

Introduction to ObjectOriented Programming Concepts

Question 1

Assertion (A): ObjectOriented Programming improves software maintainability.

Reason (R): OOP promotes code reusability through the use of inheritance.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): Polymorphism allows objects to be treated as instances of their parent class rather than their actual class.

Reason (R): Polymorphism provides a way to perform a single action in different forms.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Abstraction focuses on the essential qualities of something rather than one specific example.

Reason (R): Abstraction simplifies complex reality by modeling classes appropriate to the problem.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true and Reason (R) is false.

(d) Assertion (A) is false and Reason (R) is true.

Elementary Concept of Objects and Classes

Question 1

Assertion (A): An object is an instance of a class in Java.

Reason (R): Classes define the blueprint for objects, specifying attributes and behaviors.

Options:

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true and Reason (R) is false.

(d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): Objects in programming represent realworld entities.

Reason (R): Objects encapsulate data and methods that operate on that data.

Options:

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is true and Reason (R) is false.

(d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): In Java, a class cannot have multiple objects.

Reason (R): Each object is a distinct instance with its own state.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit III: Values and Data Types

Question 1

Assertion (A): Java is a statically typed language.

Reason (R): Variables must be declared with a data type before they can be used.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `char` data type in Java is used to store integer values.

Reason (R): `char` can store Unicode characters represented by integer codes.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Floatingpoint types in Java are used for precise calculations.

Reason (R): Floatingpoint arithmetic can introduce rounding errors due to binary representation.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit IV: Operators in Java

Question 1

Assertion (A): The modulo operator `%` is used to find the remainder of division.

Reason (R): In Java, `10 % 3` will result in `1`.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): Logical operators are used with boolean values.

Reason (R): The `&&` operator returns true only if both operands are true.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): The increment operator `++` increases the value of a variable by two.

Reason (R): `i++` is equivalent to `i = i + 1` in Java.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit V (a): Introduction to Java

Question 1

Assertion (A): Java is platformindependent at the source code level.

Reason (R): Java source code is compiled into bytecode, which runs on the Java Virtual Machine (JVM).

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `main` method is the entry point of any Java application.

Reason (R): Without the `main` method, the JVM does not know where to start the execution

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Java supports multiple inheritance through classes.

Reason (R): A Java class can extend only one class but implement multiple interfaces.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit V (b): Input in Java

Question 1

Assertion (A): The `Scanner` class is used for obtaining input of primitive types.

Reason (R): `Scanner` can read input from various sources like input streams and files.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): `BufferedReader` is faster than `Scanner` for reading large amounts of data.

Reason (R): `BufferedReader` reads text from a character input stream, buffering characters for efficient reading.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): The `nextLine()` method of `Scanner` reads input until it encounters a newline character.

Reason (R): `nextLine()` can be used to read an entire line of text, including spaces.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit VI: Mathematical Library Methods

Question 1

Assertion (A): The `Math.sqrt()` method returns the square root of a number.

Reason (R): `Math.sqrt(16)` will return `4.0` in Java.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `Math.random()` method generates a random integer between 0 and 1.

Reason (R): `Math.random()` returns a double value greater than or equal to 0.0 and less than 1.0.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is false and Reason (R) is true.
- (d) Assertion (A) is true and Reason (R) is false.

Question 3

Assertion (A): The `Math.abs()` method returns the absolute value of a number.

Reason (R): For any positive number `x`, `Math.abs(x)` equals `x`.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit VII: Conditional Statements in Java

Question 1

Assertion (A): The `switch` statement can evaluate string expressions in Java.

Reason (R): Starting from Java 7, the `switch` statement supports strings.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `ifelse` statement allows branching of execution paths.

Reason (R): `ifelse` statements execute code blocks based on boolean conditions.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): The `if` statement must always be followed by an `else` block.

Reason (R): The `else` block provides an alternative path when the `if` condition is false.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is false and Reason (R) is true.
- (d) Both Assertion (A) and Reason (R) are false.

Unit VIII: Iterative Constructs in Java

Question 1

Assertion (A): The `for` loop is used when the number of iterations is known.

Reason (R): The `for` loop initializes, checks condition, and increments in a single line.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `while` loop checks the condition before executing the loop body.

Reason (R): In a `while` loop, if the condition is false initially, the loop body may not execute at all.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): The `dowhile` loop executes the loop body at least once.

Reason (R): In a `dowhile` loop, the condition is checked after executing the loop body.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Unit IX: Nested Loop

Question 1

Assertion (A): Nested loops are loops inside another loop.

Reason (R): Nested loops are used to perform complex iterations like traversing multidimensional arrays.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Both Assertion (A) and Reason (R) are false.

Question 2

Assertion (A): The total number of iterations in nested loops is the product of the individual loop counts.

Reason (R): Each iteration of the outer loop triggers the full execution of the inner loop.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Break statements can only exit from the innermost loop in nested loops.

Reason (R): In Java, labeled break statements are used to exit outer loops.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is false and Reason (R) is true.

(d) Both Assertion (A) and Reason (R) are false.

Library Classes

Question 1

Assertion (A): The `String` class in Java is immutable.

Reason (R): Once a `String` object is created, it cannot be modified.

Options:

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Both Assertion (A) and Reason (R) are false.

(d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): The `ArrayList` class allows dynamic resizing of arrays.

Reason (R): `ArrayList` can increase or decrease its size automatically when elements are added or removed.

Options:

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

(c) Assertion (A) is false and Reason (R) is true.

(d) Both Assertion (A) and Reason (R) are false.

Question 3

Assertion (A): The `Math` class methods are static.

Reason (R): Static methods can be called without creating an instance of the class.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Both Assertion (A) and Reason (R) are false.

Arrays (Single Dimensional and Double Dimensional)

Question 1

Assertion (A): Arrays in Java are objects.

Reason (R): Arrays are created on the heap and have a length property.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): A twodimensional array in Java is an array of arrays.

Reason (R): Each element of a twodimensional array can be of different lengths.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is true and Reason (R) is false.
- (d) Both Assertion (A) and Reason (R) are false.

Question 3

Assertion (A): The default values of array elements of type `int` are `0`.

Reason (R): In Java, primitive type arrays are initialized with default values.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

String Handling

Question 1

Assertion (A): The `equals()` method compares two strings for content equality.

Reason (R): The `==` operator checks if two string references point to the same object.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is false and Reason (R) is true.
- (d) Both Assertion (A) and Reason (R) are false.

Question 2

Assertion (A): The `StringBuilder` class is mutable.

Reason (R): `StringBuilder` allows modification of strings without creating new objects.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): The `substring()` method alters the original string.

Reason (R): Strings in Java are immutable, so `substring()` returns a new string.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is false and Reason (R) is true.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

User Defined Methods

Question 1

Assertion (A): Methods in Java enhance code reusability.

Reason (R): Methods allow encapsulation of common functionality.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 2

Assertion (A): A method must always return a value.

Reason (R): Methods with a `void` return type do not return any value.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is false and Reason (R) is true.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

Question 3

Assertion (A): Method overloading allows multiple methods with the same name but different parameters.

Reason (R): Method overloading is a form of static polymorphism.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).

- (c) Assertion (A) is false and Reason (R) is true.
- (d) Both Assertion (A) and Reason (R) are false.

Class as the Basis of all Computation (Objects and Classes)

Question 1

Assertion (A): Classes encapsulate data and methods that operate on data.

Reason (R): Encapsulation is one of the four fundamental OOP concepts.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

Question 2

Assertion (A): Every Java program must contain at least one class.

Reason (R): The `main` method must be defined within a class.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is true and Reason (R) is false.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Objects are the runtime entities in an objectoriented system.

Reason (R): Objects interact by sending messages to one another.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is false and Reason (R) is true.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

Constructors

Question 1

Assertion (A): Constructors in Java are used to initialize objects.

Reason (R): A constructor has the same name as the class and no return type.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

Question 2

Assertion (A): If no constructor is defined, Java provides a default constructor.

Reason (R): The default constructor initializes object variables to default values.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is true and Reason (R) is false.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is false and Reason (R) is true.

Question 3

Assertion (A): Constructors can be overloaded in Java.

Reason (R): Overloading allows creating multiple constructors with different parameters.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Both Assertion (A) and Reason (R) are true, and Reason (R) is not the correct explanation of Assertion (A).
- (c) Assertion (A) is false and Reason (R) is true.
- (d) Both Assertion (A) and Reason (R) are false.

Encapsulation and Inheritance

Question 1

Assertion (A): Inheritance promotes code reusability in OOP.

Reason (R): A subclass inherits methods and variables from its superclass.

Options:

- (a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
- (b) Assertion (A) is false and Reason (R) is true.
- (c) Both Assertion (A) and Reason (R) are false.
- (d) Assertion (A) is true and Reason (R) is false.

Question 2

Assertion (A): Encapsulation is achieved by declaring class variables as `public`.

Reason (R): Encapsulation restricts direct access to an object's data.

Options:

- (a) Both Assertion (A) and Reason (R) are false.
- (b) Assertion (A) is false and Reason (R) is true.
- (c) Both Assertion (A) and Reason (R) are true.

(d) Assertion (A) is true and Reason (R) is false.

Question 3

Assertion (A): The `final` keyword prevents a class from being inherited.

Reason (R): A `final` class cannot have subclasses.

Options:

(a) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).

(b) Both Assertion (A) and Reason (R) are false.

(c) Assertion (A) is true and Reason (R) is false.

(d) Assertion (A) is false and Reason (R) is true.