Task 1
Bit Manipulation Basics
Create a function that counts the number of set bits (1s) in the binary representation of an integer. Extend this to count the total number of set bits in all integers from 1 to n.
ANS:

```
package com.Day18;
public class BitManipulation {
  // Function to count the number of set bits (1s) in an integer
  public static int countSetBits(int x) {
     int count = 0;
     while (x > 0) {
        count += x & 1;
        x >>= 1;
     }
     return count;
  }
  // Function to count the total number of set bits in all integers
from 1 to n
  public static int totalSetBits(int n) {
     int totalCount = 0;
     for (int i = 1; i <= n; i++) {
        totalCount += countSetBits(i);
     }
     return totalCount;
  }
  public static void main(String[] args) {
     int n = 5;
     System.out.println("Total number of set bits from 1 to " + n + ":
" + totalSetBits(n));
  }
}
```

OUTPUT:

```
Total number of set bits from 1 to 5: 7
```