TUTORIAL 2 (HOME ASSIGNMENT)

Decision Making Statements and Control Flow – Conditional statements and logical decision-making in programs. Looping Constructs and Control Statements – for, while, do while loops, break, and continue statements.

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A. Decision Making Statements (Conditional statements):

1. Write a program to check whether a number is positive, negative, or zero.

Code:

```java
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a number: ");
        int num = Integer.parseInt(input.nextLine());

        if (num > 0) {
            System.out.println("The number is Positive.");
        } else if (num < 0) {
            System.out.println("The number is Negative.");
        } else {
            System.out.println("The number is Zero.");
        }
    }
}
```

Output:

```
Output

Enter a number: 45
The number is Positive.

=== Code Execution Successful ===
```

```
Output

Enter a number: -51
The number is Negative.

=== Code Execution Successful ===
```

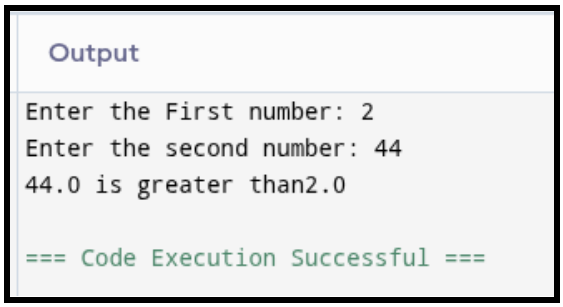
2. Write a program to find the largest of two numbers using conditional statements.

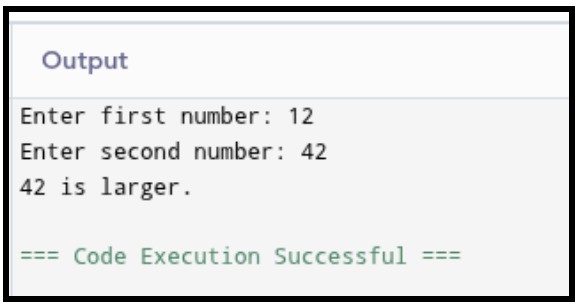
Code:

```java
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter first number: ");
        int a = Integer.parseInt(input.nextLine());
        System.out.print("Enter second number: ");
        int b = Integer.parseInt(input.nextLine());

        if (a > b) {
            System.out.println(a + " is larger.");
        } else if (b > a) {
            System.out.println(b + " is larger.");
        } else {
            System.out.println("Both are equal.");
        }
    }
}
```

Output:





3. Write a program to check whether a given year is a leap year.

Code:

```java
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a year: ");
        int year = Integer.parseInt(input.nextLine());

        if ((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)) {
            System.out.println(year + " is a Leap Year.");
        } else {
            System.out.println(year + " is not a Leap Year.");
        }
    }
}
```

Output:

```
Output

Enter a year: 2027
2027 is not a Leap Year.

=== Code Execution Successful ===
```

```
Output

Enter a year: 2016
2016 is a Leap Year.

=== Code Execution Successful ===
```

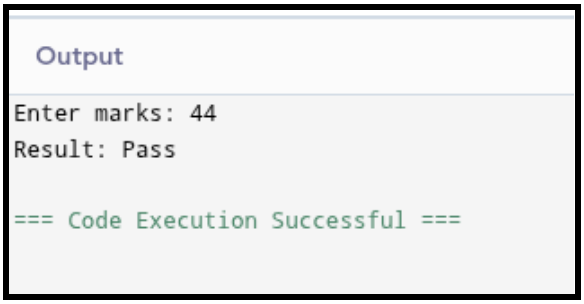
4. Write a program to determine whether a student has passed or failed based on marks.

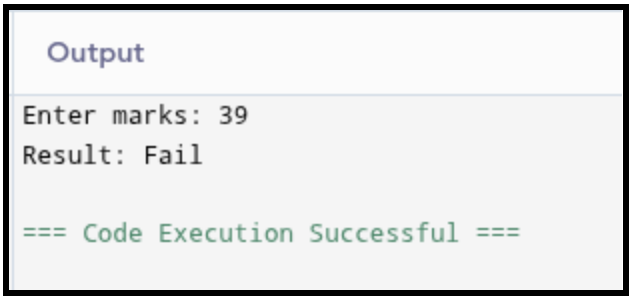
Code:

```java
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter marks: ");
        int marks = Integer.parseInt(input.nextLine());

        if (marks >= 40) {
            System.out.println("Result: Pass");
        } else {
            System.out.println("Result: Fail");
        }
    }
}
```

Output:





5. Write a program to check whether a character is a vowel or a consonant.

Code:

```java
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.print("Enter a character: ");
        char ch = input.nextLine().toLowerCase().charAt(0);

        if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {
            System.out.println(ch + " is a Vowel.");
        } else if (Character.isLetter(ch)) {
            System.out.println(ch + " is a Consonant.");
        } else {
            System.out.println("Invalid input (not a letter).");
        }
    }
}
```

Output:

Output

```
Enter a character: s
s is a Consonant.

=== Code Execution Successful ===
```

Output

```
Enter a character: a
a is a Vowel.

=== Code Execution Successful ===
```

B. Looping Constructs and Control Statements:

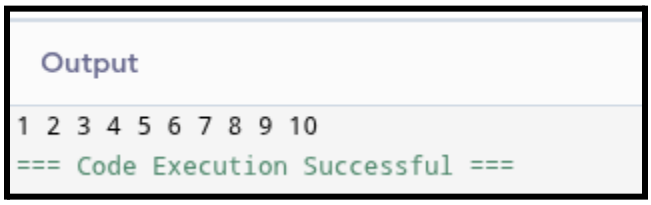
6. Write a program to print numbers from 1 to 10 using a for loop.

Code:

```
class Main {
    public static void main(String[] args) {
      for (int i = 1; i <= 10; i++) {
        System.out.print(i + " ");
  }
  }

  }
```

Output:



7. Write a program to display the multiplication table of a number using a while loop.

Code:

```java
class Main {
    public static void main(String[] args) {
     int n = 5; // Example number
    int i = 1;
    while (i <= 10) {
        System.out.println(n + " x " + i + " = " + (n * i));
        i++;
            }
        }
    }

```

Output:

Output

```
5 x 1 = 5
5 x 2 = 10
5 x 3 = 15
5 x 4 = 20
5 x 5 = 25
5 x 6 = 30
5 x 7 = 35
5 x 8 = 40
5 x 9 = 45
5 x 10 = 50

=== Code Execution Successful ===
```

8. Write a program to calculate the sum of first n natural numbers using a do-while loop.

Code:

```java
class Main {
    public static void main(String[] args) {
    int limit = 10;
    int sum = 0, count = 1;
    do {
        sum += count;
        count++;
    } while (count <= limit);
        System.out.println("Sum is: " + sum);
    }
}
```

Output:

```
Output

Sum is: 55

=== Code Execution Successful ===
```

9. Write a program to stop printing numbers when a specific value is encountered using the break statement.

Code:

```
class Main {
    public static void main(String[] args) {
    for (int i = 1; i <= 10; i++) {
    if (i == 5) break;
    System.out.println(i);
}
}}
```

Output:

```
Output

1
2
3
4

=== Code Execution Successful ===
```

10. Write a program to skip printing a specific number in a loop using the continue statement.

Code:

```java
class Main {
    public static void main(String[] args) {
    for (int i = 1; i <= 10; i++) {
    if (i == 5) continue;
    System.out.println(i);
}
}

}
```

Output:

Concept Check

11. Write a program to print numbers from 1 to 50, but skip numbers that are divisible by 5.

Code:

```
class Main {
    public static void main(String[] args) {
    for (int i = 1; i <= 50; i++) {
    if (i % 5 == 0) continue;
    System.out.print(i + " ");
}
}
}
```

Output:

```
Output                                                                    Clear
1 2 3 4 6 7 8 9 11 12 13 14 16 17 18 19 21 22 23 24 26 27 28 29 31 32 33 34 36 37 38 39 41 42 43 44 46 47 48 49

=== Code Execution Successful ===
```

12. Write a program to read numbers until the user enters 0, and then display the total count of numbers entered.

Code:

```java
import java.util.Scanner;

class Main {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        int count = 0;

        while (true) {
            System.out.print("Enter a number (0 to stop): ");
            int val = Integer.parseInt(input.nextLine());

            if (val == 0) {
                break; // Exit the loop
            }
            count++;
        }

        System.out.println("Total numbers entered: " + count);
        input.close();
    }
}
```

Output:

```
Output
Enter a number (0 to stop): 33
Enter a number (0 to stop): 23
Enter a number (0 to stop): 0
Total numbers entered: 2

=== Code Execution Successful ===
```

13. Write a program to check whether a character is a vowel or a consonant.

Code:

Main.java

Share Run

```java
class Main {
    public static void main(String[] args) {
        for (int i = 1; i <= 100; i++) {
            System.out.println(i);
            if (i % 3 == 0 && i % 7 == 0) {
                System.out.println("Stopped at " + i + " (Divisible by 3 and 7)");
                break;
            }
        }
    }

}
```

Output:

Output

```
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
Stopped at 21 (Divisible by 3 and 7)

=== Code Execution Successful ===
```