AP Tutorials

Java Programming classes under Aryan Singh

Week 3 Assignment

1. A number is said to be Duck if the digit zero is (0) present in it. Write a program to accept a number and check whether the number is Duck or not. The program displays the message accordingly. (The number must not begin with zero)

Hint: Sample Input: 5063 Sample Output: It is a Duck number. Sample Input: 7453 Sample Output: It is not a Duck number.

2. Write a program to enter two numbers and check whether they are co-prime or not.

Hint: [Two numbers are said to be co-prime, if their HCF is 1 (one).] Sample Input: 14, 15 Sample Output: They are co-prime.

3. The Greatest Common Divisor (GCD) of two integers is calculated by the continued division method. Divide the larger number by the smaller, the remainder then divides the previous divisor. The process repeats unless the remainder reaches to zero. The last divisor results in GCD.

Hint: Sample Input: 45, 20 Sample Output: GCD=5

4. Write a program to input a number and check and print whether it is a Pronic number or not.

Hint: [Pronic number is the number which is the product of two consecutive integers.] Examples: 12 = 3 * 4 20 = 4 * 5 42 = 6 * 7

1. Duck Number Check

A Duck number is defined as a positive number that contains at least one '0' in it but does not start with '0'. Below is the Java code to check if a number is a Duck number:

```java
import java.util.Scanner;

public class DuckNumber {
    public static boolean isDuckNumber(int num) {
        String strNum = Integer.toString(num);
        // Check if the first character is '0'
        if (strNum.charAt(0) == '0') {
            return false;
        }
        // Check for presence of '0' in the rest of the number
        return strNum.contains("0");
```

```
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter a positive number: ");
        int number = scanner.nextInt();

        if (isDuckNumber(number)) {
            System.out.println(number + " is a Duck number.");
        } else {
            System.out.println(number + " is not a Duck number.");
        }
    }
}
```

2. Co-prime Check

Two numbers are co-prime if their greatest common divisor (GCD) is 1. Here's how to implement this in Java:

```
import java.util.Scanner;

public class CoprimeCheck {
    public static int gcd(int a, int b) {
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }
        return a;
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter two numbers separated by a space: ");
        int num1 = scanner.nextInt();
        int num2 = scanner.nextInt();

        if (gcd(num1, num2) == 1) {
            System.out.println("They are co-prime.");
        } else {
            System.out.println("They are not co-prime.");
        }
    }
}
```

3. GCD Calculation

The GCD can be calculated using the Euclidean algorithm. Here's the Java code for that:

```java
import java.util.Scanner;

public class GCDCalculation {
    public static int gcd(int a, int b) {
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }
        return a;
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        System.out.print("Enter two numbers separated by a space: ");
        int num1 = scanner.nextInt();
        int num2 = scanner.nextInt();

        int result = gcd(num1, num2);
        System.out.println("GCD=" + result);
    }
}
```

4. Pronic Number Check

A Pronic number is defined as the product of two consecutive integers. Here's how to check if a number is Pronic in Java:

```java
import java.util.Scanner;

public class PronicNumberCheck {
    public static boolean isPronic(int n) {
        for (int i = 0; i * (i + 1) <= n; i++) {
            if (i * (i + 1) == n) {
                return true;
            }
        }
        return false;
    }

    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
```

```
        System.out.print("Enter a number: ");
        int number = scanner.nextInt();

        if (isPronic(number)) {
            System.out.println(number + " is a Pronic number.");
        } else {
            System.out.println(number + " is not a Pronic number.");
        }
    }
}
```