Glossary

Introduction to Java Environment and Ecosystem

Welcome! This alphabetized glossary contains many terms used in this module. Understanding these terms is essential when working in the industry, participating in user groups, and participating in other certificate programs.

Term	Definition
Abstract class	A class that cannot be instantiated and is meant to be subclassed, often containing abstract methods that subclasses must implement.
Abstract method	A method without a body that subclasses of an abstract class must implement.
Access modifier	A keyword that defines the scope and visibility of a class, method, or variable (for example, public, private, or protected).
Annotation	A metadata tag in code that provides information to the compiler or at runtime and is often used for configuration or code generation.
Application Programming Interface (API)	A set of rules and tools that allow different software applications to communicate with each other.
Applet	A small Java program that runs within a web browser or applet viewer.
Argument	A value that is passed to a function or method when it is called.
Array	A data structure that holds a fixed number of elements of the same type in a contiguous memory location.
Autoboxing	The automatic conversion of a primitive data type into its corresponding wrapper class object.
Boolean	A data type that represents one of the two values: true or false.
Break statement	A control flow statement that is used to exit a loop or switch statement prematurely.
Bytecode	A low-level, platform-independent code generated by the Java compiler that runs on the Java Virtual Machine (JVM).
Casting	The process of converting one data type into another.
catch block	A block of code used to handle exceptions in a try-catch structure.
Checked exception	An exception must be declared in the method signature or handled using a try-catch block.
Class	A blueprint for creating objects and defining attributes (fields) and behaviors (methods).
ClassLoader	A part of the Java Runtime Environment (JRE) responsible for dynamically loading classes into memory.
Constructor	A special method that is used to initialize objects when a class is instantiated.
continue statement	A control statement that skips the current iteration of a loop and proceeds with the next iteration.
Data encapsulation	The practice of restricting direct access to object data and allowing manipulation through methods.
Data hiding	The concept of making class variables private and accessible only through public methods to ensure security.
Deque (Double-ended queue)	A data structure that allows insertion and deletion from both ends.
do-while loop	A control structure that executes a block of code at least once before checking the condition.
Dynamic binding	The process of resolving method calls at runtime instead of compile time.
Enumeration (enum)	A special data type used to define a set of named constants.
Exception	An event that disrupts the normal execution of a program, requiring special handling.
Exception handling	A programming mechanism for handling runtime errors and ensuring smooth program execution.
Explicit casting	A type conversion that requires the programmer to specify the target type.
Extends keyword	A keyword used in Java for class inheritance, allowing a subclass to inherit from a superclass.
final class	A class that cannot be extended or subclassed.
final keyword	A keyword used to define constants, prevent method overriding, or restrict class inheritance.
finally block	A block of code that executes after a try-catch structure, regardless of whether an exception occurs.
Float	A primitive data type that represents decimal numbers with single precision.
for loop	A control structure used to iterate over a range of values with a specified condition.
Garbage collection	The automatic process of reclaiming unused memory in Java to prevent memory leaks.
Generic class	A class that can work with different data types using type parameters.
HashMap	A data structure that stores key-value pairs, allowing fast retrieval of values based on keys.
Heap memory	A memory area where objects are dynamically allocated at runtime.
if-else statement	A control structure used for conditional execution based on Boolean expressions.

Term	**Definition**
Immutable object	An object whose state cannot be changed after creation.
Import statement	A statement used to include Java packages or specific classes in a program.
Inheritance	A mechanism where a subclass derives properties and behaviors from a parent class.
Interface	A blueprint for a class that defines abstract methods, which must be implemented by subclasses.
Iterator	An object that provides a way to traverse elements in a collection sequentially.
Java Archive (JAR)	A package file format that contains compiled Java classes and resources.
Java Development Kit (JDK)	A software development kit used to develop Java applications, including a compiler and libraries.
Java Runtime Environment (JRE)	A software package that provides the libraries and components needed to run Java applications.
Java Virtual Machine (JVM)	A virtual machine that executes Java bytecode and provides platform independence.
List	A collection that maintains an ordered sequence of elements and allows duplicates.
Local variable	A variable declared inside a method or block, accessible only within that scope.
Loop	A control structure used to execute a block of code repeatedly while a condition is true.
Method	A block of code that performs a specific task when called.
Method overloading	Defining multiple methods with the same name but different parameter lists in the same class.
Method overriding	Redefining a method in a subclass that is already defined in a parent class.
Multithreading	A programming technique that allows multiple threads to run concurrently.
Mutable object	An object whose state can be changed after creation.
Nested class	A class defined inside another class.
NullPointerException	A runtime exception that occurs when attempting to access an object reference that is null.
Object	An instance of a class that encapsulates state (fields) and behavior (methods).
Overriding	The process of providing a new implementation for a method in a subclass that already exists in the superclass.
Package	A namespace that groups related Java classes and interfaces together.
Polymorphism	The ability of an object to take multiple forms, allowing methods to be called on objects of different types.
Primitive data type	A basic data type in Java such as int, char, float, or Boolean.
Recursion	A programming technique where a method calls itself to solve a problem.
Reflection	The ability of a program to inspect and manipulate its own structure at runtime.
Serialization	The process of converting an object into a byte stream for storage or transmission.
Stack memory	A memory area used for storing method call frames and local variables.
Static method	A method that belongs to the class rather than instances of the class.
String	A sequence of characters, implemented as an immutable object in Java.
Super keyword	A keyword used to refer to the parent class of an object.
Synchronized block	A block of code that ensures thread safety by allowing only one thread to execute at a time.
Thread	A lightweight process that runs concurrently with other threads.
try-catch block	A control structure used to handle exceptions by catching errors and executing alternative code.
Type casting	The process of converting one data type into another.
Variable	A named storage location for data in a program.
Wrapper class	A class that provides an object representation for primitive data types.
While loop	A control structure that executes a block of code as long as a condition is true.

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