

1. Write a program to check if a number is divisible by 5

I/P => number

O/P => Is the number ____ divisible by 5? ____

Sol :-

```
import java.util.Scanner;
```

```
public class DivisibilityCheck {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number;  
  
        System.out.println("Enter a number to check divisibility by 5: ");  
        number = myobj.nextInt();  
  
        myobj.close();  
  
        if (number % 5 == 0) {  
            System.out.println("Is the number " + number + " divisible by 5? Yes");  
        } else {  
            System.out.println("Is the number " + number + " divisible by 5? No");  
        }  
    }  
}
```

2. Write a program to check if the first is the smallest of the 3 numbers.

I/P => number1, number2, number3

O/P => Is the first number the smallest? ____

```
import java.util.Scanner;
```

```

public class SmallestNumberCheck {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number1, number2, number3;

        System.out.println("Enter three numbers: ");
        number1 = myobj.nextInt();
        number2 = myobj.nextInt();
        number3 = myobj.nextInt();

        myobj.close();

        if (number1 < number2 && number1 < number3) {
            System.out.println("Is the first number the smallest? Yes");
        } else {
            System.out.println("Is the first number the smallest? No");
        }
    }
}

```

3. Write a program to check if the first, second, or third number is the largest of the three.

I/P => number1, number2, number3

O/P =>

Is the first number the largest? ____

Is the second number the largest? ____

Is the third number the largest? ____

```
import java.util.Scanner;
```

```
public class LargestNumberCheck {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        int number1, number2, number3;
```

```
        System.out.println("Enter three numbers: ");
```

```
        number1 = myobj.nextInt();
```

```
        number2 = myobj.nextInt();
```

```
        number3 = myobj.nextInt();
```

```
        myobj.close();
```

```
        boolean isFirstLargest = (number1 > number2 && number1 > number3);
```

```
        boolean isSecondLargest = (number2 > number1 && number2 > number3);
```

```
        boolean isThirdLargest = (number3 > number1 && number3 > number2);
```

```
        System.out.println("Is the first number the largest? " + (isFirstLargest ? "Yes" :  
"No"));
```

```
        System.out.println("Is the second number the largest? " + (isSecondLargest ?  
"Yes" : "No"));
```

```
        System.out.println("Is the third number the largest? " + (isThirdLargest ? "Yes" :  
"No"));
```

```
    }
```

```
}
```

4. Write a program to check for the natural number and write the sum of n natural numbers

Hint =>

a. A Natural Number is a positive integer (1,2,3, etc) sometimes with the inclusion of 0

a. A sum of n natural numbers is $n * (n+1) / 2$

I/P => number

O/P => If the number is a positive integer then the output is

The sum of ____ natural numbers is ____

Otherwise

The number ____ is not a natural number

```
import java.util.Scanner;
```

```
public class NaturalNumberSum {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number;  
  
        System.out.println("Enter a number: ");  
        number = myobj.nextInt();  
  
        myobj.close();  
  
        if (number >= 0) {  
            int sum = number * (number + 1) / 2;  
            System.out.println("The sum of " + number + " natural numbers is " + sum);  
        } else {  
            System.out.println("The number " + number + " is not a natural number");  
        }  
    }  
}
```

```
}  
}
```

5. Write a program to check whether a person can vote, depending on whether his/her age is greater than or equal to 18.

Hint =>

- a. Get integer input from the user and store it in the age variable.**
- a. If the person is 18 or older, print "The person can vote." Otherwise, print "The person cannot vote."**

I/P => age

O/P => If the person's age is greater or equal to 18 then the output is

The person's age is ____ and can vote.

Otherwise

The person's age is ____ and cannot vote.

```
import java.util.Scanner;
```

```
public class VotingEligibility {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        int age;
```

```
        System.out.println("Enter the person's age: ");
```

```
        age = myobj.nextInt();
```

```
        myobj.close();
```

```
        if (age >= 18) {
```

```
            System.out.println("The person's age is " + age + " and can vote.");
```

```
    } else {  
        System.out.println("The person's age is " + age + " and cannot vote.");  
    }  
}  
}
```

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

Hint =>

- a. Get integer input from the user and store it in the number variable.**
- a. If the number is positive, print positive.**
- a. If the number is negative, print negative.**
- a. If the number is zero, print zero.**

```
import java.util.Scanner;
```

```
public class NumberCheck {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number;  
  
        System.out.println("Enter a number: ");  
        number = myobj.nextInt();  
  
        myobj.close();  
  
        if (number > 0) {  
            System.out.println("The number is positive.");  
        } else if (number < 0) {
```

```

        System.out.println("The number is negative.");
    } else {
        System.out.println("The number is zero.");
    }
}
}
}

```

- 7. Write a program SpringSeason that takes two int values month and day from the command line and prints “Its a Spring Season” otherwise prints “Not a Spring Season”.**

Hint =>

- a. Spring Season is from March 20 to June 20**

```
import java.util.Scanner;
```

```

public class SpringSeason {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int month, day;

        System.out.println("Enter the month (1-12): ");
        month = myobj.nextInt();

        System.out.println("Enter the day (1-31): ");
        day = myobj.nextInt();

        myobj.close();

        boolean isSpring = (month == 3 && day >= 20) ||
            (month == 4) ||

```

```

        (month == 5) ||
        (month == 6 && day <= 20);

    if (isSpring) {
        System.out.println("It's a Spring Season.");
    } else {
        System.out.println("Not a Spring Season.");
    }
}
}
}

```

8. Write a program to count down the number from the user input value to 1 using a *while* loop for a rocket launch

Hint =>

- a. Create a variable counter to take user inputted value for the countdown.**
- a. Use the *while* loop to check if the counter is 1**

Inside a *while* loop, print the value of the counter and decrement the counter

```
import java.util.Scanner;
```

```

public class RocketLaunch {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int counter;

        System.out.println("Enter the countdown start number: ");
        counter = myobj.nextInt();
    }
}

```



```
myobj.close();

while (counter > 0) {
    System.out.println(counter);
    counter--;
}

System.out.println("🚀 Liftoff!");
}
}
```

9. Rewrite program 8 to do the countdown using the *for*-loop

```
import java.util.Scanner;

public class RocketLaunch {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int counter;

        System.out.println("Enter the countdown start number: ");
        counter = myobj.nextInt();

        myobj.close();

        for (int i = counter; i > 0; i--) {
            System.out.println(i);
        }
    }
}
```

```
        System.out.println("🚀 Liftoff!");  
    }  
}
```

10. Write a program to find the sum of numbers until the user enters 0

Hint =>

- a. Create a variable **total** of type **double** initialize to **0.0**. Also, create a variable to store the double value the user enters
- a. Use the *while* loop to check if the user entered is 0
- a. If the user entered value is not 0 then inside the while block add user entered value to the total and ask the user to input again
- a. The loop will continue till the user enters zero and outside the loop display the total value

```
import java.util.Scanner;
```

```
public class SumUntilZero {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        double total = 0.0;  
        double number;  
  
        System.out.println("Enter numbers to sum (enter 0 to stop): ");  
  
        while (true) {  
            number = myobj.nextDouble();  
            if (number == 0) {  
                break; // Exit loop when 0 is entered  
            }  
            total += number;  
        }  
        System.out.println("Sum: " + total);  
    }  
}
```

```

        }
        total += number;
    }

    myobj.close();

    System.out.println("Total sum: " + total);
}
}

```

11. Rewrite the program 10 to find the sum until the user enters 0 or a negative number using *while* loop and break statement

Hint =>

- a. Use infinite while loop as in while (true)
- a. Take the user entry and check if the user entered 0 or a negative number to break the loop using break;

```
import java.util.Scanner;
```

```

public class SumUntilZeroOrNegative {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        double total = 0.0;
        double number;

        System.out.println("Enter numbers to sum (enter 0 or a negative number to
stop): ");

        while (true) {
            number = myobj.nextDouble();

```

```

        if (number <= 0) {
            break;
        }
        total += number;
    }

    myobj.close();

    System.out.println("Total sum: " + total);
}
}

```

12. Write a program to find the sum of n natural numbers using *while* loop compare the result with the formulae $n*(n+1)/2$ and show the result from both computations was correct.

Hint =>

- a. Take the user input number and check whether it's a Natural number**
- a. If it's a natural number Compute using formulae as well as compute using *while* loop**
- a. Compare the two results and print the result**

```
import java.util.Scanner;
```

```

public class SumOfNaturalNumbers {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;
    }
}

```

```
System.out.println("Enter a natural number: ");
number = myobj.nextInt();

if (number < 0) {
    System.out.println("The number " + number + " is not a natural number.");
} else {

    int sumFormula = number * (number + 1) / 2;

    int sumLoop = 0, i = 1;
    while (i <= number) {
        sumLoop += i;
        i++;
    }

    System.out.println("Sum using formula: " + sumFormula);
    System.out.println("Sum using while loop: " + sumLoop);

    if (sumFormula == sumLoop) {
        System.out.println("Both computations are correct!");
    } else {
        System.out.println("There is a mismatch in computations.");
    }
}

myobj.close();
```

```
}  
}
```

13. Rewrite the program number 12 with the *for* loop instead of a while loop to find the sum of n Natural Numbers.

Hint =>

- a. Take the user input number and check whether it's a Natural number**
- a. If it's a natural number Compute using formulae as well as compute using *for* loop**
- a. Compare the two results and print the result**

```
import java.util.Scanner;
```

```
public class SumOfNaturalNumbers {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        int number;
```

```
        System.out.println("Enter a natural number: ");
```

```
        number = myobj.nextInt();
```

```
        if (number < 0) {
```

```
            System.out.println("The number " + number + " is not a natural number.");
```

```
        } else {
```

```
            int sumFormula = number * (number + 1) / 2;
```

```
            int sumLoop = 0;
```

```

    for (int i = 1; i <= number; i++) {
        sumLoop += i;
    }

    System.out.println("Sum using formula: " + sumFormula);
    System.out.println("Sum using for loop: " + sumLoop);

    if (sumFormula == sumLoop) {
        System.out.println("Both computations are correct!");
    } else {
        System.out.println("There is a mismatch in computations.");
    }
}

myobj.close();
}
}

```

14. Write a Program to find the factorial of an integer entered by the user.

Hint =>

- a. For example, the factorial of 4 is $1 * 2 * 3 * 4$ which is 24.
- a. Take an integer input from the user and assign it to the variable. Check the user has entered a positive integer.
- a. Using a *while* loop, compute the factorial.
- a. Print the factorial at the end.

```

import java.util.Scanner;

public class FactorialWhileLoop {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;
        long factorial = 1;

        System.out.println("Enter a positive integer: ");
        number = myobj.nextInt();

        if (number < 0) {
            System.out.println("Factorial is not defined for negative numbers.");
        } else {
            int i = number;
            while (i > 0) {
                factorial *= i;
                i--;
            }
            System.out.println("The factorial of " + number + " is " + factorial);
        }

        myobj.close();
    }
}

```

15. Rewrite program 14 using for loop

Hint =>

- a. **Take the integer input, check for natural number and determine the factorial using for loop and finally print the result.**

```
import java.util.Scanner;

public class FactorialForLoop {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;
        long factorial = 1;

        System.out.println("Enter a positive integer: ");
        number = myobj.nextInt();

        if (number < 0) {
            System.out.println("Factorial is not defined for negative numbers.");
        } else {
            for (int i = 1; i <= number; i++) {
                factorial *= i;
            }
            System.out.println("The factorial of " + number + " is " + factorial);
        }

        myobj.close();
    }
}
```

- 16. Create a program to print odd and even numbers between 1 to the number entered by the user.**

Hint =>

- a. Get an integer input from the user, assign to a variable number and check for Natural Number**
- a. Using a for loop, iterate from 1 to the number**
- a. In each iteration of the loop, print the number is odd or even number**

```
import java.util.Scanner;
```

```
public class OddEvenNumbers {  
    public static void main(String[] args) {  
        Scanner myobj = new Scanner(System.in);  
        int number;  
  
        System.out.println("Enter a positive integer: ");  
        number = myobj.nextInt();  
  
        if (number < 1) {  
            System.out.println("Please enter a natural number (1 or greater).");  
        } else {  
            for (int i = 1; i <= number; i++) {  
                if (i % 2 == 0) {  
                    System.out.println(i + " is an even number.");  
                } else {  
                    System.out.println(i + " is an odd number.");  
                }  
            }  
        }  
    }  
  
    myobj.close();  
}
```

```
}  
}
```

17. Create a program to find the bonus of employees based on their years of service.

Hint =>

- a. Zara decided to give a bonus of 5% to employees whose year of service is more than 5 years.**
- a. Take salary and year of service in the year as input.**
- a. Print the bonus amount.**

```
import java.util.Scanner;
```

```
public class EmployeeBonus {
```

```
    public static void main(String[] args) {
```

```
        Scanner myobj = new Scanner(System.in);
```

```
        double salary, bonus = 0.0;
```

```
        int yearsOfService;
```

```
        System.out.println("Enter your salary: ");
```

```
        salary = myobj.nextDouble();
```

```
        System.out.println("Enter your years of service: ");
```

```
        yearsOfService = myobj.nextInt();
```

```
        if (yearsOfService > 5) {
```

```
            bonus = 0.05 * salary;
```

```

        System.out.println("You are eligible for a bonus!");
        System.out.println("Your bonus amount is: " + bonus);
    } else {
        System.out.println("You are not eligible for a bonus.");
    }

    myobj.close();
}
}

```

18. Create a program to find the multiplication table of a number entered by the user from 6 to 9.

Hint =>

- a. Take integer input and store it in the variable number
- a. Using a for loop, find the multiplication table of number from 6 to 9 and print it in the format number * i = ____

```
import java.util.Scanner;
```

```

public class MultiplicationTable {
    public static void main(String[] args) {
        Scanner myobj = new Scanner(System.in);
        int number;

        System.out.println("Enter a number to find its multiplication table: ");
        number = myobj.nextInt();

        System.out.println("Multiplication table of " + number + " from 6 to 9:");
    }
}

```

```
for (int i = 6; i <= 9; i++) {  
    System.out.println(number + " * " + i + " = " + (number * i));  
}  
  
myobj.close();  
}  
}
```