**Name Shoukat Ali**

**ID 16425**

**ANSWER NO 1**

import java.util.Scanner;

public class EvenOdd {

public static void main(String[] args) {

Scanner reader = new Scanner(System.in);

System.out.print("Enter a number: ");

int num = reader.nextInt();

String evenOdd = (num % 2 == 0) ? "even" : "odd";

System.out.println(num + " is " + evenOdd);

}

}

**Outpot**

Enter a number: 13

13 is odd

**EXPLANATION:**

In the above program, we've replaced if...else statement with ternary operator (? :).

Here, if num is divisible by 2,"even" is returned. Else, "odd" is returned. The returned value is saved in a string variable evenOdd.

Then, the result is printed on the screen using string concatenation.

**ANSWER NO 2:**

public class Complex {

double real;

double imag;

public Complex(double real, double imag) {

this.real = real;

this.imag = imag;

}

public static void main(String[] args) {

Complex n1 = new Complex(2.3, 4.5),

n2 = new Complex(3.4, 5.0),

temp;

temp = add(n1, n2);

System.out.printf("Sum = %.1f + %.1fi", temp.real, temp.imag);

}

public static Complex add(Complex n1, Complex n2)

{

Complex temp = new Complex(0.0, 0.0);

temp.real = n1.real + n2.real;

temp.imag = n1.imag + n2.imag;

return(temp);

}

}

**OUTPUT:**

Sum = 5.7 + 9.5i

**EXPLANATION:**

In the above program, we created a class Complex with two member variables: real and imag. As name suggests, real stores real part of a complex number and imag stores the imaginary part.

The Complex class has a constructor with initializes the value of real and imag.

We also created a new static function add() that takes two complex numbers as parameters and returns the result as a complex number.

Inside the add() method, we just add the real and imaginary parts of complex numbers n1 and n2, store it in a new variable temp and return temp.

Then, in the calling function main(), we print it using printf() function.

**ANSWER NO 3:**

import java.util.Scanner;

public class LeapYear {

   public static void main(String[] args){

      int year;

      System.out.println("Enter an Year :: ");

      Scanner sc = new Scanner(System.in);

      year = sc.nextInt();

      if (((year % 4 == 0) && (year % 100!= 0)) || (year%400 == 0))

         System.out.println("Specified year is a leap year");

      else

         System.out.println("Specified year is not a leap year");

   }

}

**OUTPUT:**

Enter an Year ::

2020

Specified year is a leap year

Java Programming questions

31

Enter an Year ::

2017

Specified year is not a leap year

**EXPLANATION:**

Finding a year is a leap or not is a bit tricky. We generally assume that if a year number is evenly divisible by 4 is a leap year. But it is not the only case. A year is a leap year if −

* 1. It is evenly divisible by 100
* 2. If it is divisible by 100, then it should also be divisible by 400
* 3. Except this, all other years evenly divisible by 4 are leap years.

**Algorithm**

* 1. Take integer variable year
* 2. Assign a value to the variable
* 3. Check if the year is divisible by 4 but not 100, DISPLAY "leap year"
* 4. Check if the year is divisible by 400, DISPLAY "leap year"
* 5. Otherwise, DISPLAY "not leap year"

**ANSWER NO 4:**

public class VowelConsonant {

public static void main(String[] args) {

char ch = 'i';

if(ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u' )

System.out.println(ch + " is vowel");

else

System.out.println(ch + " is consonant");

}

}

**OUTPUT:**

i is vowel

**EXPLANATION:**

In the above program, 'i' is stored in a char variable ch. In Java, you use double quotes (" ") for strings and single quotes (' ') for characters.

Now, to check whether ch is vowel or not, we check if ch is any of: ('a', 'e', 'i', 'o', 'u'). This is done using a simple if..else statement.

We can also check for vowel or consonant using a switch statement in Java.

**ANSWER NO 5:**

public class Power {

public static void main(String[] args) {

int base = 3, exponent = 4;

long result = 1;

while (exponent != 0)

{

result \*= base;

--exponent;

}

System.out.println("Answer = " + result);

}

}

**OUTPUT:**

Answer = 81

**EXPLANATION:**

In this program, base and exponent are assigned values 3 and 4 respectively.

Using the while loop, we keep on multiplying result by base until exponent becomes zero.

In this case, we multiply result by base 4 times in total, so result = 1 \* 3 \* 3 \* 3 \* 3 = 81.

**E N D**