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Name of the Bundle	Advanced Bundle V1	Subject	Java Programming V1
Topic	Loops	Last updated on	09 August 2024

1. Which loop construct in Java is best suited when the number of iterations is unknown?

   a. for loop

   b. while loop

   c. do-while loop

   d. none

Ans: b. while loop

Explanation: The while loop in Java is used when the number of iterations is unknown or depends on a certain condition.

2. What is the syntax for a while loop in Java?

   a. while {condition} // code

   b. while (condition) {// code}

   c. loop (condition) {// code}

   d. when (condition) {// code}

Ans: b. while (condition) {// code}

Explanation: In Java, a while loop starts with the keyword while, followed by a condition enclosed in parentheses. The code block to be executed repeatedly is enclosed in curly braces {} immediately after the condition.

3. What happens if the condition in a while loop is initially false?

   a. The loop runs indefinitely.

   b. The loop runs once.

   c. The loop does not execute at all.

   d. The compiler throws an error.

Ans: c. The loop does not execute at all.

Explanation: If the condition in a while loop is false from the beginning, the loop body will not execute even once.

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4. Which statement is used to prematurely terminate a loop in Java?

    a. exit;

    b. terminate;

    c. break;

    d. end;

Ans: c. break;

Explanation: The break statement is used in Java to exit the loop prematurely. When a break is encountered inside a loop, the loop is terminated immediately, and control passes to the next statement after the loop.

5. What is the purpose of the continue statement in a while loop?

    a. To exit the loop completely.

    b. To skip the remaining code in the loop and proceed to the next iteration.

    c. To print a message and continue the loop.

    d. To restart the loop from the beginning.

Ans: b. To skip the remaining code in the loop and proceed to the next iteration.

Explanation: The continue statement in Java is used to skip the current iteration of the loop and move to the next iteration immediately.

6. When would you prefer using a for loop?

    a. When the number of iterations is known.

    b. When initializing loop variables is complex.

    c. When you want to use break statements.

    d. When you need to iterate over elements of an array.

Ans: a. When the number of iterations is known.

Explanation: The For loop in Java is used when the number of iterations is known or depends on a certain condition.

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7. What is the condition to create an infinite loop using a while loop?

    a. while (true) {...}

    b. while (1) {...}

    c. while (false) {...}

    d. while (condition) {...}

Ans: a. while (true) {...}

Explanation: An infinite loop in Java can be created by using while (true) because true is always true, hence the loop will continue indefinitely until terminated manually or by a break statement.

8. When using a while loop, how do you ensure that the loop executes at least once?

    a. By using a do-while loop instead.

    b. By setting the loop condition to false.

    c. By using an if statement inside the loop.

    d. By setting the loop condition to true.

Ans: a. By using a do-while loop instead.

Explanation: This is because the condition is checked after executing the loop body.

9. What is the purpose of using loops in programming?

    a. To execute a block of code repeatedly based on a condition.

    b. To handle exceptions gracefully.

    c. To terminate the program.

    d. To print messages on the console.

Ans: a. To execute a block of code repeatedly based on a condition.

Explanation: Loops in programming are used to execute a block of code multiple times based on a specified condition.

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10. Which loop construct guarantees that the loop body is executed at least once?

   a. for loop

   b. while loop

   c. do-while loop

   d. continue statement

Ans: c. do-while loop

Explanation: The do-while loop in Java guarantees that the loop body is executed at least once, as the condition is checked after the loop body is executed.

11. What is an infinite loop?

   a. A loop that executes only once

   b. A loop that never terminates naturally

   c. A loop that contains an unreachable code block

   e. A loop that uses the continue statement

Ans: b. A loop that never terminates naturally

Explanation: An infinite loop in Java is a loop that never terminates naturally unless interrupted externally or using a break statement.

12. Which statement is used to exit a loop prematurely?

   a. return statement

   b. continue statement

   c. break statement

   d. exit statement

Ans: c. break statement

Explanation: The break statement in Java is used to exit a loop prematurely and continue with the execution of the code outside the loop.

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13. Which type of loop is best known for its boolean condition that controls entry to the loop?

    a. do-while loop

    b. for (traditional)

    c. for-each

    d. while

Ans: d. while

Explanation: A while loop has a condition that returns a boolean that controls the loop. It appears at the beginning and is checked before entering the loop.

14. What is the syntax for a do-while loop in Java?

    a. do {// code} while (condition);

    b. do while (condition) {// code};

    c. while (condition) {// code} do;

    d. do (condition) {// code} while;
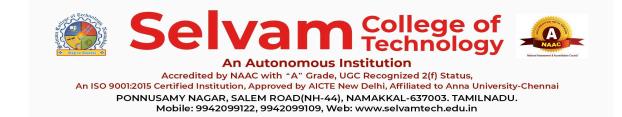
Ans: a. do {// code} while (condition);

Explanation: In Java, the do-while loop is an exit check loop. Which means an exit check loop evaluates its condition after executing the loop body. This guarantees that the loop body is executed at least once, regardless of the condition.

15. What is the key difference between a while loop and a do-while loop in Java?

    a. There is no difference; they are used interchangeably.

    b. do-while executes the loop body at least once, whereas while may not execute at all.

    c. while is used for infinite loops, do-while is not.

    d. do-while can only be used for numerical operations.

Ans: b. do-while executes the loop body at least once, whereas while may not execute at all.

Explanation: In a do-while loop, the loop body executes initially regardless of the condition, ensuring it runs at least once.

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16. What is the output of the following code?

```
int i = 6;
do {
System.out.print(i + " ");
i++;
} while (i<= 5);
```

   a. 6

   b. 6 7

   c. 6 7 8

   d. No output

Ans: a. 6

Explanation: In this do-while loop, starting with i = 6, the loop prints i (6) once and increments to 7. Since i<= 5 is false initially, the loop ends after printing 6.

17.
```
public class ForLoopExample {
    public static void main (String [] args) {
        for (int i = 1; i<= 3; i++) {
System.out.print(i + " ");}}}
```
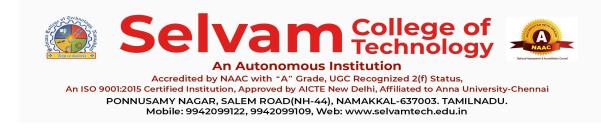
   a. 1 2 3

   b. 1 2 3 4

   c. 0 1 2

   d. 1 2 3 4 5

Ans: a.1 2 3

Explanation: This output is correct because the loop executes exactly three times, printing the values from 1 to 3.

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18. How many times will the following while loop execute?

    int i = 10;

    while (i< 5) {System.out.print(i + " "); i++; }

    a. 0

    b. 1

    c. 5

    d. 10

Ans: a. 0

Explanation: The condition `i< 5` is false initially (`i` is `10`), so the loop body does not execute.

19. Which loop construct is best suited for iterating over an array or a collection?

    a. for loop

    b. while loop

    c. do-while loop

    d. continue statement

Ans: a. for loop

Explanation: The for loop in Java is best suited for iterating over an array or a collection, as it provides a convenient way to control the iteration using an index or an iterator.

20. Which type of loop is best known for using an index or counter?

    a. do-while loop

    b. for (traditional)

    c. for-each

    d. while

Ans: b. for (traditional)

Explanation: A traditional for loop is best known for having a loop variable counting up or down as the loop progresses.

21. What is the output of the following code snippet?

int i = 0;

for (i = 0; i< 5; i++) { System.out.println(i);}

    a. 5

    b. 0

    c. 4

    d. Compilation Error

Ans: a. 5

Explanation: In for loop, the i value will be incremented until the condition fails (i< 5) so i value is 5.

22. What is an infinite loop?

    a. A loop that executes only once

    b. A loop that never terminates naturally

    c. A loop that contains an unreachable code block

    d. A loop that uses the continue statement

Ans: b. A loop that never terminates naturally

Explanation: An infinite loop in Java is a loop that never terminates naturally unless interrupted externally or using a break statement.
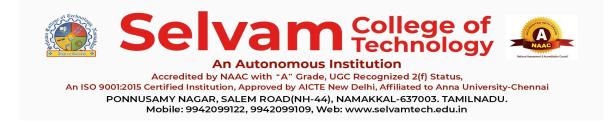
23. Which statement correctly demonstrates an infinite loop?

    a. for (int i = 0; i< 5; i--) {}

    b. while (false) {}

    c. do{} while (true);

    d. for (int i = 0; i< 5; i++){if (i == 5) break;}

Ans: c. do{} while (true);

Explanation: The do-while loop with a condition true will run indefinitely, creating an infinite loop.

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24. When using a for loop, what is the order of execution of its components?

   a. Initialization, Condition, Update

   b. Condition, Update, Initialization

   c. Update, Condition, Initialization

   d. Initialization, Update, Condition

Ans: a. Initialization, Condition, Update

Explanation: In a for loop, the components are executed in the order of Initialization (executed once at the beginning), Condition (checked before each iteration), and Update (executed at the end of each iteration).

25. What does the following code print?

```
for (int i = 3; i<= 12; i++)
{
System.out.print(i + " ");
}
```

   a. 5 6 7 8 9

   b. 4 5 6 7 8 9 10 11 12

   c. 3 5 7 9 11

   d. 3 4 5 6 7 8 9 10 11 12

Ans: d. 3 4 5 6 7 8 9 10 11 12

Explanation: The value of i starts at 3 and this loop will execute until i equals 12. The last time through the loop the value of i is 12 at the beginning and then it will be incremented to 13 which stops the loop since 13 is not less than or equal to 12.

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Topic	Loops	Last updated on	09 August 2024

26. What is the primary advantage of using a for loop over other loop types?

    a. It executes faster.

    b. It is easier to understand.

    c. It allows for input validation.

    d. It automatically handles initialization and incrementation.

Ans: d. It automatically handles initialization and incrementation.

Explanation: One of the key advantages of using a for loop is its compactness and efficiency in handling initialization, condition checking, and incrementation of loop variables within a single line, making the code more readable and less error-prone.

27. What happens if the initialization part of a for loop is omitted?

    a. The loop runs indefinitely.

    b. The loop does not execute at all.

    c. The loop prints an error message.

    d. The loop executes once.

Ans: c. The loop prints an error message.

Explanation: In a for loop, all three parts (initialization, condition, and update) are mandatory. If the initialization part is omitted, the compiler will raise an error because it doesn't know how to start the loop.

28. What is the purpose of the enhanced for loop in Java?

    a. It allows iterating over arrays and collections without using indices.

    b. It performs faster than traditional for loops.

    c. It allows modifying elements of an array directly.

    d. It can only iterate over arrays, not collections.

Ans: a. It allows iterating over arrays and collections without using indices.

Explanation: The enhanced for loop in Java simplifies iterating through arrays and collections by automatically handling the iteration and without needing to manually manage indices.

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29. What will the following code output?

```java
for (int i = 0; i< 5; i++) {
  if (i == 2) {
     continue;
  }
System.out.println(i);
}
```

    a. 0 1 2 3 4

    b. 0 1 3 4

    c. 2 3 4

    d. 1 3 4

Ans: b. 0 1 3 4

Explanation: The continue statement skips the iteration when i equals 2, so 2 is not printed, and the loop continues with 3 and 4.

30. What will the following code output?

```java
for (int i = 0; i< 5; i++) {
        if (i == 3) {
           break;
        }
        System.out.println(i);
}
```

    a. 0 1 2

    b. 0 1 2 3

    c. 0 1 2 3 4

    d. 0 1 2 4

Ans: a. 0 1 2

Explanation: When i equals 3, the break statement exits the loop, so the loop only prints the values 0, 1, and 2.

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31. Which keyword is used to declare the data type of the elements in the enhanced for loop?

    a. var

    b. type

    c. element

    d. foreach

Ans: b. type

Explanation: In the enhanced for loop syntax, the keyword type specifies the data type of the elements being iterated over.

32. What is a nested loop?

    a. A Loop with empty initialization

    b. A Loop within a Loop

    c. A Loop without condition

    d. All of above

Ans: b. A Loop within a Loop

Explanation: A nested loop in programming involves an inner loop fully contained within an outer loop, causing the inner loop to execute repeatedly for each iteration of the outer loop.

33. What is the alternative name for the enhanced for loop in Java?

    a. Advanced for loop

    b. Modern for loop

    c. Improved for loop

    d. All of the above

Ans: c. Improved for loop

Explanation: The enhanced for loop in Java is also commonly known as the "improved for loop" because it simplifies the syntax and improves readability when iterating over arrays or collections.

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34. How many times will the following for loop execute?

for (int i = 0; i< 3; i++) {

System.out.println("Hello");}

    a. 1 time

    b. 2 times

    c. 3 times

    d. 4 times

Ans: c. 3 times

Explanation: The loop starts with i = 0 and runs while i< 3. It increments i by 1 in each iteration, so the loop runs 3 times (when i = 0, i = 1, and i = 2).

35. What is a nested loop in Java?

    a. A loop inside another loop

    b. A loop that runs twice

    c. A loop that never ends

    d. A loop with no code inside

Ans: a. A loop inside another loop

Explanation: A nested loop is when one loop is placed inside another loop. The inner loop runs completely for each iteration of the outer loop.

36. When does the condition in a while loop get evaluated?

    a. Before each iteration

    b. After each iteration

    c. Only once at the beginning

    d. Never

Ans: a. Before each iteration

Explanation: In a while loop, the condition is checked before the code inside the loop is executed. If the condition is false at the beginning, the loop will not execute at all.

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37. Which loop is best suited when the number of iterations is unknown?

    a. for loop

    b. while loop

    c. do-while loop

    d. None

Ans: b. while loop

Explanation: A while loop is used when you don't know how many times you need to repeat something. It keeps going as long as a certain condition is true.

38. Which loop is best suited when the number of iterations is known?

    a. for loop

    b. while loop

    c. do-while loop
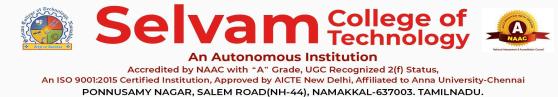
    d. None

Ans: a. for loop

Explanation: A for loop is best when you know exactly how many times you want to repeat something. It clearly sets up the number of iterations in one line.

39. What happens if the condition in a do while loop is initially false?

    a. The loop runs indefinitely.

    b. The loop runs at least once.

    c. The loop does not execute at all.

    d. The compiler throws an error.

Ans: b. The loop runs at least once.

Explanation: In a do while loop, the code inside the loop runs first, and then the condition is checked. This means it will always execute at least once, even if the condition is false from the start.

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40. What is the key difference between a while loop and do-while loop in Java?

    a. There is no difference; they are used interchangeably.

    b. do-while executes the loop body at least once, whereas while may not execute at all.

    c. while is used for infinite loops, do-while is not.

    d. do-while can only be used for numerical operations.

Ans: b. do-while executes the loop body at least once, whereas while may not execute at all.

Explanation: A do-while loop always runs the code inside at least once, while a **while loop** might not run at all if the condition is false from the start.

41. When using a for loop, what is the order of execution of its components?

    a. Initialization, Condition, Update

    b. Condition, Update, Initialization

    c. Update, Condition, Initialization

    d. Initialization, Update, Condition

Ans: a. Initialization, Condition, Update

Explanation: In a for loop, it works like this: first, you set up your variable (initialization), then check if the loop should keep going (condition), and finally update your variable for the next round (update).

42. What happens if the step in a while loop is omitted?

    a. Error

    b. The loop runs indefinitely

    c. Loop runs at least once

    d. Loop terminates normally

Ans: b. The loop runs indefinitely

Explanation: If the step (or update) is omitted in a **while loop**, the condition may always remain true, causing the loop to run forever without stopping.