uCertify

Course Outline

Introduction to Java 11



28 Mar 2024

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1. Course Objective

Use Introduction to Java 11 course and lab to learn Java programming. Lab simulates real-world, hardware, software, and command-line interface environments and can be mapped to any text-book, course, or training. The Java course and lab cover the concepts like data structure, developing swing applications, communicating over HTTP, creating classes and methods; lists, logic, and loops; exceptions and threads; and accessing the database with JDBC and Derby.

2. Pre-Assessment

Pre-Assessment lets you identify the areas for improvement before you start your prep. It determines what students know about a topic before it is taught and identifies areas for improvement with question assessment before beginning the course.

3. Quizzes

Quizzes test your knowledge on the topics of the exam when you go through the course material. There is no limit to the number of times you can attempt it.



4. flashcards

Flashcards are effective memory-aiding tools that help you learn complex topics easily. The flashcard will help you in memorizing definitions, terminologies, key concepts, and more. There is no limit to the number of times learners can attempt these. Flashcards help master the key concepts.



5. Glossary of terms

uCertify provides detailed explanations of concepts relevant to the course through Glossary. It contains a list of frequently used terminologies along with its detailed explanation. Glossary defines the key terms.



6. Expert Instructor-Led Training

uCertify uses the content from the finest publishers and only the IT industry's finest instructors. They have a minimum of 15 years real-world experience and are subject matter experts in their fields. Unlike a live class, you can study at your own pace. This creates a personal learning experience and gives you all the benefit of hands-on training with the flexibility of doing it around your schedule 24/7.

7. ADA Compliant & JAWS Compatible Platform

uCertify course and labs are ADA (Americans with Disability Act) compliant. It is now more accessible to students with features such as:

- Change the font, size, and color of the content of the course
- Text-to-speech, reads the text into spoken words
- Interactive videos, how-tos videos come with transcripts and voice-over
- Interactive transcripts, each word is clickable. Students can clip a specific part of the video by clicking on a word or a portion of the text.

JAWS (Job Access with Speech) is a computer screen reader program for Microsoft Windows that reads the screen either with a text-to-speech output or by a Refreshable Braille display. Student can easily navigate uCertify course using JAWS shortcut keys.

8. State of the Art Educator Tools

uCertify knows the importance of instructors and provide tools to help them do their job effectively. Instructors are able to clone and customize course. Do ability grouping. Create sections. Design grade scale and grade formula. Create and schedule assessments. Educators can also move a student from self-paced to mentor-guided to instructor-led mode in three clicks.

9. Award Winning Learning Platform (LMS)

uCertify has developed an award winning, highly interactive yet simple to use platform. The SIIA CODiE Awards is the only peer-reviewed program to showcase business and education technology's finest products and services. Since 1986, thousands of products, services and solutions have been recognized for achieving excellence. uCertify has won CODiE awards consecutively for last 7 years:

- **2014**
    1. Best Postsecondary Learning Solution

- **2015**
    1. Best Education Solution

2. Best Virtual Learning Solution
3. Best Student Assessment Solution
4. Best Postsecondary Learning Solution
5. Best Career and Workforce Readiness Solution
6. Best Instructional Solution in Other Curriculum Areas
7. Best Corporate Learning/Workforce Development Solution

- **2016**
    1. Best Virtual Learning Solution
    2. Best Education Cloud-based Solution
    3. Best College and Career Readiness Solution
    4. Best Corporate / Workforce Learning Solution
    5. Best Postsecondary Learning Content Solution
    6. Best Postsecondary LMS or Learning Platform
    7. Best Learning Relationship Management Solution

- **2017**
    1. Best Overall Education Solution
    2. Best Student Assessment Solution
    3. Best Corporate/Workforce Learning Solution
    4. Best Higher Education LMS or Learning Platform

- **2018**
    1. Best Higher Education LMS or Learning Platform
    2. Best Instructional Solution in Other Curriculum Areas
    3. Best Learning Relationship Management Solution

- **2019**
    1. Best Virtual Learning Solution
    2. Best Content Authoring Development or Curation Solution
    3. Best Higher Education Learning Management Solution (LMS)

- **2020**

1. Best College and Career Readiness Solution
2. Best Cross-Curricular Solution
3. Best Virtual Learning Solution

10. Chapter & Lessons

uCertify brings these textbooks to life. It is full of interactive activities that keeps the learner engaged. uCertify brings all available learning resources for a topic in one place so that the learner can efficiently learn without going to multiple places. Challenge questions are also embedded in the chapters so learners can attempt those while they are learning about that particular topic. This helps them grasp the concepts better because they can go over it again right away which improves learning.

Learners can do Flashcards, Exercises, Quizzes and Labs related to each chapter. At the end of every lesson, uCertify courses guide the learners on the path they should follow.

Syllabus

Chapter 1: Introduction

- How This Course Is Organized?
- Who Should Read This Course?
- Conventions Used in This Course

Chapter 2: Getting Started with Java

- The Java Language
- Object-Oriented Programming
- Objects and Classes

- Attributes and Behavior
- Organizing Classes and Class Behavior
- Summary

Chapter 3: The ABCs of Programming

- Statements and Expressions
- Variables and Data Types
- Comments
- Literals
- Expressions and Operators
- String Arithmetic
- Summary

Chapter 4: Working with Objects

- Creating New Objects
- Using Class and Instance Variables
- Calling Methods
- References to Objects

- Casting Objects and Primitive Types
- Comparing Object Values and Classes
- Summary

Chapter 5: Lists, Logic, and Loops

- Arrays
- Block Statements
- if Conditionals
- Switch Conditionals
- The Ternary Operator
- for Loops
- while and do Loops
- Breaking Out of Loops
- Summary

Chapter 6: Creating Classes and Methods

- Defining Classes
- Creating Instance and Class Variables
- Creating Methods

- Creating Java Applications
- Java Applications and Arguments
- Creating Methods with the Same Name
- Constructors
- Overriding Methods
- Summary

Chapter 7: Packages, Interfaces, and Other Class Features

- Modifiers
- Static Variables and Methods
- Final Classes, Methods, and Variables
- Abstract Classes and Methods
- Packages
- Creating Your Own Packages
- Interfaces
- Creating and Extending Interfaces
- Summary

Chapter 8: Exceptions and Threads

- Exceptions
- Managing Exceptions
- Declaring Methods That Might Throw Exceptions
- Creating and Throwing Exceptions
- When Not to Use Exceptions
- Threads
- Summary

Chapter 9: Data Structures

- Moving Beyond Arrays
- Java Structures
- Generics
- Enumerations
- Summary

Chapter 10: Creating a Graphical User Interface

- Creating an Application
- Working with Components

- Lists
- The Java Class Library
- Summary

Chapter 11: Building an Interface

- Swing Features
- Summary

Chapter 12: Arranging Components on a User Interface

- Basic Interface Layout
- Mixing Layout Managers
- Card Layout
- Summary

Chapter 13: Responding to User Input

- Event Listeners
- Working with Methods
- Summary

Chapter 14: Creating Java2D Graphics

- The Graphics2D Class
- Drawing Text
- Color
- Drawing Lines and Polygons
- Summary

Chapter 15: Developing Swing Applications

- Improving Performance with SwingWorker
- Grid Bag Layout
- Summary

Chapter 16: Using Inner Classes and Lambda Expressions

- Inner Classes
- Lambda Expressions
- Variable Type Inference
- Summary

Chapter 17: Working with Input and Output

- Introduction to Streams

- Byte Streams
- Filtering a Stream
- Character Streams
- Files and Paths
- Summary

Chapter 18: Communicating Over HTTP

- Networking in Java
- The java.nio Package
- Summary

Chapter 19: Accessing Databases with JDBC and Derby

- Java Database Connectivity
- Summary

Chapter 20: Reading and Writing RSS Feeds

- Using XML
- Designing an XML Dialect
- Processing XML with Java

- Processing XML with XOM
- Summary

Chapter 21: Making Web Service Requests

- Introduction to XML-RPC
- Communicating with XML-RPC
- Choosing an XML-RPC Implementation
- Using an XML-RPC Web Service
- Creating an XML-RPC Web Service
- Summary

Chapter 22: Writing a Game with Java

- Playing a Game
- Summary

Chapter 23: Appendix A: Using the NetBeans Integrated Development Environment

- Installing NetBeans
- Creating a New Project
- Creating a New Java Class

- Running the Application
- Fixing Errors
- Expanding and Shrinking a Pane
- Exploring NetBeans

Chapter 24: Appendix B: Fixing Package Not Visible Errors in NetBeans

- Adding Module Info

Chapter 25: Appendix C: Using the Java Development Kit

- Choosing a Java Development Tool
- Configuring the Java Development Kit
- Using a Text Editor
- Creating a Sample Program

Chapter 26: Appendix D: Programming with the Java Development Kit

- Overview of the JDK
- java, the Java Virtual Machine
- The javac Compiler
- The javadoc Documentation Tool

- The jar Java File Archival Tool
- The jdb Debugger
- Using System Properties
- Writing Java Statements in a Shell

11. Practice Test

Here's what you get

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PRE-ASSESSMENTS QUESTIONS	POST-ASSESSMENTS QUESTIONS

Features

Each question comes with detailed remediation explaining not only why an answer option is correct but also why it is incorrect.

Unlimited Practice

Each test can be taken unlimited number of times until the learner feels they are prepared. Learner can review the test and read detailed remediation. Detailed test history is also available.

Each test set comes with learn, test and review modes. In learn mode, learners will attempt a question and will get immediate feedback and complete remediation as they move on to the next question. In

test mode, learners can take a timed test simulating the actual exam conditions. In review mode, learners can read through one item at a time without attempting it.

12. Live Labs

The benefits of live-labs are:

- Exam based practical tasks
- Real equipment, absolutely no simulations
- Access to the latest industry technologies
- Available anytime, anywhere on any device
- Break and Reset functionality
- No hardware costs

Lab Tasks

The ABCs of Programming

- Using a Variable
- Using Multiple Variables
- Creating a Local Variable
- Using Comments
- Using the Modulus Operator
- Using the Logical AND Operator
- Using the Logical OR Operator
- Using the instanceOf Operator
- Using Relational Operators
- Concatenating Two Strings

Working with Objects

- Creating an Object
- Creating a Class Variable
- Creating a Reference to the Object
- Using Java Primitives
- Converting a Primitive Type to Object

Lists, Logic, and Loops

- Declaring a Multidimensional Array
- Declaring an Array
- Using the if Statement
- Using the if-else Statement
- Using the switch Statement
- Using the Ternary Operator
- Using the for Statement
- Using the while Loop
- Using the do/while Loop
- Using the break Statement

Creating Classes and Methods

- Using the this Keyword
- Creating a Method
- Creating the main() Method
- Passing Parameters to a Method
- Creating a Constructor
- Overloading a Method
- Using Method Overriding

Packages, Interfaces, and Other Class Features

- Using the Access Modifier
- Using the Static Method
- Using Static Variables
- Importing a Package
- Using the Abstract Method

- Creating an Interface

Exceptions and Threads

- Using the try/catch Block
- Using the finally Block
- Using the throws Keyword

Data Structures

- Creating an Enumeration

Creating a Graphical User Interface

- Creating a Form

Building an Interface

- Creating a Signup Form
- Creating a Textbox and a Progress Bar

Arranging Components on a User Interface

- Creating a Calendar

Responding to User Input

- Creating a Calculator

Creating Java2D Graphics

- Drawing a Rectangle and Adding Color to it

Developing Swing Applications

- Creating a Graphical User Interface

Using Inner Classes and Lambda Expressions

- Using the Static Inner Class
- Using a Lambda Expression

Working with Input and Output

- Writing Values in a File
- Reading the Content of a File

Accessing Databases with JDBC and Derby

- Working with JDBC Statements
- Executing a SQL Query
- Displaying Records
- Reading the Content of a Webpage

Reading and Writing RSS Feeds

- Creating an XML Document

Here's what you get

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LIVE LABS

13. Post-Assessment

After completion of the uCertify course Post-Assessments are given to students and often used in conjunction with a Pre-Assessment to measure their achievement and the effectiveness of the exam.

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