BC401

ABAP Objects

COURSE OUTLINE

Course Version: 18
Course Duration:

SAP Copyrights and Trademarks

© 2018 SAP SE or an SAP affiliate company. All rights reserved.

No part of this publication may be reproduced or transmitted in any form or for any purpose without the express permission of SAP SE or an SAP affiliate company.

SAP and other SAP products and services mentioned herein as well as their respective logos are trademarks or registered trademarks of SAP SE (or an SAP affiliate company) in Germany and other countries. Please see http://global12.sap.com/corporate-en/legal/copyright/index.epx for additional trademark information and notices.

Some software products marketed by SAP SE and its distributors contain proprietary software components of other software vendors.

National product specifications may vary.

These materials are provided by SAP SE or an SAP affiliate company for informational purposes only, without representation or warranty of any kind, and SAP SE or its affiliated companies shall not be liable for errors or omissions with respect to the materials. The only warranties for SAP SE or SAP affiliate company products and services are those that are set forth in the express warranty statements accompanying such products and services, if any. Nothing herein should be construed as constituting an additional warranty.

In particular, SAP SE or its affiliated companies have no obligation to pursue any course of business outlined in this document or any related presentation, or to develop or release any functionality mentioned therein. This document, or any related presentation, and SAP SE's or its affiliated companies' strategy and possible future developments, products, and/or platform directions and functionality are all subject to change and may be changed by SAP SE or its affiliated companies at any time for any reason without notice. The information in this document is not a commitment, promise, or legal obligation to deliver any material, code, or functionality. All forward-looking statements are subject to various risks and uncertainties that could cause actual results to differ materially from expectations. Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of their dates, and they should not be relied upon in making purchasing decisions.

Typographic Conventions

American English is the standard used in this handbook.

The following typographic conventions are also used.

This information is displayed in the instructor's presentation	🖥
Demonstration	➤
Procedure	1 2 3
Warning or Caution	⚠
Hint	💡
Related or Additional Information	»
Facilitated Discussion	💬
User interface control	*Example text*
Window title	*Example text*

© Copyright. All rights reserved.

© Copyright. All rights reserved.

Contents

© Copyright. All rights reserved.

© Copyright. All rights reserved.

Course Overview

TARGET AUDIENCE

This course is intended for the following audiences:

- Application Consultant
- Development Consultant
- Developer

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 1 Introduction to Object-Oriented Programming

Lesson 1: Explaining the Object-Oriented Programming Model

Lesson Objectives

After completing this lesson, you will be able to:

- Describe the differences between the procedural and object-oriented programming models

Lesson 2: Analyzing and Designing with Unified Modeling Language (UML)

Lesson Objectives

After completing this lesson, you will be able to:

- Classify objects
- Model in UML

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 2

Fundamental Object-Oriented Syntax

Lesson 1: Creating Local Classes

Lesson Objectives

After completing this lesson, you will be able to:

- Define local classes
- Define attributes
- Create methods

Lesson 2: Creating Objects

Lesson Objectives

After completing this lesson, you will be able to:

- Create objects

Lesson 3: Accessing Methods and Attributes

Lesson Objectives

After completing this lesson, you will be able to:

- Call instance methods
- Call static methods
- Call functional methods
- Access public attributes

Lesson 4: Implementing Constructors in Local Classes

Lesson Objectives

After completing this lesson, you will be able to:

- Create and use constructors

Lesson 5: Implementing Class Constructors in Local Classes

Lesson Objectives

© Copyright. All rights reserved.

After completing this lesson, you will be able to:

- Create and use static constructors

© Copyright. All rights reserved.

UNIT 3 Inheritance and Casting

Lesson 1: Implementing Inheritance

Lesson Objectives

After completing this lesson, you will be able to:

- Explain generalization and specialization
- Implement inheritance
- Access elements of classes in inheritance

Lesson 2: Implementing Upcasts Using Inheritance

Lesson Objectives

After completing this lesson, you will be able to:

- Implement upcasts using inheritance

Lesson 3: Implementing Polymorphism Using Inheritance

Lesson Objectives

After completing this lesson, you will be able to:

- Explain polymorphism
- Implement polymorphism using inheritance

Lesson 4: Implementing Downcasts Using Inheritance

Lesson Objectives

After completing this lesson, you will be able to:

- Implement downcasts using inheritance
- Model class hierarchies

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 4 Interfaces and Casting

Lesson 1: Defining and Implementing Local Interfaces

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the use of interfaces
- Create generalization and specialization relationships using interfaces

Lesson 2: Implementing Polymorphism Using Interfaces

Lesson Objectives

After completing this lesson, you will be able to:

- Implement polymorphism using interfaces

Lesson 3: Integrating Class Models Using Interfaces

Lesson Objectives

After completing this lesson, you will be able to:

- Implement downcasts with interfaces
- Integrate different submodels using interfaces
- Create and use interface hierarchies

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 5 Object-Oriented Events

Lesson 1: Implementing Events in Local Classes

Lesson Objectives

After completing this lesson, you will be able to:

- Implement event-controlled method calls
- Trigger and handle events
- Register for events
- Explain visibility sections in event handling

Lesson 2: Implementing Events in Local Interfaces

Lesson Objectives

After completing this lesson, you will be able to:

- Implement events in local interfaces

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 6 Object-Oriented Repository Objects

Lesson 1: Creating Global Classes

Lesson Objectives

After completing this lesson, you will be able to:

- Create global classes
- Test global classes
- Use global classes

Lesson 2: Defining and Implementing Global Interfaces

Lesson Objectives

After completing this lesson, you will be able to:

- Define and implement global interfaces
- Import local classes and interfaces

Lesson 3: Using Further Functions of Class Builder

Lesson Objectives

After completing this lesson, you will be able to:

- Generate UML diagrams for global classes
- Implement inheritance in global classes
- Change the display of components in global classes

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 7

Examples for Object-Oriented ABAP Programming

Lesson 1: Using the ABAP List Viewer (ALV)

Lesson Objectives

After completing this lesson, you will be able to:

- Implement a simple ALV grid
- Handle the double-click event of the ALV grid

Lesson 2: Describing Business Add-Ins (BAdIs)

Lesson Objectives

After completing this lesson, you will be able to:

- Describe BAdIs

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 8

Global Classes in ABAP Development Tools

Lesson 1: Developing ABAP Programs with Eclipse-Based Tools

Lesson Objectives

After completing this lesson, you will be able to:

- Develop ABAP coding in Eclipse
- Use quick fixes and refactoring

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 9 Class-Based Exceptions

Lesson 1: Explaining Class-Based Exceptions

Lesson Objectives

After completing this lesson, you will be able to:

- Explain class-based exceptions
- Handle class-based exceptions
- Debug class-based exceptions

Lesson 2: Defining and Raising Exceptions

Lesson Objectives

After completing this lesson, you will be able to:

- Define global exception classes
- Raise class-based exceptions
- Propagate exceptions

Lesson 3: Implementing Advanced Exception Handling Techniques

Lesson Objectives

After completing this lesson, you will be able to:

- Explain the hierarchy of predefined exception classes
- Explain different ways of handling an exception
- Retry after exceptions
- Implement resumable exceptions
- Map exceptions

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 10 Unit Testing

Lesson 1: Unit Testing with ABAP Unit

Lesson Objectives

After completing this lesson, you will be able to:

- Perform unit testing
- Use test classes and test methods
- Perform advanced ABAP unit testing

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 11 Object-Oriented Design Patterns

Lesson 1: Implementing Advanced Object-Oriented Techniques

Lesson Objectives

After completing this lesson, you will be able to:

- Implement abstract classes
- Implement final classes
- Access internal tables with object references
- Call navigation methods
- Create objects with the NEW operator
- Work with conditions on dynamic type of an object reference
- Restrict the visibility of the instance constructor

Lesson 2: Implementing Factory Methods and Singleton Patterns

Lesson Objectives

After completing this lesson, you will be able to:

- Implement factory methods
- Implement the singleton pattern

Lesson 3: Implementing Factory Classes Using Friendship

Lesson Objectives

After completing this lesson, you will be able to:

- Implement friendship relationships

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 12 Runtime Type Services

Lesson 1: Using Runtime Type Identification (RTTI)

Lesson Objectives

After completing this lesson, you will be able to:

- Explain RTTI
- Describe structure type properties at runtime
- Describe object type properties at runtime

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 13 Persistent Objects and OO Transactions

Lesson 1: Implementing Persistent Objects

Lesson Objectives

After completing this lesson, you will be able to:

- Explain persistence services
- Examine persistent classes
- Create persistent objects
- Read data with persistent objects
- Create OO transactions

© Copyright. All rights reserved.

© Copyright. All rights reserved.

UNIT 14

Creation of a Comprehensive Object-Oriented Application

Lesson 1: Developing a Comprehensive Object-Oriented Application

Lesson Objectives

After completing this lesson, you will be able to:

- Develop a comprehensive object-oriented application

© Copyright. All rights reserved.