Unit 1: Introduction to Java

1. What is Java Bytecode?
   a) Executable code
   b) Machine code
   c) **Intermediate code**
   d) Assembly code

2. Which of the following is NOT a feature of Java?
   a) Platform-independent
   b) Object-oriented
   c) **Procedure-oriented**
   d) Multithreaded

3. What is the role of the Java Virtual Machine (JVM)?
   a) Compile Java code
   b) **Execute Bytecode**
   c) Write Java programs
   d) Debug Java programs

4. Which of the following is a Java keyword?
   a) **class**
   b) struct
   c) include
   d) define

5. What is the extension of a Java source file?
   a) .class
   b) .exe
   c) **.java**
   d) .jar

6. Which command is used to compile a Java program?
   a) java
   b) **javac**
   c) javadoc
   d) jvm

7. What is the default value of an uninitialized integer variable in Java?
   a) null
   b) 0.0
   c) **0**
   d) undefined

8. Which of the following is a valid Java identifier?
   a) 1variable
   b) variable-name
   c) **variableName**
   d) variable name

9. What is the main purpose of the `public static void main(String[] args)` method in Java?
   a) To define a class
   b) **To start the execution of a Java program**
   c) To compile a Java program
   d) To debug a Java program

10. Which of the following is NOT a Java primitive data type?
    a) int
    b) float
    c) **String**
    d) boolean

Unit 2: Tokens, Expressions, and Control Structures

1. Which of the following is a valid declaration of a boolean variable in Java?
   a) boolean b = 1;
   b) **boolean b = true;**
   c) boolean b = "true";
   d) boolean b = True;

2. What is the result of `10 % 3` in Java?
   a) 0
   b) **1**
   c) 3
   d) 10

3. Which operator is used for logical AND in Java?
   a) &
   b) **&&**
   c) ||
   d) |

4. What is the default value of a boolean variable in Java?
   a) null
   b) **false**
   c) true
   d) 0

5. Which of the following is NOT a valid control structure in Java?
   a) if-else
   b) switch
   c) **repeat-until**
   d) for

6. What is the output of `System.out.println(5 > 3 ? "Yes" : "No");` ? a) No
   b) **Yes**
   c) true
   d) false

7. Which of the following is a valid way to declare an array in Java?
   a) int arr[] = new int[5];
   b) int[] arr = new int[5];
   c) int arr = new int[5];
   d) **Both a and b**

8. What is the purpose of the `break` statement in Java?
   a) To terminate the program
   b) **To exit a loop or switch statement**
   c) To skip the current iteration
   d) To return a value

9. Which of the following is a valid Java comment?
   a)
   b) **// Comment**
   c) /* Comment
   d) ** Comment **

10. What is the result of `System.out.println(10 + 20 + "30");`? a) 3030
    b) **3030**
    c) 60
    d) 102030

Unit 3: Object-Oriented Programming Concepts

1. What is the keyword used to create an instance of a class in Java?
   a) class
   b) **new**
   c) this
   d) instance

2. Which of the following is NOT a principle of OOP?
   a) Encapsulation
   b) Inheritance
   c) Polymorphism
   d) **Compilation**

3. What is the purpose of the `this` keyword in Java?
   a) To create a new object
   b) **To refer to the current object**
   c) To call a superclass method
   d) To define a constructor

4. Which of the following is true about constructors in Java?
   a) They can return a value
   b) They can be inherited
   c) **They have the same name as the class**
   d) They can be static

5. What is method overloading in Java?
   a) Defining multiple methods with the same name but different return types
   b) **Defining multiple methods with the same name but different parameters**
   c) Defining multiple methods with the same name and parameters
   d) Defining multiple methods with different names

6. What is the default access modifier for a class in Java?
   a) public
   b) private
   c) **package-private (default)**
   d) protected

7. Which of the following is true about recursion in Java?
   a) It is faster than iteration
   b) **It involves a method calling itself**
   c) It cannot be used with methods
   d) It is not supported in Java

8. What is the purpose of the `super` keyword in Java?
   a) To create a new object
   b) **To refer to the superclass**
   c) To call a subclass method
   d) To define a constructor

9. Which of the following is true about inner classes in Java?
   a) They cannot access outer class members
   b) **They can access outer class members**
   c) They are always static
   d) They cannot be instantiated

10. What is the output of the following code?

```
class Test {
    int x = 10;
    void display() {
        System.out.println(x);
    }
}
public class Main {
    public static void main(String[] args) {
        Test t = new Test();
        t.display();
    }
}
```

   a) 0
   b) **10**
   c) null
   d) Compilation error

Unit 4: Inheritance & Packaging

1. Which keyword is used to implement inheritance in Java?
   a) implements
   b) **extends**
   c) inherits
   d) super

2. What is the purpose of the `super` keyword in Java?
   a) To create a new object
   b) **To refer to the superclass**
   c) To call a subclass method
   d) To define a constructor

3. Which of the following is true about method overriding in Java?
   a) It is done in the same class
   b) **It requires the method name and parameters to be the same**
   c) It is not allowed in Java
   d) It does not involve inheritance

4. What is the root class of all classes in Java?
   a) String

b) **Object**
c) Class
d) Main

5. Which of the following is true about abstract classes in Java?
   a) They cannot have constructors
   b) **They cannot be instantiated**
   c) They cannot have methods
   d) They cannot be inherited

6. What is the purpose of the `final` keyword in Java?
   a) To make a class abstract
   b) **To prevent inheritance or overriding**
   c) To make a class static
   d) To make a class private

7. Which of the following is true about packages in Java?
   a) They cannot contain classes
   b) **They help in organizing classes**
   c) They are not supported in Java
   d) They cannot be imported

8. What is the purpose of the `import` statement in Java?
   a) To define a package
   b) **To include classes from other packages**
   c) To create a new package
   d) To compile a Java program

9. Which of the following is true about interfaces in Java?
   a) They can have constructors
   b) **They can have abstract methods**
   c) They cannot be implemented
   d) They cannot have variables

10. What is the output of the following code?

```java
class A {
    void display() {
        System.out.println("Class A");
    }
}
class B extends A {
    void display() {
        System.out.println("Class B");
    }
}
public class Main {
    public static void main(String[] args) {
        A obj = new B();
        obj.display();
    }
}
```

a) Class A
b) **Class B**

c) Compilation error
d) Runtime error

Unit 5: Handling Error/Exception

1. Which keyword is used to handle exceptions in Java?
   a) try
   b) catch
   c) finally
   d) **All of the above**

2. What is the purpose of the `finally` block in Java?
   a) To handle exceptions
   b) **To execute code regardless of whether an exception occurs**
   c) To throw exceptions
   d) To define custom exceptions

3. Which of the following is a checked exception in Java?
   a) NullPointerException
   b) **IOException**
   c) ArithmeticException
   d) ArrayIndexOutOfBoundsException

4. What is the purpose of the `throw` keyword in Java?
   a) To handle exceptions
   b) **To explicitly throw an exception**
   c) To define a custom exception
   d) To catch exceptions

5. Which of the following is true about custom exceptions in Java?
   a) They cannot extend the `Exception` class
   b) **They must extend the `Exception` class or its subclasses**
   c) They cannot be thrown
   d) They are always unchecked exceptions

6. What is the output of the following code?

```java
public class Main {
    public static void main(String[] args) {
        try {
            int x = 10 / 0;
        } catch (ArithmeticException e) {
            System.out.println("Exception caught");
        } finally {
            System.out.println("Finally block executed");
        }
    }
}
```

   a) Exception caught
   b) Finally block executed
   c) **Both a and b**
   d) Compilation error

7. Which of the following is true about the `throws` keyword in Java?
   a) It is used to handle exceptions
   b) **It is used to declare exceptions that a method might throw**
   c) It is used to throw exceptions
   d) It is used to define custom exceptions

8. What is the purpose of the `try-with-resources` statement in Java?
   a) To handle exceptions
   b) **To automatically close resources after use**
   c) To define custom exceptions
   d) To throw exceptions

9. Which of the following is NOT a runtime exception in Java?
   a) NullPointerException
   b) ArithmeticException
   c) **IOException**
   d) ArrayIndexOutOfBoundsException

10. What is the output of the following code?

```
public class Main {
    public static void main(String[] args) {
        try {
            throw new Exception("Custom Exception");
        } catch (Exception e) {
            System.out.println(e.getMessage());
        }
    }
}
```

   a) Custom Exception
   b) **Custom Exception**
   c) Compilation error
   d) Runtime error

Unit 6: Handling Strings

1. Which of the following is a valid way to create a String in Java?
   a) String s = new String("Hello");
   b) String s = "Hello";
   c) **Both a and b**
   d) None of the above

2. What is the output of `"Hello".length()` ? a) 4
   b) **5**
   c) 6
   d) Compilation error

3. Which method is used to concatenate two strings in Java?
   a) concat()
   b) + operator
   c) **Both a and b**
   d) None of the above

4. What is the output of `"Hello".charAt(1)`? a) H
   b) **e**
   c) l
   d) o

5. Which of the following is true about the `StringBuffer` class in Java?
   a) It is immutable
   b) **It is mutable**
   c) It cannot be modified
   d) It is slower than `String`

6. What is the output of `"Hello".equals("hello")`? a) true
   b) **false**
   c) Compilation error
   d) Runtime error

7. Which method is used to convert a String to lowercase in Java?
   a) toLowerCase()
   b) toLower()
   c) **toLowerCase()**
   d) lowerCase()

8. What is the output of `"Hello".substring(1, 3)`? a) He
   b) **el**
   c) llo
   d) Compilation error

9. Which of the following is true about the `StringBuilder` class in Java?
   a) It is immutable
   b) **It is mutable**
   c) It is slower than `StringBuffer`
   d) It cannot be modified

10. What is the output of `"Hello".indexOf('l')`? a) 1
    b) **2**
    c) 3
    d) 4

Unit 7: Threads

1. Which of the following is a way to create a thread in Java?
   a) Extending `Thread` class
   b) Implementing `Runnable` interface
   c) **Both a and b**
   d) None of the above

2. What is the default priority of a thread in Java?
   a) 1
   b) **5**
   c) 10
   d) 0

3. Which method is used to start a thread in Java?
   a) run()

b) **start()**
c) execute()
d) begin()

4. What is the purpose of the `synchronized` keyword in Java?
   a) To create a new thread
   b) **To prevent multiple threads from accessing a resource simultaneously**
   c) To stop a thread
   d) To define a thread

5. Which method is used to pause a thread in Java?
   a) stop()
   b) **sleep()**
   c) pause()
   d) wait()

6. What is the output of the following code?

```java
class MyThread extends Thread {
    public void run() {
        System.out.println("Thread is running");
    }
}
public class Main {
    public static void main(String[] args) {
        MyThread t = new MyThread();
        t.start();
    }
}
```

   a) Compilation error
   b) Runtime error
   c) **Thread is running**
   d) No output

7. Which of the following is true about thread priorities in Java?
   a) They cannot be changed
   b) **They range from 1 to 10**
   c) They are always 5
   d) They are not supported

8. What is the purpose of the `join()` method in Java?
   a) To start a thread
   b) **To wait for a thread to finish execution**
   c) To stop a thread
   d) To pause a thread

9. Which of the following is true about deadlock in Java?
   a) It occurs when a thread is paused
   b) **It occurs when two or more threads are waiting for each other**
   c) It occurs when a thread is stopped
   d) It occurs when a thread is started

10. What is the output of the following code?

```java
class MyThread implements Runnable {
    public void run() {
        System.out.println("Thread is running");
    }
}
public class Main {
    public static void main(String[] args) {
        MyThread t = new MyThread();
        Thread thread = new Thread(t);
        thread.start();
    }
}
```

a) Compilation error
b) Runtime error
c) **Thread is running**
d) No output

Unit 8: I/O and Streams

1. Which package is used for file I/O operations in Java?
   a) java.util
   b) **java.io**
   c) java.net
   d) java.awt

2. Which of the following is a character stream class in Java?
   a) FileInputStream
   b) **FileReader**
   c) FileOutputStream
   d) DataInputStream

3. What is the purpose of the `File` class in Java?
   a) To read data from a file
   b) **To represent a file or directory path**
   c) To write data to a file
   d) To delete a file

4. Which method is used to read a line of text from a file in Java?
   a) read()
   b) **readLine()**
   c) readAll()
   d) readFile()

5. What is the purpose of the `Serializable` interface in Java?
   a) To read data from a file
   b) **To enable object serialization**
   c) To write data to a file
   d) To delete a file

6. Which of the following is true about byte streams in Java?
   a) They handle Unicode characters
   b) **They handle binary data**

c) They are slower than character streams
d) They cannot be used for file I/O

7. What is the output of the following code?

```
import java.io.*;
public class Main {
    public static void main(String[] args) throws IOException {
        FileWriter fw = new FileWriter("test.txt");
        fw.write("Hello");
        fw.close();
    }
}
```

a) Compilation error
b) Runtime error
c) **A file named "test.txt" is created with the content "Hello"**
d) No output

8. Which method is used to write data to a file in Java?
a) read()
b) **write()**
c) readLine()
d) readAll()

9. What is the purpose of the `BufferedReader` class in Java?
a) To write data to a file
b) **To read data efficiently from a file**
c) To delete a file
d) To represent a file path

10. Which of the following is true about deserialization in Java?
a) It converts an object into a byte stream
b) **It converts a byte stream into an object**
c) It deletes an object
d) It writes data to a file

Unit 9: Understanding Core Packages

1. Which package contains the `Math` class in Java?
a) java.util
b) **java.lang**
c) java.io
d) java.awt

2. What is the output of `Math.sqrt(16)`? a) 2
b) **4**
c) 8
d) 16

3. Which of the following is a wrapper class in Java?
a) int
b) **Integer**

c) float
d) double

4. What is the purpose of the `Vector` class in Java?
   a) To store key-value pairs
   b) **To store a dynamic array of objects**
   c) To store unique elements
   d) To store sorted elements

5. Which of the following is true about the `Hashtable` class in Java?
   a) It allows null keys and values
   b) **It does not allow null keys or values**
   c) It is not synchronized
   d) It stores elements in sorted order

6. What is the output of the following code?

```java
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Random rand = new Random();
        System.out.println(rand.nextInt(10));
    }
}
```

   a) A random number between 0 and 10
   b) **A random number between 0 and 9**
   c) Compilation error
   d) Runtime error

7. Which of the following is true about the `Stack` class in Java?
   a) It follows FIFO (First In First Out)
   b) **It follows LIFO (Last In First Out)**
   c) It allows null values
   d) It is not synchronized

8. What is the purpose of the `Enumeration` interface in Java?
   a) To store key-value pairs
   b) **To iterate over a collection of elements**
   c) To store unique elements
   d) To store sorted elements

9. Which of the following is true about the `Random` class in Java?
   a) It generates the same sequence of numbers every time
   b) **It generates a different sequence of numbers every time**
   c) It cannot generate random numbers
   d) It is not part of the `java.util` package

10. What is the output of the following code?

```java
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Vector<Integer> v = new Vector<>();
        v.add(10);
```

```
        v.add(20);
        System.out.println(v.get(1));
    }
}
```

a) 10
b) **20**
c) Compilation error
d) Runtime error

Unit 10: Holding Collection of Data

1. Which of the following is a collection interface in Java?
   a) ArrayList
   b) **List**
   c) HashSet
   d) TreeSet

2. What is the purpose of the `Iterator` interface in Java?
   a) To store elements
   b) **To iterate over a collection of elements**
   c) To sort elements
   d) To remove elements

3. Which of the following is true about the `ArrayList` class in Java?
   a) It does not allow duplicate elements
   b) **It allows duplicate elements**
   c) It is synchronized
   d) It stores elements in sorted order

4. What is the output of the following code?

```
import java.util.*;
public class Main {
    public static void main(String[] args) {
        List<String> list = new ArrayList<>();
        list.add("Java");
        list.add("Python");
        System.out.println(list.get(1));
    }
}
```

   a) Java
   b) **Python**
   c) Compilation error
   d) Runtime error

5. Which of the following is true about the `HashSet` class in Java?
   a) It allows duplicate elements
   b) **It does not allow duplicate elements**
   c) It stores elements in sorted order
   d) It is synchronized

6. What is the purpose of the `Comparator` interface in Java?
   a) To store elements
   b) **To define custom sorting logic**
   c) To iterate over elements
   d) To remove elements

7. Which of the following is true about the `TreeSet` class in Java?
   a) It does not allow duplicate elements
   b) **It stores elements in sorted order**
   c) It is not synchronized
   d) It allows null values

8. What is the output of the following code?

```java
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Set<Integer> set = new HashSet<>();
        set.add(10);
        set.add(20);
        set.add(10);
        System.out.println(set.size());
    }
}
```

   a) 1
   b) **2**
   c) 3
   d) Compilation error

9. Which of the following is true about the `Map` interface in Java?
   a) It stores elements in sorted order
   b) **It stores key-value pairs**
   c) It does not allow duplicate keys
   d) It is not part of the `java.util` package

10. What is the output of the following code?

```java
import java.util.*;
public class Main {
    public static void main(String[] args) {
        Map<String, Integer> map = new HashMap<>();
        map.put("Java", 10);
        map.put("Python", 20);
        System.out.println(map.get("Python"));
    }
}
```

    a) 10
    b) **20**
    c) Compilation error
    d) Runtime error

Unit 11: Java Applications

1. Which of the following is a Swing component in Java?
   a) Frame
   b) **JFrame**
   c) Window
   d) Panel

2. What is the purpose of the `JButton` class in Java?
   a) To display text
   b) **To create a clickable button**
   c) To display images
   d) To create a text field

3. Which of the following is true about event handling in Java?
   a) It is not supported in Swing
   b) **It involves listeners and events**
   c) It cannot be used with buttons
   d) It is not part of the AWT package

4. What is the purpose of the `FlowLayout` manager in Java?
   a) To arrange components in a grid
   b) **To arrange components in a flow**
   c) To arrange components in a border
   d) To arrange components in a stack

5. Which of the following is true about the `JTextField` class in Java?
   a) It is used to display images
   b) **It is used to accept user input**
   c) It is not part of Swing
   d) It cannot be added to a frame

6. What is the purpose of the `JCheckBox` class in Java?
   a) To display text
   b) **To create a checkbox**
   c) To display images
   d) To create a button

7. Which of the following is true about the `JComboBox` class in Java?
   a) It is used to display images
   b) **It is used to create a dropdown list**
   c) It is not part of Swing
   d) It cannot be added to a frame

8. What is the purpose of the `JMenuBar` class in Java?
   a) To display text
   b) **To create a menu bar**
   c) To display images
   d) To create a button

9. Which of the following is true about the `JTable` class in Java?
   a) It is used to display images
   b) **It is used to display data in tabular form**
   c) It is not part of Swing
   d) It cannot be added to a frame

10. What is the purpose of the `JDesktopPane` class in Java?
    a) To display text
    b) **To create a multi-document interface (MDI)**
    c) To display images
    d) To create a button

Unit 12: Introduction to Java Applets

1. Which of the following is a lifecycle method of an applet?
    a) start()
    b) stop()
    c) init()
    d) **All of the above**

2. What is the purpose of the `Applet` class in Java?
    a) To create a standalone application
    b) **To create an applet**
    c) To create a Swing application
    d) To create a console application

3. Which of the following is true about applets in Java?
    a) They cannot be run in a browser
    b) **They are embedded in web pages**
    c) They are not part of Java
    d) They cannot use graphics

4. What is the purpose of the `paint()` method in an applet?
    a) To initialize the applet
    b) **To draw graphics on the applet**
    c) To start the applet
    d) To stop the applet

5. Which of the following is true about the `AppletViewer` tool in Java?
    a) It is used to compile applets
    b) **It is used to run applets**
    c) It is not part of Java
    d) It cannot be used with applets

6. What is the output of the following code?

```java
import java.applet.*;
import java.awt.*;
public class MyApplet extends Applet {
    public void paint(Graphics g) {
        g.drawString("Hello", 50, 50);
    }
}
```

    a) Compilation error
    b) Runtime error
    c) **"Hello" is displayed at (50, 50)**
    d) No output

7. Which of the following is true about animation in applets?
   a) It is not supported
   b) **It can be achieved using threads**
   c) It cannot use graphics
   d) It is not part of Java

8. What is the purpose of the `repaint()` method in an applet?
   a) To initialize the applet
   b) **To refresh the applet display**
   c) To start the applet
   d) To stop the applet

9. Which of the following is true about the `Graphics` class in Java?
   a) It is used to create buttons
   b) **It is used to draw graphics**
   c) It is not part of the AWT package
   d) It cannot be used in applets

10. What is the output of the following code?

```
import java.applet.*;
import java.awt.*;
public class MyApplet extends Applet {
    public void paint(Graphics g) {
        g.drawRect(50, 50, 100, 100);
    }
}
```

   a) Compilation error
   b) Runtime error
   c) **A rectangle is drawn at (50, 50)**
   d) No output

Unit 13: Database Programming using JDBC

1. Which of the following is a JDBC interface?
   a) Connection
   b) Statement
   c) ResultSet
   d) **All of the above**

2. What is the purpose of the `Connection` interface in JDBC?
   a) To execute SQL queries
   b) **To establish a connection to a database**
   c) To store query results
   d) To close the database

3. Which of the following is true about the `Statement` interface in JDBC?
   a) It is used to establish a connection
   b) **It is used to execute SQL queries**
   c) It is used to store query results
   d) It is used to close the database

4. What is the purpose of the `ResultSet` interface in JDBC?
   a) To establish a connection
   b) To execute SQL queries
   c) **To store and retrieve query results**
   d) To close the database

5. Which of the following is true about the `DriverManager` class in JDBC?
   a) It is used to execute SQL queries
   b) **It is used to manage database drivers**
   c) It is used to store query results
   d) It is used to close the database

6. What is the output of the following code?

```
import java.sql.*;
public class Main {
    public static void main(String[] args) throws SQLException {
        Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test", "root",
"password");
        System.out.println("Connection established");
    }
}
```

   a) Compilation error
   b) Runtime error
   c) **Connection established**
   d) No output

7. Which of the following is true about the `PreparedStatement` interface in JDBC?
   a) It is used to establish a connection
   b) **It is used to execute parameterized SQL queries**
   c) It is used to store query results
   d) It is used to close the database

8. What is the purpose of the `executeQuery()` method in JDBC?
   a) To establish a connection
   b) **To execute a SELECT query**
   c) To execute an UPDATE query
   d) To close the database

9. Which of the following is true about the `executeUpdate()` method in JDBC?
   a) It is used to execute a SELECT query
   b) **It is used to execute INSERT, UPDATE, or DELETE queries**
   c) It is used to establish a connection
   d) It is used to close the database

10. What is the output of the following code?

```
import java.sql.*;
public class Main {
    public static void main(String[] args) throws SQLException {
        Connection conn =
DriverManager.getConnection("jdbc:mysql://localhost:3306/test", "root",
"password");
```

```
        Statement stmt = conn.createStatement();
        ResultSet rs = stmt.executeQuery("SELECT * FROM employees");
        while (rs.next()) {
            System.out.println(rs.getString("name"));
        }
    }
}
```

a) Compilation error
b) Runtime error
c) **The names of all employees are printed**
d) No output
