EDUOCEANS *Learn Today to Become Better Tomorrow*

Note: Before You see the Course Content, lets Read out few Basics understandings about the subject.

What is ABAP on HANA?

- ABAP on HANA(AOH) refers to all the development which leverages power of SAP HANA
- AOH is process of migrating programming Paradigm from **data-to-code** to **code-to-data** technique.

Advantages of ABAP on HANA

- Enhanced performance of application using ABAP-managed code pushdown Technique
- Faster data processing by utilizing data compression methodology introduced by SAP HANA DB using Columnar database resulting in Improved Application Performance
- Easier and quicker maintenance of existing application due to reduced lines of code

Future Scope of ABAP on HANA

- ABAP goes Platform as a Service(PaaS) after SAP introduced ABAP in SAP Cloud Platform
- Real time analytics need in today's growing technology world can be achieved by Real Time Computing with AOH

Major Components of ABAP on HANA

- New ABAP 7.40/7.50+ Syntax
- Core Data Services(CDS)
- ABAP-Managed Database Procedures(AMDP)

New ABAP 7.40/7.50+ Syntax

- Reduced lines of code
- Reduced maintenance overhead
- Faster execution
- Improved exception handling

- Plenty of ABAP built-in functions to ease developer's life

Core Data Services(CDS)

- CDS enables building design-time data-persistence model
- Supports DDL, DML and DCL
- Pushes business logic at database layer hence enhancing application performance

ABAP-Managed Database Procedures(AMDP)

- AMDP is one kind of SQL Script
- AMDP allows developers to create and manage database procedures in the ABAP environment using ABAP methods and push its execution to database layer

Examples of ABAP on HANA

- Real time MRP(Material Requirement Planning) run compared to earlier time consuming Background Execution in SAP ECC
- Generating backend Services for SAPUI5 Applications

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Course Content.

- **Week 1 -**

New ABAP Syntax

Introduction to ABAP on HANA & ABAP 7.40/7.50+

I. What is ABAP on HANA?
II. Programming Methodology
    I. Procedural
    II. OOPS
III. Sample Program with ABAP & ABAP 7.4/7.5
IV. Deep dive into implementation of new Syntax
    I. Inline Declaration
    II. Using Open SQL
    III. Creating CDS with same Open SQL Statements
    IV. Consuming CDS in ABAP Program
    V. Discussing limitations of Open SQL Syntax

Deep Dive into new Syntax

I. Helper Variable Dynamic Declaration
II. Operations at Internal Table and Work Area Level
III. CONV & CAST Operator
IV. COND & SWITCH Operator
V. VALUE Operator
VI. IN Operator
VII. Example Demonstrating Above Operators
VIII. Conversion Routines – DATE, TIME and ALPHA

Master ABAP 7.40/7.50+

I. Deep diving into New ABAP Syntax
    I. New READ TABLE with – DEFAULT & OPTIONAL
    II. WITH EMPTY KEY & WITH DEFAULT KEY
    III. OOPS – NEW Keyword & Method Calling
    IV. Aligning new ABAP with Java
        I. Shorthand Operators
        II. FOR | THEN | UNTIL
        III. Using to_upper( ) and to_lower( )
        IV. REDUCE Operator
    V. EXACT – lossless operator

- **Week 2 -**

Associations & Hook Method's Replacements in ABAP 7.4/7.5+

I. Deep diving into New ABAP Syntax
    I. GROUP BY – Replacement of LOOP HOOK Methods
    II. MESH and it's operations
        I. Forward Associations
        II. Inverse Associations
        III. DELETE Operations
    III. nmax & nmin built in functions
    IV. CORRESPONDING & CL_ABAP_CORRESPONDING Use cases
    V. Q&A

Core Data Services (CDS)

Introduction to CDS

I. Getting Comfortable with Eclipse
II. Core Data Services(CDS)
    I. What is CDS?
    II. Type of CDS
    III. Find already available CDS Views in System
III. Creating & Consuming Sample CDS Views
    I. Parameterized
    II. Non-parameterized
IV. Using Session Variables
V. Exposing CDS View as OData Service

- **Week 3 -**

Joins, Extensions & Built In Functions in CDS

I. How to delete a CDS View
II. Joins in CDS
III. CDS Extension
IV. CDS Built In Functions
    I. Grouping Function
    II. SQL Functions
        I. Numeric Function
        II. String Functions
    III. Unit Conversion

Authorization Control & Associations using CDS

I. Extend Standard CDS Views
II. CDS – DCL Functionality
    I. Defining Access Roles with
        I. Simple Conditions
        II. PFCG Aspects
III. Ways of Linking Multiple Entities
    I. Joins
    II. Associations
IV. Exposing CDS with Associations as OData service and accessing via Navigation
V. SAP IDA with CDS

- **Week - 4**

Fiori Elements handling using CDS

I. CRUDQ Operations Using SAP BOPF
II. Metadata Extensions
III. VDM – Virtual Data Model
    I. Interface Views
        I. Basic Views
        II. Composite Views
    II. Consumption Views
IV. Value Helps using
    I. Foreign Key Associations
    II. Modeled Value help views

ABAP Managed Database Procedures (AMDP)

Introduction to AMDP

I. Programming Methodology
    I. Procedural
    II. Object Oriented
II. What is AMDP?
III. Types of AMDP Methods
    I. Database Procedure
    II. Database Functions
IV. Passing Parameters in AMDP Method
V. Passing Select Options in
    I. AMDP Method
    II. CDS Table Function

Learning SQLScripting for AMDP

I. Passing Select Options / Range in
   I. AMDP Method
   II. CDS Table Function
II. AMDP OOPS Operation
   I. Inheritance
   II. Changing Variable & Changing Table
III. Data Declaration
   I. Defining Variable with
      I. Built-In Types
      II. User defined Types
IV. Internal Table Operations

- **Week 5 -**

CRUDQ & Exception Handling Using AMDP

I. CASE Statements in AMDP
II. How to Perform CUD Operations
   I. INSERT
   II. UPDATE
   III. UPSERT
   IV. DELETE
III. JOINS – INNER + LEFT OUTER JOINS
IV. UUID Generation
V. ROW Number( ), Partition By, Rank( ) Functions
VI. DEFAULT NULL
VII. Defining EXIT Handler in AMDP

Fuzzy Search & BadI Operations using AMDP

I. UNION and UNION ALL
II. UPPER() / UCASE() & LOWER() Functions
III. IFNULL and NULLIF Functions
IV. DATE Functions
V. FUZZY Search
VI. Parallel Processing Using AMDP – MAP_MERGE
VII. What is AMDP BadI?
   I. Fallback Class in AMDP BadI

II. Filter in AMDP BadI