Rajalakshmi Engineering College

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2024_28_III_OOPS Using Java Lab

2028_REC_OOPS using Java_Week 1_CY

Attempt : 1
Total Mark : 40
Marks Obtained : 40

Section 1 : Coding

1. Problem Statement

In the faraway land of Arithmetica, there exists an ancient calculator that can only perform bitwise operations. The calculator is locked with a secret code that only works when the number is modified using a special operation called right shifting.

The ruler of Arithmetica, King Thales, needs your help to unlock the calculator. The lock on the calculator is encoded with a number, and the calculator will only open if you apply a right shift by 2 on the number. Your task is to help King Thales determine the magic number that will unlock the ancient calculator.

Input Format

The first line of input represents an integer.

Output Format

The output should display the right-shifted value by 2 bits.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 16
Output: 4

Answer

```
import java.util.Scanner;
 class AncientCalculator {
   public static void main(String[] args) {
      Scanner sc = new Scanner(System.in);
      int number = sc.nextInt();
      System.out.println(number >> 2);
   }
}
```

Status : Correct *Marks : 10/10*

2. Problem Statement

Mandy is working on a cybersecurity project that involves basic encryption techniques. She wants to write a program that takes an integer number and performs a bitwise XOR operation to flip all the bits.

Help Mandy in this encryption using bitwise operations.

Input Format

The input consists of an integer N, representing the number to be flipped.

Output Format

The output displays "Result: " followed by an integer representing the result of the bitwise XOR operation to flip all the bits.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 0
Output: Result: 255

Answer

```
import java.util.Scanner;
public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int input = scanner.nextInt();
      int result = input ^ 255;
      System.out.println("Result: " + result);
      scanner.close();
   }
}
```

Status : Correct ***Marks : 10/10***

3. Problem Statement

Mandy is a software engineer working on a program to analyze two integers based on specific conditions using a logical operator. She needs to determine if both integers are odd or if at least one of them is divisible by 7.

Depending on the result, she wants to print different messages.

If the condition is met, the program should identify and print the first number that is divisible by 7 or indicate that both numbers are odd.If the condition is not met, the program should print a message indicating the condition was not met, along with the input numbers.

Input Format

The first line of input consists of an integer representing the first input number.

The second line consists of an integer representing the second input number.

Output Format

The output displays "Condition met: " followed by an integer representing the first number divisible by 7, or prints "Both numbers are odd" if the two inputs are odd.

If the condition is not met, it displays "Conditions not met: " followed by the two input integers, separated by a space.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 7
14

Output: Condition met: 7

Answer

```
import java.util.Scanner;
class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int input1 = scanner.nextInt();
      int input2 = scanner.nextInt();
      boolean conditionMet = (input1 % 2 != 0 && input2 % 2 != 0) || (input1 % 7 ==
0 || input2 % 7 == 0);
      String output = conditionMet
         ? "Condition met: " + (input1 % 7 == 0 ? input1 : (input2 % 7 == 0 ? input2 :
"Both numbers are odd"))
         : "Conditions not met: " + input1 + " " + input2;
      System.out.println(output);
      scanner.close();
   }
}
```

Status : Correct ***Marks : 10/10***

4. Problem Statement:

Tom is tasked with writing a program that determines whether a given integer is the square of another integer. A perfect square is a number that can be expressed as the square of an integer. The program should take an integer as input and determine if it is a perfect square or not.

The task is to implement the logic to check if the provided integer is the square of an integer and return the result.

Input Format

The first line of the input contains an integer, "input", where |input| represents the absolute value of the integer.

Output Format

The output should display a boolean value, "result," which should be set to true if the input is a perfect square (the square of an integer), and false if it is not.

Refer to the sample output for formatting specifications.

Sample Test Case

Input: 16

Output: Is the integer a perfect square? true

Answer

```
import java.util.Scanner;
public class Main {
   public static void main(String[] args) {
      Scanner scanner = new Scanner(System.in);
      int input = scanner.nextInt();
      boolean result = ((int) Math.sqrt(input) * (int) Math.sqrt(input) == input);
      System.out.println("Is the integer a perfect square? " + result);
   }
}
```

Status : Correct ***Marks : 10/10***