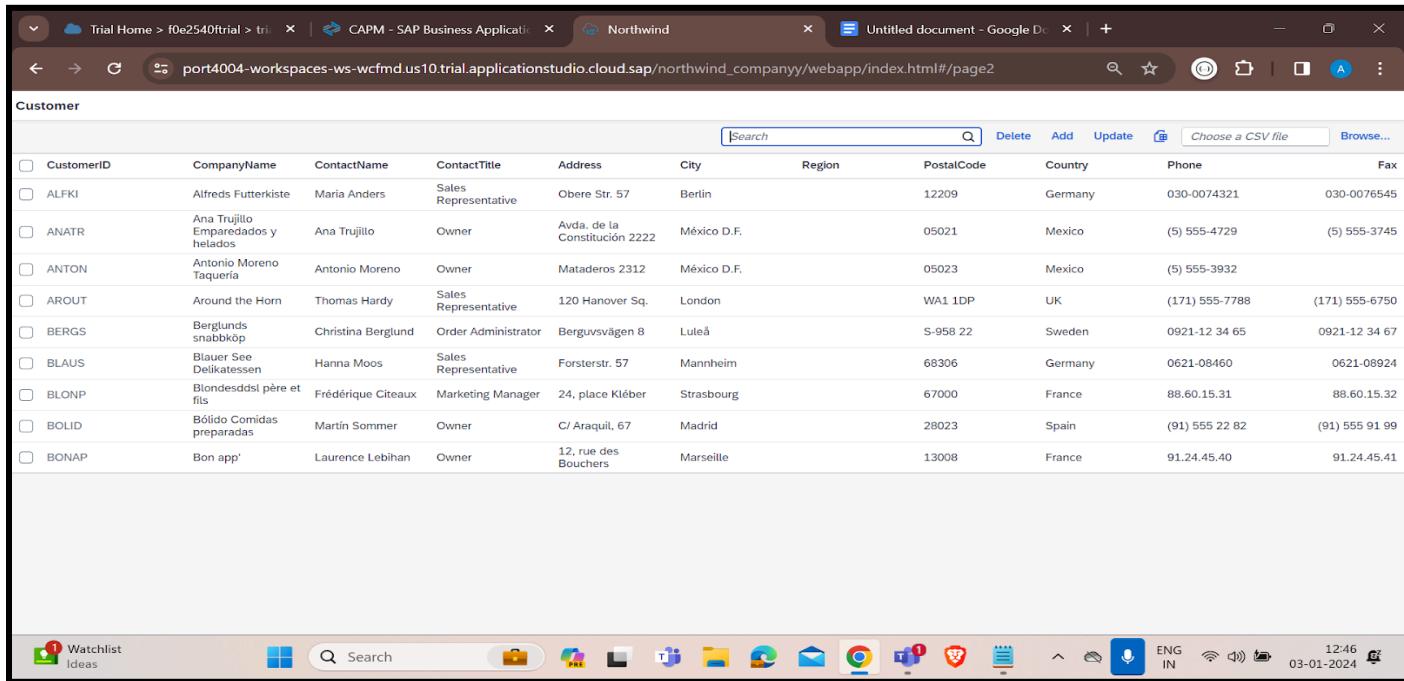
Customers	Employees	Shippers	Orders	Products	Order_Details
CustomerID _(key)	Employee ID _(key)	ShipperID _(key)	OrderID _(key)	ProductID _(key)	OrderID
CompanyName	LastName	CompanyName	CustomerID	ProductName	ProductID _(key)
ContactName	FirstName	Phone	EmployeeID	SupplierID	UnitPrice
ContactTitle	Title		OrderDate	CategoryID	Quantity
Address	TitleOfCourtesy		RequiredDate	QuantityPerUnit	Discount
City	BirthDate		ShippedDate	UnitPrice	
Region	HireDate		ShipVia	UnitsInStock	



PostalCode	Address		Freight	UnitsOnOrder	
Country	City		ShipName	ReorderLevel	
Phone	Region		ShipAddress	Discontinued	
Fax	PostalCode		ShipCity		
	Country		ShipRegion		
	HomePhone		ShipPostalCode		
	Extension		ShipCountry		
	ReportsTo				

Categories	Suppliers	Invoices	Regions	Sales_Amounts	Product_Sales
CategoryID _(key)	SupplierID _(key)	ShipName	ShipperID _(key)	SaleAmount	CategoryName
CategoryName	CompanyName	ShipAddress	CompanyName	OrderID _(key)	ProductName
ProductName	ContactName	ShipCity	Phone	CompanyName	ProductSales _(key)
ProductSales	ContactTitle	ShipRegion		ShippedDate	
	Address	ShipPostalCode			
	City	ShipCountry			
	Region	CustomerID _(key)			
	PostalCode	CustomerName			
	Country	Address			
	Phone	City			
	Fax	Region			
	HomePage	PostalCode			

		Country			
--	--	---------	--	--	--



CustomerID	CompanyName	ContactName	ContactTitle	Address	City	Region	PostalCode	Country	Phone	Fax
ALFKI	Alfreds Futterkiste	Maria Anders	Sales Representative	Obere Str. 57	Berlin		12209	Germany	030-0074321	030-0076545
ANATR	Ana Trujillo Emparedados y helados	Ana Trujillo	Owner	Avda. de la Constitución 2222	México D.F.		05021	Mexico	(5) 555-4729	(5) 555-3745
ANTON	Antonio Moreno Taquería	Antonio Moreno	Owner	Mataderos 2312	México D.F.		05023	Mexico	(5) 555-3932	
AROUT	Around the Horn	Thomas Hardy	Sales Representative	120 Hanover Sq.	London	WA1 1DP	UK	(171) 555-7788	(171) 555-6750	
BERGS	Berglunds snabbköp	Christina Berglund	Order Administrator	Berguvsvägen 8	Luleå		S-998 22	Sweden	0921-12 34 65	0921-12 34 67
BLAUS	Blauer See Delikatessen	Hanna Moos	Sales Representative	Forsterstr. 57	Mannheim		68306	Germany	0621-08460	0621-08924
BLONP	Blondesddsl père et fils	Frédérique Citeaux	Marketing Manager	24, place Kléber	Strasbourg		67000	France	88.60.15.31	88.60.15.32
BOLID	Bólido Comidas preparadas	Martín Sommer	Owner	C/ Araquil, 67	Madrid		28023	Spain	(91) 555 22 82	(91) 555 91 99
BONAP	Bon app'	Laurence Lebihan	Owner	12, rue des Bouchers	Marseille		13008	France	91.24.45.40	91.24.45.41

4. Merging Tables into Single UI Screen

In the collaborative development of the Northwind CAPM Project, each team member has contributed to the creation of tables representing different entity sets. The culmination of these efforts involves merging the data from these tables into a unified User Interface (UI) screen.

UI5 View-Controller Details:

SN	View	Controller	Description
1.	Northwind.view.xml	Northwind.controller.js	This is root view/controller as per routing configuration
2.	Home.view.xml	Home.controller.js	This is home page of Northwind app which contains various KPI Tiles(contain microchart) for easy navigation to each Chart
3.	Form.view.xml	Form.controller.js	This page Triggers workflow for order approval by different departments

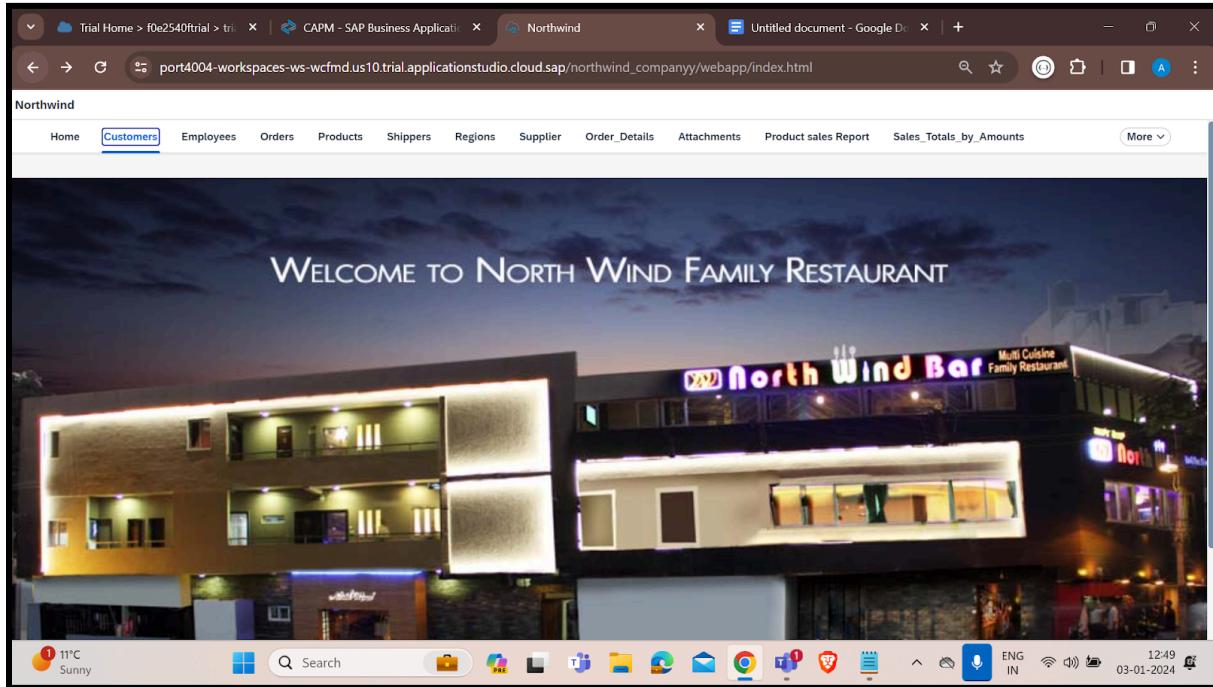
4.	Product.view.xml	Product.controller.js	This page contains information about product stock and Alert notification functionality to remind restock order
5.	Employee.view.xml	Form.controller.js	This page involves making the employee name or ID clickable, triggering a quick view card with dynamically displayed contact details for each selected employee

UI5 Fragments Details:

SN.	Fragment	Controller	Description
1.	Add.fragment.view.xml	Add.controller.js	Each view have their respective controller for Add functionality
2.	Update.fragment.view.xml	Update.controller.js	Each view have their respective controller for update functionality
3.	Quickcard.fragment.view.xml	Employee.controller.js	This fragment open a dialog box containing information about the employee on click of table row

Other UI5 and app router based configuration file:

SN	File	Description
1.	manifest.json	This file contains ui5 app configuration related to routing, data models and default libraries
2.	Component.js	This is reusable UI5 component file which will load the manifest and other required library initialization
3.	xs-app.json	BTP managed app router configurations files. These configurations help to redirect the service and other URLs to respective destinations and allow to have oauth2 based user authentication
4.	srv/server.js	This file contains OData model v2 based proxy to convert OData v4 to v2



5. Implementing Charts with Data from Different Entity Sets

In the continued development of the Northwind CAPM Project, the team has progressed to enhance the project management interface by incorporating visual representations of data. This section details the collaborative effort in adding different charts that dynamically display information sourced from various entity sets.

5.1 Integration of Charts:

- Improved visibility
- Enhanced user experience
- Cross-referencing capabilities

5.2 Implementation Steps:

- Identify key relationships.
- Design a unified data model.

Develop UI components.
Integrate CRUD operations.
Optimize performance.

5.3 Example - Unified UI Screen:

(Include a screenshot or mockup of the unified UI screen, showcasing merged data from various tables.)



6. KPI Microchart Tiles Implementation

6.1 Home Tab Overview:

In the next phase of the Northwind CAPM Project development, the team has introduced a dedicated Home tab to serve as a central dashboard. This tab features Key Performance

Indicator (KPI) tiles adorned with microcharts, providing users with an at-a-glance overview of critical project metrics.

6.2 Benefits:

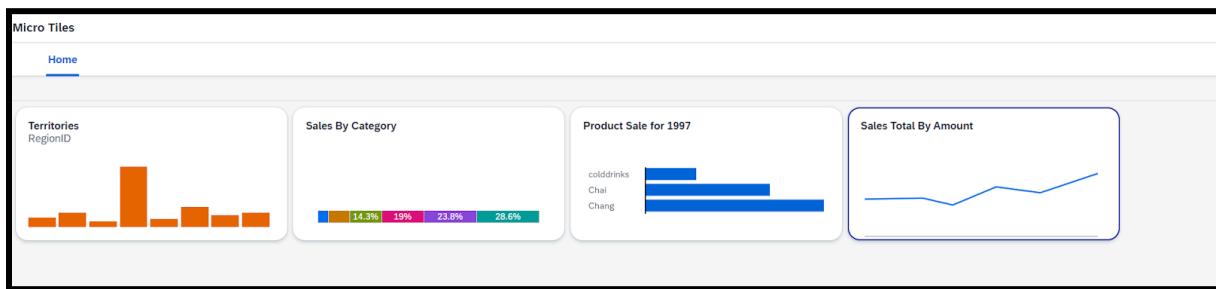
- Improved visibility
- Enhanced user experience
- Quick access to key metrics

6.3 Implementation Steps:

- Design KPI tiles.
- Embed microcharts.
- Ensure interactivity.
- Optimize performance.

6.4 Example - Home Tab Dashboard:

(Include screenshots or mockups showcasing the Home tab with KPI tiles and embedded microcharts.)



7. Quick View Cards for Employee Contact Details

7.1 Overview:

In the evolving stages of the Northwind CAPM Project, the team has introduced a feature that enhances user interaction with the Employee table. This phase involves making the employee name or ID clickable, triggering a quick view card with dynamically displayed contact details for each selected employee.

7.2 Team Contributions:

Two Team Members - Clickable Employee Names:

- Enhanced the Employee table by making the employee name and ID clickable.
- Implemented dynamic linking for each row to ensure individual employee data is accessible.

Three Team Members - Quick View Card Implementation:

- Developed quick view cards to display contact details dynamically.
- Ensured the popover appears upon clicking the linked employee name or ID.

7.3 Implementation Steps:

Make employee names or IDs clickable.

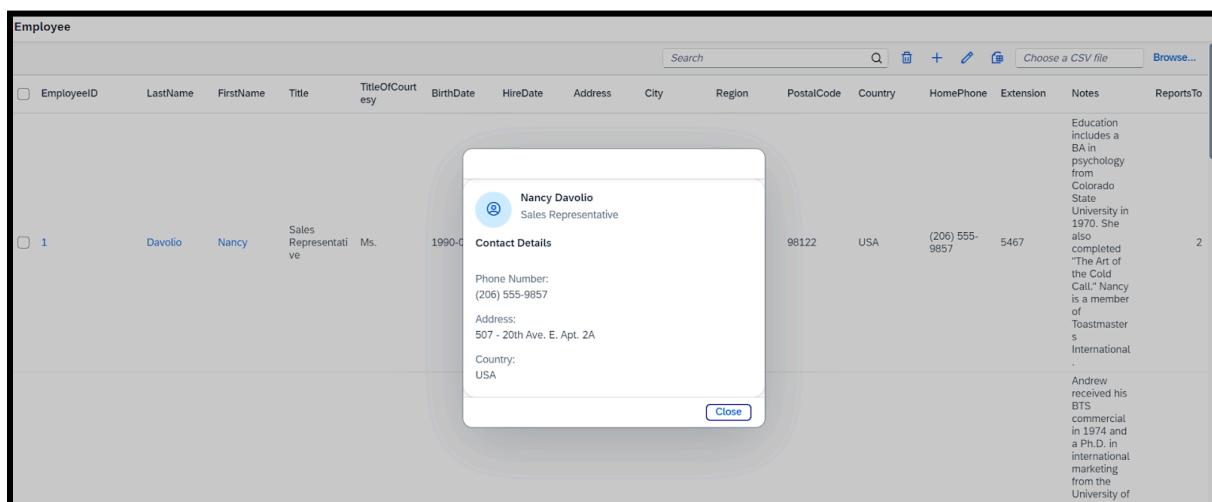
Design quick view cards.

Implement dynamic popover generation.

Optimize user experience.

7.4 Example - Quick View Cards in Action:

(Include screenshots or mockups showcasing the Employee table with clickable employee names or IDs and the corresponding dynamic quick view cards.)



The screenshot shows a web-based Employee management system. The main table has columns for EmployeeID, LastName, FirstName, Title, TitleOfCourt, BirthDate, HireDate, Address, City, Region, PostalCode, Country, HomePhone, Extension, Notes, and ReportsTo. Row 1 is selected, highlighting Nancy Davolio's information. A modal 'Contact Details' window is open over the table, displaying Nancy Davolio's profile: Sales Representative, Phone Number (206) 555-9857, Address 507 - 20th Ave. E. Apt. 2A, and Country USA. The background table shows additional employee data, such as Andrew Harrington's education and Andrew's professional background.

EmployeeID	LastName	FirstName	Title	TitleOfCourt	BirthDate	HireDate	Address	City	Region	PostalCode	Country	HomePhone	Extension	Notes	ReportsTo
1	Davolio	Nancy	Sales Representative	Ms.	1990-01-01					98122	USA	(206) 555-9857	5467		2

 Nancy Davolio
Sales Representative

Contact Details

Phone Number:
(206) 555-9857

Address:
507 - 20th Ave. E. Apt. 2A

Country:
USA

[Close](#)

8. Validation on Import Functionality for Mandatory ID Fields

8.1 Overview:

In the latest phase of the Northwind CAPM Project, the team has focused on enhancing data integrity by implementing validation on the Node.js side during the import functionality. Specifically, the validation ensures that ID fields are mandatory in the uploaded files for each table, maintaining consistency and accuracy in the database.

8.2 Team Contribution:

Team Member - Node.js Validation Implementation:

- Implemented validation logic on the Node.js side for the import functionality.
- Ensured that uploaded files for each table include mandatory ID fields.

8.3 Implementation Steps:

- Identify mandatory ID fields.
- Implement validation logic.
- Handle errors effectively.
- Integrate with import functionality.

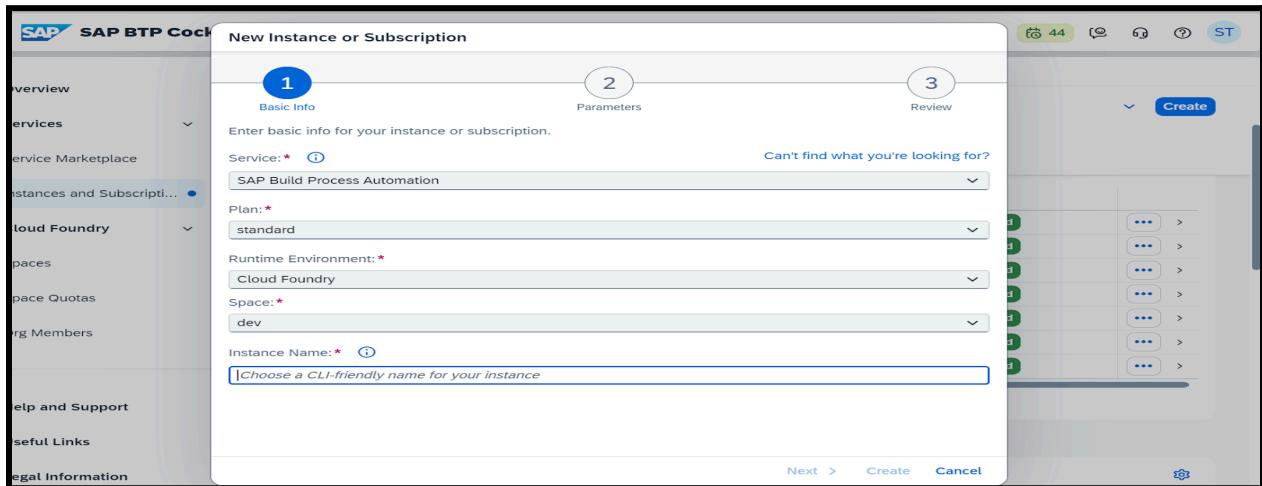
8.4 Example - Validation in Action:

(Include snippets of code or screenshots illustrating the validation process during the import functionality on the Node.js side.)

Order Details					
OrderID	ProductID	UnitPrice	Quantity	Discount	
2	56	5	6	70	

OrderID is Mandatory in CSV File

9. SAP Build Process Automation Workflow for Product Approval



The screenshot shows the SAP BTP Cockpit interface for creating a new instance. The left sidebar includes links for Overview, Services, Instances and Subscriptions, Cloud Foundry, Spaces, Space Quotas, Org Members, Help and Support, Useful Links, and Legal Information. The main area is titled "New Instance or Subscription" and is divided into three steps: 1. Basic Info, 2. Parameters, and 3. Review. Step 1 is active, showing fields for Service (selected as "SAP Build Process Automation"), Plan (selected as "standard"), Runtime Environment (selected as "Cloud Foundry"), Space (selected as "dev"), and Instance Name (a placeholder field). A dropdown menu for Service shows "SAP Build Process Automation" as the current selection. A link "Can't find what you're looking for?" is available for other services.

9.1 Overview:

In the latest advancement of the Northwind CAPM Application, the team has introduced a SAP Build Process Automation Workflow to streamline and formalize the approval process for new products. This workflow incorporates a two-level approval mechanism, involving Department Approvers at the first level and Financial Approvers at the second level.

The SAP Build Process Automation Workflow enhances the efficiency and accountability of product approvals within the Northwind CAPM Application. By introducing a structured approval process, the team aims to expedite decision-making and ensure alignment with departmental and financial criteria.

SAP Build

Lobby

Connectors

Actions

Automation SDK

Store

Monitoring

Control Tower

Welcome to SAP Build

Create apps, automate processes, and build business sites using productivity or no-code tools.

Quick Start

- Learning Journeys
- Discover Process Editor with Enhanced Layout
- Create a Change and Innovation Approval Process

All Projects (2)

Name	Versions	Type	Last Accessed	Members	Options
Northwind Orders Management	12 Available Latest: 1.0.11	Process Automation	Jan 02, 11:33 AM	Me	...

SAP Build Process Automation

Northwind Orders Management

Editable

Overview Northwind Order Process...

Released

Saved

Process Details

General Variables Visibility

Process name: *
Northwind Order Processing

Subject: *
Northwind Order Processing

Business Key
Process Instance Id

Business Key is used to uniquely identify the process with some business object information like Sales Order ID, Business Partner ID.

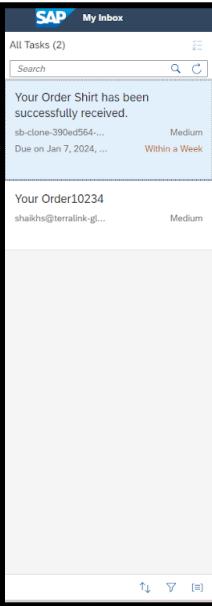
```

graph LR
    API[API Trigger] --> Start1[Approval Form: Departmental Form]
    Start1 -- Approve --> Start2[Approval Form: Finance Form]
    Start1 -- Reject --> Start3[Approval Form: Finance Form]
    Start2 -- Approve --> Mail1[Mail Send Mail]
    Start2 -- Reject --> Mail2[Mail Send Mail]
    Start3 -- Approve --> Mail1
    Start3 -- Reject --> Mail2
    Mail1 -- Sent --> End([End])
    Mail2 -- Sent --> End
  
```

Form

Supplier Name:	Zara
Product Name:	Shirt
Order Amount:	1000
Product Need By Date:	Jan 2, 2024
Created By:	Jenny
Created Date:	Dec 31, 2023

Submit Save



Approve Sales Order for Department

A new order has been received. Please review and confirm whether the requirements can be met or not.

Supplier Name: Zara

Product Name: Shirt

Order Amount: 1000

Product Need By Date: Jan 2, 2024

Created By: Jenny

Created Date: Dec 31, 2023

Supplier Acknowledgment

I acknowledge that we have received your order and will process it based on the availability

Message To Buyer: Enter text

Approve Reject Show Log Claim 

Order Approved inbox  

 shannoshaikh34@gmail.com to me, shahzeb.ahmad772 12:07 PM (0 minutes ago)    

Dear Sender,

Your product Shirt ordered on 2023-12-30T18:30:00.000Z of 1000 has been approved by Zara and will be delivered on 2024-01-01T18:30:00.000Z

Thanks for your Order...Visit Again!!

9.2 CONFIGURATION SEND EMAIL IN SAP PROCESS AUTOMATION BY GMAIL:

In this step we will configure send email in SAP Process Automation. To do this, we have to create one destination in BTP Cockpit with the name `sap_process_automation_mail`.

9.3 CONFIGURE DESTINATION AND HTML5 APPLICATION:

In this section, we also create an instance and service key for SAP Process Automation. This will be used in configure destination to get HTML5 Application for SAP Process Automation. With this destination, we will configure the above application in Launchpad service.

HTML5 Applications

Connectivity

- Destinations
- Cloud Connectors

Security

- Users

Basic Properties				Actions
Type: HTTP	Name: dev-spa	Authentication: OAuth2ClientCredentials	ProxyType: Internet	URL: https://spa-api-gateway-bpi-us-prod.cfapps.us10.hana.ondemand.com
Type: MAIL	Name: sap_process_automation_mail	Authentication: mail.user	ProxyType: Internet	Email: shannoshaikh34@gmail.com

Destination Configuration

Additional Properties

endpoints	{ "api": "https://spa-...
html5-apps-repo	{ "app_host_id": "90...
sasregistryena...	true
sap.cloud.service	com.sap.spa.processaut...
sap.cloud.servi...	spa

Use default JDK truststore

Form Fields:

- Name: * dev-spa
- Type: HTTP
- Description:
- URL: * https://spa-api-gateway-bpi-us-prod.cfapps.us10.hana.ondemand.com
- Proxy Type: Internet
- Authentication: OAuth2ClientCredentials
- Use mTLS for token retrieval
- Client ID: * sb-6b09004b-b284-48e2-b115-cb1195d0...
- Client Secret: *****
- Token Service URL Type: * Dedicated Common
- Token Service URL: * https://57623de1trial.authentication.us10...
- Token Service User:
- Token Service Password:

Buttons: Edit, Clone, Export, Delete, Check Connection

Destination Configuration

Additional Properties

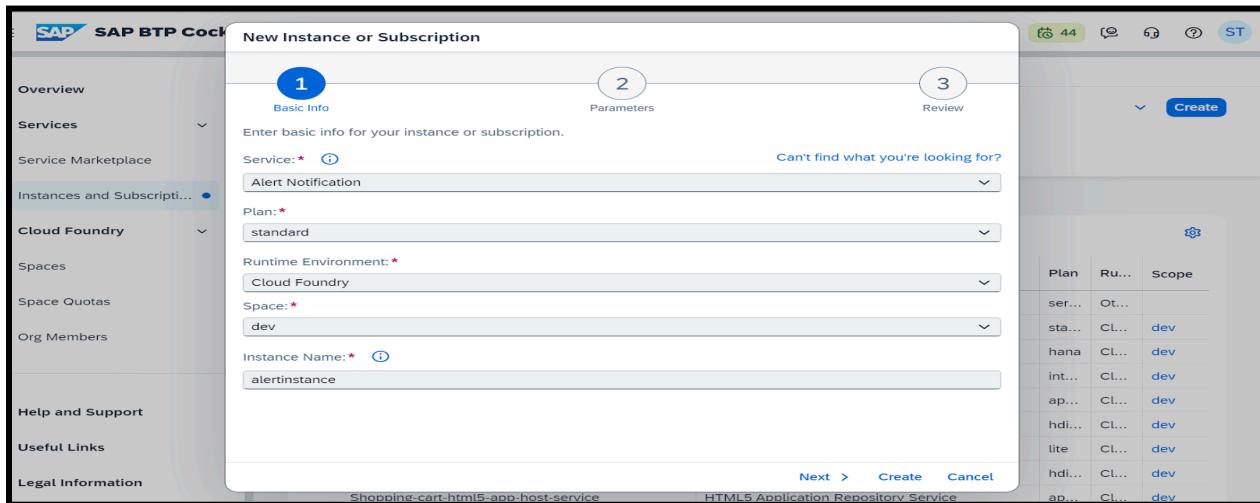
mail.bpm.send...	false
mail.smtp.auth	true
mail.smtp.from	shannoshaikh34@gmail...
mail.smtp.host	smtp.gmail.com
mail.smtp.port	587
mail.smtp.ssl.c...	false
mail.smtp.ssl.e...	false
mail.smtp.ssl.tr...	*
mail.smtp.startt...	true
mail.smtp.startt...	true
mail.transport.p...	smtp

Form Fields:

- Name: * sap_process_automation_mail
- Type: MAIL
- Description:
- Proxy Type: Internet
- Authentication: BasicAuthentication
- User: shannoshaikh34@gmail.com
- Password: *****

Buttons: Edit, Clone, Export, Delete

10. Alert Notifications for Low Units in Stock



10.1 Overview :

In the latest phase of development for the Northwind CAPM Application, the team has introduced an alert notification system on the Product table. Specifically, this feature monitors the "Units In Stock" column, and when the unit count falls below 10, a triggered alert sends an email to a pre-set email address.

The Alert Notifications for Low Units in Stock enhance the application's proactive monitoring capabilities, ensuring timely awareness of potential stock shortages. By implementing automatic email alerts, the team aims to facilitate quick responses to low stock situations.

Products

Add	Delete	Update	Import	Choose a CSV file	Browse...	Search	X		
ProductID	ProductName	SupplierID	CategoryID	QuantityPerUnit	UnitPrice	UnitsInStock	UnitsOnOrder	ReorderLevel	Discontinued
1	Chai	1	1	10 boxes x 20 bags	18	39	0	10	false
2	Chang	1	1	24 - 12 oz bottles	19	17	40	25	false
3	Aniseed Syrup	1	2	12 - 550 ml bottles	10	13	70	25	false
5	Chai	4	3	600 ml bottles	19	9 (Low Stock)	80	26	false
6	Green Tea	4	3	600 ml bottles	19	8 (Low Stock)	80	26	false
7	Coffee	4	3	600 ml bottles	19	15	80	26	false
8	Chips	4	3	600 ml bottles	19	5 (Low Stock)	80	26	false

SAP BTP Cockpit

[Trial Home](#) / [305dd861nat](#) / [trial](#) / [dev](#) / [Alert Notification](#) / [alertinstance](#) / [SendAlertsToMyMail](#)

Action: SendAlertsToMyMail - Overview

Enabled Enabled by the user

[Edit](#) [Disable](#) [Delete](#)

Action Details

Type: Email
Description: No description is available
Time Created: 28 Dec 2023, 11:31:48 (GMT+05:30)
Last Modified: 3 Jan 2024, 18:24:11 (GMT+05:30)

Labels
No labels are assigned

Additional Properties

Email Address: kumarp@terralink-global.com
Use HTML:
Subject: Low Stock
Template:
Payload: I hope this message finds you well. I am reaching out to bring to your attention that the current stock quantity of [Product Name] is running low. This could potentially impact our ability to provide seamless service to our valued customers.
In order to ensure uninterrupted supply and meet the growing demand, I kindly request you to consider increasing the quantity of [Product Name] in our inventory. This adjustment will not only help maintain customer satisfaction but also contribute to sustaining our competitive edge in the market.
I appreciate your prompt attention to this matter, and I am confident that your swift action will positively impact our overall service quality. If you require any additional information or have any concerns, please feel free to reach out.
Thank you for your cooperation.

Related Subscriptions

State	Title	Description	Subscription Labels
Enabled	test1	N/A	No labels are assigned

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Inbox

Low Stock

SB SAP Alert Notification service Low Stock Wed 18:26
I hope this message finds you

SB SAP Alert Notification service Low Stock Wed 18:25
I hope this message finds you

SB SAP Alert Notification service Low Stock Wed 18:19
Your stock is low in quantity p

SB SAP Alert Notification service [FATAL] [ALERT] Something is Landscape Details: region: cf-1 Wed 17:45

SB SAP Alert Notification service [FATAL] [ALERT] Sample Event Landscape Details: region: cf-1 Wed 17:39

13°C Low visibility

Search [Reply](#) [Reply all](#) [Forward](#) [Archive](#) [Delete](#) [Set flag](#) ... [Try the new Outlook](#)

12:09 04-01-2024 ENG IN

11. References

- **Northwind API**
[services.odata.org/v2/northwind/northwind.svc/\\$metadata](https://services.odata.org/v2/northwind/northwind.svc/$metadata)
- **ToolPage With Navigation**
[Tool Page with Horizontal Navigation - Samples - Demo Kit - SAPUI5 SDK](#)
- **QuickViewCard**
[QuickViewCard - Samples - Demo Kit - SAPUI5 SDK](#)
- **SAP Build Process Automation**
<https://learning.sap.com/learning-journey/create-processes-and-automations-with-sap-build-process-automation>
- **SAP build Process Configure Destination For Email**
[\[SAP PROCESS AUTOMATION\] – BUILD SIMPLE APPLICATION BY SAP LOW CODE & NO CODE -SAP Zero to Hero \(sapzero2hero.com\)](#)
- **SAP Cloud Platform Alert Notification custom alerts from Node.js app in Cloud Foundry**
[SAP Cloud Platform Alert Notification custom alerts from Node.js app in Cloud Foundry | SAP Blogs](#)

12. GitHub Repository (Northwind Application)

URL:- <https://github.com/Abhishek-pa-l/new-northwind-5->