



# MAINSTREAM INSTITUTE (SAP ABAP)

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Mainstream Institute (ISO 9001:2008) is a prestigious leading training organization being located In Nayapalli, Bhubaneswar.

## CORE ABAP

### ERP & ABAP INTRODUCTION

- Manual Business process and its limitations
- ERP Products
- Introduction to SAP and its Modules
- Role of ABAP Consultant in SAP Projects
- Role of ABAP Consultant in object Development
- R/3 Landscape
- Client Concept in SAP
- Repository and Dictionary Objects
- ABAP related Transaction Codes
- ABAP Programming Rules
- Data Types and Operators

### ABAP BASIC STATEMENTS

- Data, Write, Constant and Parameter Statements and their attributes
- CONDITIONAL and LOOPING Statements (Do-End Do, While-End While & Loop-End loop)
- Check Boxes and Radio Buttons
- Submit, Import, Export keywords
- Field-symbols

### STRING FUNCTIONS

- Shift, Replace
- Translate
- Overlay
- String length(strIn)
- Condense, Concatenate
- Split

### LOCAL STRUCTURES

- Creating Structures
- Nested Structures (structure within structure)
- Including Structures
- Move and Move-Corresponding Statements, Move-Corresponding limitations

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### DICTIONARY OBJECTS(SE11)

- Standard Database tables
- Types of DB tables
- Client Dependent Tables
- Client Independent Tables
- Table creation minimum settings
- Table creation using direct data types
- Table creation using data elements and domains (Top-down & Bottom-up approaches)
- Currency and Quantity fields
- Reference tables and Reference fields
- Dictionary Structures
- . Append and .Include Structures
- Table Maintenance Generator
- Events at Table Level
- Primary and Secondary Indexes
- Foreign key Relationship
- Check Tables and Value Tables
- Views (Projection view, DB View, Help View & Maintenance view)
- View Cluster
- Lock objects
- Type-Groups
- Table Types
- Search Helps

### DATABASE ACCESS

- Open and Native SQL statements
- Select, Insert, Delete and update statements
- Select-End Select
- Insert, Delete and Modify statements
- Select-single , Select up to 1 rows
- Select \*
- Joins (Inner Join & Left-outer Joins)
- 

### INTERNAL TABLES & OPERATION

- Introduction and Necessity of Internal Tables
- Types of Internal tables (Standard, sorted & Hashed ITAB)
- Select-Options statement
- Ranges selection
- Append
- Describe
- Read
- modify
- Sort
- Clear
- Refresh



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- Free
- delete
- Transporting keyword
- Collect statement
- For all Entries

## SELECTION SCREEN PROGRAMMING

- Creating Simple and Tabbed Blocks
- Creating Push Buttons and Labels
- Dropdown List boxes
- Grouping Selection screen elements
- Event Handling in Selection Screens
- SCREEN Structure
- Creating Sub-screens
- Creating Application. Toolbar Push Buttons Using Function Keys
- Menu Painter tool
- At User-command event
- At PF-Status event

## MESSAGE CLASSES

- Creating Message classes
- Types of Messages
- Calling Message Class in Report & dialog Programs
- Dynamic Message Handlings

## MODULARIZATION TECHNIQUES

- Internal and External Subroutines
- Actual and Formal Parameters
- Pass by Value and Reference
- Changing Parameters
- Passing Internal Tables as Parameters
- Include Programs
- Function Group & Function Modules

## FUNCTION MODULES

- Creating Function Groups
- Function Builder tool
- Types of Parameters in Function Modules
- Optional and Default Parameters
- Exception Handling in Function Modules

## REPORTS

- Classical Reports
  - Single Table
  - Multiple Tables using Joins
- Control-Break statements



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- Difference between at new and on change of events
- Interactive Reports -> using Techniques
  - System field SY-LISEL
  - HIDE Statement
  - Get Cursor Statement
- Sequence of events execution
- Scheduling Reports in background statically and dynamically
- Background job overview
- Logical Database Reporting

### ALV Reports using FUNCTION MODULES

- SLIS Type-pool
- Field Catalog
- Layout Generation
- Classical ALV
- Interactive ALV
- Blocked ALV
- Hierarchical ALV

### DEBUGGING

- Setting Break points (Static & Dynamic)
- Watch Point
- Dynamically Changing Internal Tables Contents in Debugging Editor
- Options to Step through the Program in Debugging Editor

### MODULE POOL PROGRAMMING

- Introduction to Screen Painter tool
- Screen layout elements
- Events in Module Pool
  - PBO, PAI, POV, POH
- Working with Table Control (With & Without Wizard)
- Tab Strip Control
- Designing Sub screens
- Modal Dialog boxes
- Drop Down List Boxes
- Navigating between Screens
- Select-option Functionality in MPP
- Leave Screen, Leave to Screen, Call Screen & Set Scree
- Field Validations
  - Automatic Field Validations
  - Flow Logic Validations
  - Module Pool Validations
  - Chain-End chain
  - AT Exit-Command

### FILE HANDLING

- File Management on Presentation Server
- File Management on Application Server
- Working with Datasets
  - OPEN, READ, CLOSE Dataset
  - Transfer statement
  - SET and GET Dataset

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- DELETE Dataset

## BDC

- Direct Input Method
- Call Transaction Method
- Error Handling in Call Transaction
- Session Method
  
- Recording Transactions with single screen and Multiple screens
- BDC using Table Control

## LSMW

- Using Direct Input Method
- Using Batch Input Recording
- Using IDOC method (Will be covered as part of cross application)
- Using BAPI Method (Will be covered as part of cross application)
- Transporting LSMW Settings (Will be covered as part of cross application)

## SMART FORMS

- Introduction
- Designing and Passing Data to Smart Forms
- Calling smart forms from Driver Program
- Working with Loop and Program lines
- Graphic Management in Smart forms & Logo
- Including Standard texts in smart forms, Text module, Dynamic Text
- Transporting Standard Texts
- Copy Windows, secondary window
- Working with Tables
- Alternative Conditions
- SMART STYLES
- Working with Templates
- Control level events in smart forms
- Debugging Smart forms
- Converting Smart forms to PDF format Using OTF
- Sending email of a smart forms as a PDF

## OOPS ABAP

- Applications of OOPS in SAP
- Features of OOPS concepts
- Introduction to CLASS and OBJECT
- Difference between structures and classes
- Creation of Classes in different Programming Languages
- Types of ABAP Classes
- Class-Components
- Visibility at Class levels
  - Public Classes
  - Protected Classes
  - Private Classes
  - Abstract Classes
- Local class



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## (SAP ABAP)

- Global Class Creation using CLASS BUILDER Tool (SE24)
- Instance and Static Attributes (Types, constant)
- Instance and Static Methods
- RETURNING keyword / Parameter
  
- Exception Handling (Local & Global)
  - o Standard Exceptions
  - o Try and Catch Blocks
  - o Standard Exception Messages
  - o User Defined Exceptions
  - o Raising Keyword
  - o CLEANUP Block
- ME Keyword
- LOAD keyword
- Converting Local class to Global class
- Creating T-codes for Methods

### Constructors

- o Instance Constructors
- o Static Constructors
- o Parameters to Constructors
- o Class Loading

### Inheritance (Local & Global)

- o Types of Inheritance
- o Hierarchy of Constructor execution

- Exception Classes with OTR
- Exception Classes with Message classes
  
- Polymorphism
  - o Method Overloading
  - o Method Overriding
  - o REDEFINITION Keyword
  - o SUPER Keyword
- Final Classes and Final Methods
- Abstract Classes (Local & Global)
- Interfaces (Local & Global)
- Aliases (Local & Global)
- Implementing Interfaces Partially
  
- Friend Classes (Local & Global)
- DEFERRED Keyword
- Singleton Classes
- Persistence Service
  - o GUID Object Identity
  - o Business Key Identity
- Transaction Service
- Design Pattern Example
- Casting
  - o Narrow Casting
  - o Wide Casting

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## EVENT HANDLING in Classes

- Introduction to events
- Procedure for Custom Event Handling
  - o Local classes
  - o Global classes
- Instance and Static Events
- Raising events
- Single and Multiple Event Handler methods
- Instance and Static Event handler methods
- Registering Handlers
- Deactivating Handlers
- FOR ALL INSTANCES Keyword
- Events with Parameters
- Events in Interfaces

## CROSS APPLICATIONS ABAP

### RFC'

- Creating Remote Function Modules
- Creating RFC Destinations
- Synchronous RFC
- Asynchronous RFC
- Transactional RFC
- Calling RFC's Back

### BAPI's

- BAPI Architecture
- BOR
- BAPI Function Module Standards
- Creating Custom BAPI's
- Working with Standard BAPI's
- BAPI Enhancements and Modifications, Extension

### ALE – IDOCS

- Introduction to ALE and IDOC
- IDOC Related Objects
- Outbound configuration & Inbound configuration
- Standard Selection programs & Standard Posting programs
- Distributing Master Data
- IDOC Structure
- IDOC Related Tables
- Processing ERROR Idocs
- Introduction to Change Pointers, Change Pointers Configuration, Change Pointers Related Tables ▪
- IDOC Data Filtering, IDOC Segment Filtering
- IDOC Reduction & IDOC Extension
- IDOC Download to EXCEL and HTML
- Custom IDOC configuration, Writing Custom Outbound Selection Program , Writing Custom

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## Inbound Function Module

- IDOC Archiving
- WE19 Vs BD87
- IDOC Status change, Inbound & Outbound status numbers

## SAP ENHANCEMENTS

### Customer-Exits

- Identifying Customer Exits
- Function Exits
- Menu Exits
- Screen Exits

### BADI's

- BADI Searching Techniques
- Validations using BADI's
- Menu Enhancements using BADI's
- Screen Enhancements using BADI's
- Filters in BADI's
- Difference between BADI's in 4.7 and 6.0
- Custom BADI Creation
- Fallback Class in BADI
- Difference between Customer-exits and BADI's ENHANCEMENT

### FRAMEWORK

- Enhancement SPOTS
- Implicit & Explicit enhancement spots
- Enhancement Implementations
- KERNEL BADI's
- Source-Code Enhancement
- Function Group Enhancement
- Class Enhancement

## Release Management

- Transport organizer
- Work bench & Customized TR
- Task creation
- Release objects
- TR related tables
- Package Creation
- TOC
- Change the status of CR from released to modifiable
- Move the object from \$TMP to transportable package
- Version management

## Additional Topics

### NEW ABAP SYNTAX 7.4/7.5

- Inline data declarations
- COND Statement
- SWITCH statement
- String Expression
- Value Expression

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- Corresponding Operator
- ALPHA Keyword
- NEW keyword
- LET Expression
- CONV operator
- REDUCE Operator
- FILTER Operator
- Table Expression
- New features of OPEN SQL
- JOIN Improvement (\*)
- FOR Clause, Next clause
- Aggregate Functions-MAX, MIN, AVERAGE, SUM & COUNT
- LINE\_INDEX function
- Insert with select query

### ADOBE/PDF FORM

- Introduction
- Creation of Interface
- Layout Designing/Form creation
- Layout elements on master page/Body page
- BARCODE
- Use of text module, Include text in Adobe forms
- Scripting languages in Adobe forms
  - JAVA SCRIPIT
  - FORMCaLC
- Currency/Qty field concept in Adobe forms
- Adobe form translation to other languages
- Translation of text module and Include text
- Sending Adobe form as an Email attachment
- Dynamic Graphics in adobe forms

### PERFORMANCE TOOLS

- Performance Trace -ST05
- Run-Time analysis -SAT
- Extended Program check (EPC)

### Value Addition

- Search-Help Hot-Key concept
- Search-Help Exit Introduction, parameters, Call control
- Document Log change
- Open cursor, Fetch Next cursor, close cursor
- SAP Memory & ABAP memory
- Where-used List
- Update Function Module
- Background Job in details
- Number range concept and custom NR Object creation
- Authority-Checks in ABAP program
- DUMP Analysis
- TVARVC, BRF+ & SET Concepts
- Workflow Introduction
- Understanding Functional specifications

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## PROJECT TOPICS:

- Project Scenarios
- Types of SAP Projects
- ASAP Methodologies & Activate Methodology
- ABAPer Role & Responsibility in project
- TS Writing skills
- Organizational structure
- MM (P2P) Cycle
- SD (O2C) Cycle
- Handling Objects in MM, SD, & FICO

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## PREPARED BY

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