ASSIGNMENT-8

1.In an organization they decide to give bonus to all the employees on New Year. A 5% bonus on salary is given to the grade A workers and 10% bonus on salary to the grade B workers. Write a program to enter the salary and grade of the employee. If the salary of the employee is less than $10,000 then the employee gets an extra 2% bonus on salary Calculate the bonus that has to be given to the employee and print the salary that the employee will get.

Sample Input & Output:

Enter the grade of the employee: B

Enter the employee salary: 50000

Salary=50000

Bonus=5000.0

Total to be paid:55000.0

Test cases:

1.   Enter the grade of the employee: A

Enter the employee salary: 8000

2.   Enter the grade of the employee: C

Enter the employee salary: 60000

3.   Enter the grade of the employee: B

Enter the employee salary: 0

4.   Enter the grade of the employee: 38000

Enter the employee salary: A

5.   Enter the grade of the employee: B

Enter the employee salary: -8000

```java
import java.util.Scanner;

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

        System.out.print("Enter the grade of the employee: ");
        char grade = input.next().charAt(0);

        System.out.print("Enter the employee salary: ");
        double salary = input.nextDouble();

        double bonus = 0;

        if (salary < 10000) {
            bonus = salary * 0.02;
        } else {
            if (grade == 'A') {
                bonus = salary * 0.05;
            } else if (grade == 'B') {
                bonus = salary * 0.10;
            }
        }

        double totalSalary = salary + bonus;
```
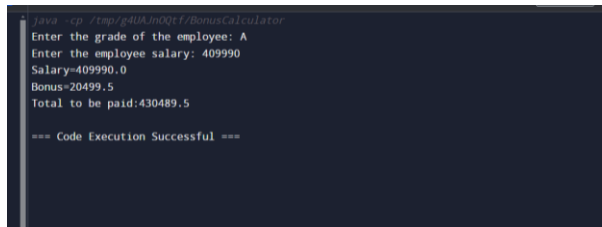
```java
        System.out.println("Salary=" + salary);
        System.out.println("Bonus=" + bonus);
        System.out.println("Total to be paid:" + totalSalary);
    }
}
```

2.Write a program to print the first n perfect numbers. (Hint Perfect number means **a positive integer that is equal to the sum of its proper divisors)**

Sample Input:

N = 3

Sample Output:

First 3 perfect numbers are: 6 , 28 , 496

Test Cases:

1. N = 0

2. N = 5

3. N = -2

4. N = -5

5. N = 0.2

```java
public class PerfectNumbers {
    public static void main(String[] args) {
        int n = 3;
        int count = 0;
        int num = 1;

        System.out.print("First " + n + " perfect numbers are: ");
        while (count < n) {
            if (isPerfectNumber(num)) {
                System.out.print(num + " ");
                count++;
            }
            num++;
        }
    }

    public static boolean isPerfectNumber(int number) {
        int sum = 0;
        for (int i = 1; i < number; i++) {
            if (number % i == 0) {
                sum += i;
            }
```
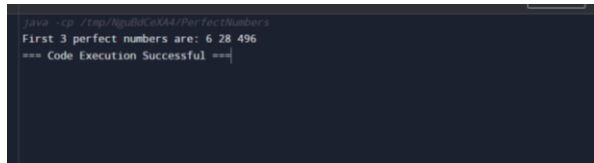
```
        }
        return sum == number;
    }
}
```



```
java -cp /tmp/NguBdCeXA4/PerfectNumbers
First 3 perfect numbers are: 6 28 496
=== Code Execution Successful ===
```

8.Write a program to enter the marks of a student in four subjects. Then calculate the total and aggregate, display the grade obtained by the student. If the student scores an aggregate greater than 75%, then the grade is Distinction. If aggregate is 60>= and <75, then the grade is First Division. If aggregate is 50 >= and <60, then the grade is Second Division. If aggregate is 40>= and <50, then the grade is Third Division. Else the grade is Fail.

Sample Input & Output:
Enter the marks in python: 90
Enter the marks in c programming: 91
Enter the marks in Mathematics: 92
Enter the marks in Physics: 93
Total= 366
Aggregate = 91.5
DISTINCTION
Test cases:
    a) 18, 76,93,65
    b) 73,78,79,75
    c) 98,106,120,95
    d) 96,73, -85,95
    e) 78,59.8,76,79

```java
import java.util.Scanner;

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

        System.out.print("Enter the marks in Python: ");
        int python = input.nextInt();
        System.out.print("Enter the marks in C Programming: ");
        int cProgramming = input.nextInt();
        System.out.print("Enter the marks in Mathematics: ");
        int mathematics = input.nextInt();
        System.out.print("Enter the marks in Physics: ");
        int physics = input.nextInt();

        int total = python + cProgramming + mathematics + physics;
        double aggregate = total / 4.0;
```

```java
                System.out.println("Total= " + total);
                System.out.println("Aggregate = " + aggregate);

                if (aggregate > 75) {
                    System.out.println("DISTINCTION");
                } else if (aggregate >= 60 && aggregate < 75) {
                    System.out.println("FIRST DIVISION");
                } else if (aggregate >= 50 && aggregate < 60) {
                    System.out.println("SECOND DIVISION");
                } else if (aggregate >= 40 && aggregate < 50) {
                    System.out.println("THIRD DIVISION");
                } else {
                    System.out.println("FAIL");
                }
            }
        }
```


9.Write a program to read the numbers until -1 is encountered. Find the average of positive numbers and negative numbers entered by user.

Sample Input:
Enter -1 to exit…
Enter the number: 7
Enter the number: -2
Enter the number: 9
Enter the number: -8
Enter the number: -6
Enter the number: -4
Enter the number: 10
Enter the number: -1
Sample Output:
The average of negative numbers is: -5.0
The average of positive numbers is : 8.66666667
Test cases:
1. -1,43, -87, -29, 1, -9
2. 73, 7-6,2,10,28,-1
3. -5, -9, -46,2,5,0
4. 9, 11, -5, 6, 0,-1
    5. -1,-1,-1,-1,-1
    import java.util.Scanner;

    public class AverageCalculator {

```java
public static void main(String[] args) {
    Scanner input = new Scanner(System.in);
    int number;
    int positiveSum = 0, positiveCount = 0;
    int negativeSum = 0, negativeCount = 0;

    System.out.println("Enter numbers. Enter -1 to exit.");

    do {
        System.out.print("Enter the number: ");
        number = input.nextInt();

        if (number > 0) {
            positiveSum += number;
            positiveCount++;
        } else if (number < 0) {
            negativeSum += number;
            negativeCount++;
        }
    } while (number != -1);

    if (positiveCount > 0) {
        double positiveAverage = (double) positiveSum / positiveCount;
        System.out.println("The average of positive numbers is: " + positiveAverage);
    } else {
        System.out.println("No positive numbers entered.");
    }

    if (negativeCount > 0) {
        double negativeAverage = (double) negativeSum / negativeCount;
        System.out.println("The average of negative numbers is: " + negativeAverage);
    } else {
        System.out.println("No negative numbers entered.");
    }

    input.close();
}
}
```


1. Write a program to read a character until a ***** is encountered. Also count the number of uppercase, lowercase, and numbers entered by the users.

Sample Input:
Enter * to exit…
Enter any character: W
Enter any character: d
Enter any character: A
Enter any character: G
Enter any character: g
Enter any character: H
Enter any character: *
Sample Output:
Total count of lower case:2
Total count of upper case:4
Total count of numbers =0
Test cases:

1. 1,7,6,9,5
2. S, Q, l, K,7, j, M
3. M, j, L, &, @, G
4. D, K, I, 6, L, *
5. *, K, A, e, 1, 8, %, *

```java
import java.util.Scanner;

public class CharacterCounter {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int uppercaseCount = 0;
        int lowercaseCount = 0;
        int numberCount = 0;

        System.out.println("Enter * to exit...");

        char input;
        do {
            System.out.print("Enter any character: ");
            input = scanner.next().charAt(0);

            if (Character.isUpperCase(input)) {
                uppercaseCount++;
            } else if (Character.isLowerCase(input)) {
                lowercaseCount++;
            } else if (Character.isDigit(input)) {
                numberCount++;
            }
        } while (input != '*');

        System.out.println("Total count of lower case: " + lowercaseCount);
        System.out.println("Total count of upper case: " + uppercaseCount);
        System.out.println("Total count of numbers = " + numberCount);
```

```
            scanner.close();
        }
    }
```



```
java -cp /tmp/z3qXrQXkcW/CharacterCounter
Enter * to exit...
Enter any character: A
Enter any character: U
Enter any character: R
Enter any character: A
Enter any character: *
Total count of lower case: 0
Total count of upper case: 4
Total count of numbers = 0

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