

# CS-22: Programming with Java.

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## Unit 1: History, Introduction and Language Basics, Classes and Objects

- Q:** What is Java?  
**A:** Java is a high-level, object-oriented programming language developed by Sun Microsystems, used to build platform-independent applications.
  - Q:** What is the JVM?  
**A:** The Java Virtual Machine is a part of the JDK that executes Java bytecode and enables platform independence.
  - Q:** Define JDK.  
**A:** Java Development Kit is a software development environment that provides tools to write, compile, and run Java programs.
  - Q:** What is a keyword in Java?  
**A:** Keywords are reserved words in Java like `class`, `if`, `else`, which have predefined meanings.
  - Q:** What is the use of the `final` keyword?  
**A:** It is used to define constants or prevent inheritance or method overriding.
  - Q:** What is a variable?  
**A:** A variable is a container used to store data during the execution of a program.
  - Q:** Define type casting.  
**A:** Type casting is converting a variable from one data type to another, e.g., `int` to `float`.
  - Q:** What is the purpose of an array?  
**A:** An array is a collection of elements of the same data type stored in contiguous memory locations.
  - Q:** Define looping statement.  
**A:** A loop is a control structure that repeats a block of code until a condition is met.
  - Q:** What is the command-line argument?  
**A:** It is a way to pass arguments to the `main()` method during program execution via the command line.
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## Unit 2: Inheritance, Java Packages

- Q:** What is inheritance in Java?  
**A:** Inheritance allows a class to inherit properties and methods from another class using the `extends` keyword.
- Q:** What is the use of access specifiers?  
**A:** Access specifiers define the scope of class members (public, private, protected, default).
- Q:** Define interface in Java.  
**A:** An interface is a reference type in Java used to specify a set of abstract methods that a class must implement.
- Q:** What is method overriding?  
**A:** Overriding means defining a subclass method with the same signature as a superclass method to provide specific implementation.
- Q:** Define abstract class.  
**A:** An abstract class cannot be instantiated and may contain abstract methods which must be implemented by subclasses.
- Q:** What is a package in Java?  
**A:** A package is a namespace that organizes a set of related classes and interfaces.
- Q:** What is the purpose of `import` in Java?  
**A:** The `import` statement allows access to classes from other packages.

8. **Q:** Name any two classes in the `java.util` package.  
**A:** `ArrayList`, `HashMap`
  9. **Q:** What is the difference between static and normal import?  
**A:** Normal import imports classes; static import imports static members.
  10. **Q:** What is the universal superclass in Java?  
**A:** The `Object` class is the superclass of all Java classes.
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## Unit 3: Exception Handling, Threading, and Streams (Input and Output)

1. **Q:** What is an exception?  
**A:** An exception is an event that disrupts the normal flow of a program during execution.
  2. **Q:** Define try-catch block.  
**A:** A try-catch block handles exceptions in Java, where `try` holds risky code and `catch` handles the exception.
  3. **Q:** What is the use of the `throw` keyword?  
**A:** The `throw` keyword is used to manually throw an exception in Java.
  4. **Q:** What is a thread?  
**A:** A thread is a lightweight subprocess that can run concurrently with other threads.
  5. **Q:** What is multithreading?  
**A:** Multithreading is the concurrent execution of two or more threads.
  6. **Q:** Define `synchronized` keyword.  
**A:** It is used to control access to a block of code or method in a multithreaded environment.
  7. **Q:** What is a daemon thread?  
**A:** A daemon thread is a low-priority thread that runs in the background and dies when all user threads finish.
  8. **Q:** What is the purpose of `FileReader` class?  
**A:** `FileReader` is used to read characters from a file.
  9. **Q:** What is a byte stream?  
**A:** Byte streams handle input and output of raw binary data.
  10. **Q:** Define `BufferedWriter`.  
**A:** `BufferedWriter` is used to write text to a character-output stream efficiently.
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## Unit 4: JavaFX Basics and Event-Driven Programming

1. **Q:** What is JavaFX?  
**A:** JavaFX is a platform for creating desktop GUI applications in Java.
2. **Q:** What is an event?  
**A:** An event is a signal that something has occurred, like a mouse click or key press.
3. **Q:** Define `EventHandler`.  
**A:** An `EventHandler` is an interface used to handle events like button clicks.
4. **Q:** What is `Scene` in JavaFX?  
**A:** A `Scene` is the container for all content in a JavaFX application window.
5. **Q:** Define `Pane`.  
**A:** A `Pane` is a layout container that holds UI components.
6. **Q:** What is `ImageView`?  
**A:** `ImageView` is a node used to display images in JavaFX.

7. **Q:** What is property binding?  
**A:** Property binding links UI control values so that a change in one reflects in the other.
  8. **Q:** What is an anonymous inner class?  
**A:** It is a class without a name used to instantiate objects with certain modifications.
  9. **Q:** What is animation in JavaFX?  
**A:** Animation is the change of properties over time for UI components.
  10. **Q:** What is the use of `setOnAction()`?  
**A:** It is used to define actions to be performed when an event occurs, like a button click.
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## Unit 5: JavaFX UI Controls and Multimedia

1. **Q:** What is a `Button` in JavaFX?  
**A:** A `Button` is a control that performs an action when clicked.
  2. **Q:** What is the use of a `TextField`?  
**A:** A `TextField` is a text input control where users can enter text.
  3. **Q:** What is a `CheckBox`?  
**A:** A `CheckBox` is a control that allows selection of multiple options.
  4. **Q:** Define `ComboBox`.  
**A:** A `ComboBox` allows users to choose from a dropdown list of options.
  5. **Q:** What is the function of `Slider`?  
**A:** A `Slider` is used to select a value from a range using a sliding knob.
  6. **Q:** What is a `Label`?  
**A:** A `Label` is a control used to display a text string.
  7. **Q:** What is `ListView`?  
**A:** `ListView` displays a scrollable list of items.
  8. **Q:** Define `TextArea`.  
**A:** A `TextArea` is a multi-line text input control.
  9. **Q:** What is `MediaPlayer` in JavaFX?  
**A:** `MediaPlayer` is used to play audio and video media files.
  10. **Q:** What is the role of `ScrollBar`?  
**A:** A `ScrollBar` allows the user to scroll through content that is too large to fit in the visible area.
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# IMP Full Forms in Java

## Unit 1:

1. **JVM** – Java Virtual Machine
  2. **JDK** – Java Development Kit
  3. **JRE** – Java Runtime Environment
  4. **IDE** – Integrated Development Environment
  5. **OOP** – Object Oriented Programming
  6. **JIT** – Just-In-Time (Compiler)
  7. **API** – Application Programming Interface
  8. **CMD** – Command
  9. **EOF** – End Of File
  10. **GUI** – Graphical User Interface
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## Unit 2:

1. **API** – Application Programming Interface
  2. **OOP** – Object Oriented Programming
  3. **JVM** – Java Virtual Machine
  4. **JRE** – Java Runtime Environment
  5. **JDK** – Java Development Kit
  6. **IDE** – Integrated Development Environment
  7. **JAR** – Java ARchive
  8. **RTTI** – Run-Time Type Information
  9. **JSP** – Java Server Pages
  10. **POJO** – Plain Old Java Object
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## Unit 3:

1. **I/O** – Input/Output
2. **EOF** – End Of File
3. **JVM** – Java Virtual Machine
4. **JDK** – Java Development Kit
5. **JRE** – Java Runtime Environment
6. **IOE** – Input Output Exception

7. **OOP** – Object Oriented Programming
  8. **URL** – Uniform Resource Locator
  9. **CSV** – Comma-Separated Values
  10. **CPU** – Central Processing Unit
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## Unit 4:

1. **GUI** – Graphical User Interface
  2. **FXML** – FX Markup Language
  3. **RGB** – Red Green Blue (Color Model)
  4. **CSS** – Cascading Style Sheets
  5. **UI** – User Interface
  6. **API** – Application Programming Interface
  7. **IDE** – Integrated Development Environment
  8. **GIF** – Graphics Interchange Format
  9. **SVG** – Scalable Vector Graphics
  10. **URL** – Uniform Resource Locator
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## Unit 5:

1. **UI** – User Interface
  2. **MP3** – MPEG Layer 3
  3. **MP4** – MPEG Layer 4
  4. **WAV** – Waveform Audio File Format
  5. **MPEG** – Moving Picture Experts Group
  6. **HD** – High Definition
  7. **FX** – Effects (commonly used as short form in JavaFX)
  8. **GIF** – Graphics Interchange Format
  9. **AVI** – Audio Video Interleave
  10. **AAC** – Advanced Audio Coding
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## IMP Blanks :

### Unit 1:

1. Java was developed by \_\_\_\_\_ at Sun Microsystems.  
➤ **James Gosling**
  2. \_\_\_\_\_ is used to convert Java source code into bytecode.  
➤ **javac**
  3. The entry point of any Java program is the \_\_\_\_\_ method.  
➤ **main**
  4. Java supports \_\_\_\_\_ typing, which means type checking is done at compile time.  
➤ **static**
  5. \_\_\_\_\_ loop is used when the number of iterations is known.  
➤ **for**
  6. The \_\_\_\_\_ statement is used to terminate a loop prematurely.  
➤ **break**
  7. A \_\_\_\_\_ in Java is a blueprint for creating objects.  
➤ **class**
  8. The \_\_\_\_\_ keyword is used to refer to the current object.  
➤ **this**
  9. An array in Java is a \_\_\_\_\_ data structure.  
➤ **homogeneous**
  10. \_\_\_\_\_ keyword is used to create an object in Java.  
➤ **new**
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### Unit 2:

1. The keyword used for inheritance in Java is \_\_\_\_\_.  
➤ **extends**
2. A class that cannot be instantiated is called an \_\_\_\_\_ class.  
➤ **abstract**
3. \_\_\_\_\_ is used to achieve multiple inheritance in Java.  
➤ **interface**
4. A method in a subclass that has the same name and parameters as in the superclass is said to be \_\_\_\_\_.  
➤ **overridden**
5. The root package of Java is \_\_\_\_\_.  
➤ **java**
6. The keyword used to access superclass members is \_\_\_\_\_.  
➤ **super**
7. \_\_\_\_\_ keyword prevents a class from being inherited.  
➤ **final**
8. Java supports \_\_\_\_\_ import to avoid naming conflicts.  
➤ **static**

9. \_\_\_\_\_ class is the parent of all Java classes.  
➤ **Object**
  10. \_\_\_\_\_ package contains utility classes like ArrayList and HashMap.  
➤ **java.util**
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## Unit 3:

1. \_\_\_\_\_ block is used to catch exceptions.  
➤ **catch**
  2. The keyword \_\_\_\_\_ is used to throw an exception manually.  
➤ **throw**
  3. \_\_\_\_\_ method is used to start a thread.  
➤ **start**
  4. \_\_\_\_\_ is a lightweight process in Java.  
➤ **Thread**
  5. \_\_\_\_\_ keyword is used for thread synchronization.  
➤ **synchronized**
  6. \_\_\_\_\_ streams handle character data.  
➤ **Character**
  7. \_\_\_\_\_ streams handle raw binary data.  
➤ **Byte**
  8. The \_\_\_\_\_ class is used to read data from a file character by character.  
➤ **FileReader**
  9. A thread that runs in the background is called a \_\_\_\_\_ thread.  
➤ **Daemon**
  10. \_\_\_\_\_ class allows reading of data line-by-line efficiently.  
➤ **BufferedReader**
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## Unit 4:

1. In JavaFX, \_\_\_\_\_ represents the container for all content.  
➤ **Scene**
2. \_\_\_\_\_ method is used to launch a JavaFX application.  
➤ **launch()**
3. \_\_\_\_\_ is used to display an image in JavaFX.  
➤ **ImageView**
4. \_\_\_\_\_ are used to manage layout in JavaFX.  
➤ **Panes**
5. \_\_\_\_\_ events are generated when the user clicks the mouse.  
➤ **Mouse**
6. \_\_\_\_\_ binding links two properties so they stay synchronized.  
➤ **Property**
7. \_\_\_\_\_ class handles actions like button clicks.  
➤ **EventHandler**
8. \_\_\_\_\_ method sets actions for UI controls like buttons.  
➤ **setOnAction()**

9. Anonymous inner classes are used for \_\_\_\_\_ event handling.  
➤ **simplified**
  10. JavaFX supports \_\_\_\_\_ for creating visual transitions.  
➤ **animations**
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## Unit 5:

1. \_\_\_\_\_ control is used to allow user text input.  
➤ **TextField**
2. A \_\_\_\_\_ is used to group a set of options where only one can be selected.  
➤ **RadioButton**
3. \_\_\_\_\_ control is used to select a value from a range.  
➤ **Slider**
4. The \_\_\_\_\_ control displays a list of items in a scrollable format.  
➤ **ListView**
5. \_\_\_\_\_ control is used to play media files in JavaFX.  
➤ **MediaPlayer**
6. \_\_\_\_\_ is used to display simple text on the UI.  
➤ **Label**
7. \_\_\_\_\_ is a drop-down menu used for selecting an item.  
➤ **ComboBox**
8. \_\_\_\_\_ is a scrollable area for long text input.  
➤ **TextArea**
9. The \_\_\_\_\_ control allows video playback in JavaFX.  
➤ **MediaView**
10. \_\_\_\_\_ displays on-screen vertical or horizontal scrolling.  
➤ **ScrollBar**