Instructions

Go through each of the code blocks one by one, understand how the execution is happening, note down the answers, then code and run, and test your understanding.

1. Write a program to find the sum of n natural numbers using a looping statement in Java. For example, consider n=10.(Which loop do you use for this and why?).

2. Convert the following while loop to the corresponding for loop

    ```
    int m = 5, n = 10;
    while (n>=1)
    {
    System.out.println(m*n);
    n--;
    }
    ```

3. Convert following do-while loop into for loop.

    ```
    int i=1;
    int d=5;
    do{
    d=d*2
    System.out.println(d);
    i++;
    }while(i<=5);
    ```

4. Write an equivalent while() loop for the following for() loop.

    ```
    int s=0;

    for(int x=1; x<=25; x+=2)

    s+=x;
    ```

    Think and Remember:

    ●   **Why and when do we use while loop**
    ●   **Why and when do we use for loop**
    ●   **Why and when do we use do - while loop**

5. Study the method and answer the given questions:
    ```
    public void forSampleMethod()
        {
    ```

```java
for(int i=0;i<3;i++) {
  for(int j=0;j<2;j++) {
        int number = (int)(Math.random() * 10);
        System.out.println(number);
  }
 }
}
```
- How many times in total will the inner loop execute?
- What is the range of possible values stored in the variable number?

6. What will be the output for the following code?

```java
public static void main(String[] args)
 {
    int i = 1;
    int j = 20;
    int k = 31;
    while (i < j) {
       k += (i * j);
       i = i * 2;
       j--;
    }
    System.out.println("i = " + i + " j = " + j + " k = " + k);
 }
```

7. What is the final value of ctr when the iterative process given below executes?

```java
int ctr = 0;
for(int i=1 i<5;i++);
for(int j=1 i<=5; j+=2);
System.out.println(++ctr);
```

8. How do you print the following pattern using loops in Java
```
5
45
345
2345
12345
```

9.
```java
char ch;
int x = 97;
do {
ch = (char) x;
```

```
System.out.print(ch + " ");
if (x % 10 == 0)
break;
++x;
} while (x <= 100);
```

       Do you understand what is happening in the above block of code ? do a dry run on paper, what will be printed on the screen? understand the flow of control, then code and run and check your output with your answer.

10. Write a program to print the sum of digits of a long number 8729 using for() loop.

11. If x = 2, y = 5, z = 0, then find values of the following expressions:
      a. x == 2
      b. x != 5
      c. x != 5 && y >= 5
      d. z != 0 || x == 2
      e. !(y < 10)

12. Write a program to print the Greatest and Smallest among three numbers.

13. Consider two in values for length and breadth and check if it is a square or rectangle.

14. Write a program to print the absolute value of a given number.
      For Ex:
      INPUT: 1   OUTPUT: 1
      INPUT: -1   OUTPUT: 1

15. Write a program to check whether a given character is lowercase (a to z) or uppercase (A to Z). (You can use the range of ASCII values to do so).

16. Convert the following if-else-if construct into switch case:

```
if(var == 1)
System.out.println("good");
else if(var == 2)
System.out.println("better");
else if(var == 3)
System.out.println("best");
else
System.out.println("invalid");
```

17. Find the output in the following code snippet:
      int ch=2;

```java
switch(ch) {
case 1: System.out.println("All courses");
Break;
case 2: System.out.println("Simply Coding ");
case 3: System.out.println("Best Study Material");
}
```

18. Which of the following is not correct in java?

   (a)Duplicate case is not possible.
   (b)Nested switch case is possible.
   (c)Switch case statement is more efficient than equivalent if else ladder.
   (d)A switch statement without any case is not possible.

19. What will be the output of the following code?

```java
boolean b=97>='a';
int a=65/'A'+1;
switch(b){
    case true:
        a++;
        break;
    case false:
        a+=a;
    }
System.out.print(a);
```

20. Which of the following jump statements is not supported by java?

   (a) break
   (b) goto
   (c) continue
   (d) return

   Think and remember:
   - **Where and all can we use the "break" and "continue" statements ?**
   - **What does "break" do ?**
   - **What does "continue" do ?**
   - **Where and when do we use "return" ?**
   - **What does "return" do ?**

21. What will be the output of the following code snippets?

a. ```java
    for (int i = 0; i < 10; i++) {
        if (i == 5)
            break;
        System.out.println("i: " + i);
    }
    System.out.println("Out of Loop");
    ```

b.  ```java
    int j=1;
    for(int i=1;i<5;i++){
            j*=i;
        {
            break;
        }
    }
    System.out.print(j);
    ```

c. ```java
    int j=1;
    for(int i=1;i<3;i++){
    j*=i;
        for(;;){
            break;
        }
        continue;
    }
    System.out.print(j);
    ```

d.  ```java
    int a=2;
    if(a==2)
    break first;
    System.out.print("step1");
    first:
    System.out.println("step2");
    ```

e. ```java
    int a=2;
    india: {
            ++a;
            if(a==3)
            break india;
    }
    System.out.print(a);
    ```