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BSCS-2

OOP

Q1. How to check Even and Odd numbers in java using object oriented approach?

ANS:

Java program to find whether given number is even or odd

An even number is a number which is divisible by 2. Therefore, perform %2 operation on the given number, if the result is 0 then the given number is even else given number is odd.

EG:

```
import java.util.Scanner;

public class EvenOrOdd {

    public static void main(String args[]){

        //Reading number from user

        Scanner sc = new Scanner(System.in);

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

        int num = sc.nextInt();

        //Finding even or odd
```

```
if (num % 2 == 0){
    System.out.println("Entered number is an even number");
} else {
    System.out.println("Entered number is an odd number");
}
}
}
```

OUTPUT

Enter a number ::

9

Entered number is an odd number

Q2. How to add 2 complex numbers in java using object oriented approach?

ANS:

Example – Adding two complex numbers in Java

In this program we have a class ComplexNumber. In this class we have two instance variables real and img to hold the real and imaginary parts of complex numbers.

We have declared a method sum() to add the two numbers by adding their real and imaginary parts together.

The constructor of this class is used for initializing the complex numbers. For e.g. when we create an instance of this class like this `ComplexNumber temp = new ComplexNumber(0, 0);`, it actually creates a complex number $0 + 0i$.

```
public class ComplexNumber{

    //for real and imaginary parts of complex numbers

    double real, img;

    //constructor to initialize the complex number
    ComplexNumber(double r, double i){

        this.real = r;

        this.img = i;

    }

    public static ComplexNumber sum(ComplexNumber c1,
    ComplexNumber c2)

    {

        //creating a temporary complex number to hold the sum of two
        numbers

        ComplexNumber temp = new ComplexNumber(0, 0);
```

```
temp.real = c1.real + c2.real;
temp.img = c1.img + c2.img;

//returning the output complex number
return temp;
}

public static void main(String args[]) {
    ComplexNumber c1 = new ComplexNumber(5.5, 4);
    ComplexNumber c2 = new ComplexNumber(1.2, 3.5);
    ComplexNumber temp = sum(c1, c2);
    System.out.printf("Sum is: "+ temp.real+" + "+ temp.img +"i");
}
}
```

OUTPUT

Sum is: 6.7 + 7.5i

Q3. How to check Leap year in java using object oriented approach?

ANS

Using Ternary Operator

1) The ternary operator syntax is “if (condition)? value1:value2;”, if the condition is true then it returns value1, otherwise it returns value2.

2) We are calculating the given year is a leap year or not. A year divisible by 400 (or) a year divisible by 4 and not divisible by 100 is a leap year.

3) Read the year value using scanner object sc.nextLong and store it in the variable y.

In given example y=1948, y!=0, it is divisible by 400 so c=1 return to a, a is initialized as a=1. Then it prints 1948 is a leap year.

```
class Leapyear
```

```
{
```

```
    public static void main(String arg[])
```

```
    {
```

```
        long a,y,c;
```

```
        Scanner sc=new Scanner(System.in);
```

```
        System.out.print("enter any calendar year :");
```

```
        y=sc.nextLong();
```

```
        if(y!=0)
```

```

    {
        a=(y%400==0)?(c=1):((y%100==0)?(c=0):((y%4==0)?(c=1):(c=0)));
        if(a==1)
            System.out.println(y+" is a leap year");
        else
            System.out.println(y+" is not a leap year");
    }
    else
        System.out.println("year zero does not exist ");
}
}

```

OUTPUT

Enter any calendar year : 1950

1950 is not a leap year

Q4. How to check that the input from the user is the vowel or not in java using object oriented approach?

ANS:

Java Program To Print Whether The Given Alphabet is Vowel Or Consonant

Here we are using switch case, generally switch is used one out of multiple options, an if-else ladder can also be used to select one out of multiple options. In simple words, we can say the switch is a multi-branch statement.

Here the combination of both small letters and capital letters are represented as vowels. With the help of the case statement, the output will display on what the user is going to be entered. If it is out of 10 alphabets, it will display vowel or else consonant.

switch case print vowel or consonant javaJava

1

2

3

4

5

6

7

8

9

10

11

12

13

14

15

16

17

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31

32


```
import java.util.Scanner;

class Char
{
    public static void main(String[ ] arg)
    {
        int i=0;

        Scanner sc=new Scanner(System.in);

        System.out.println("Enter a character : ");

        char ch=sc.next( ).charAt(0);

        //char ch=sc.nextChar();

        switch(ch)
        {
            case 'a' :
            case 'e' :
            case 'i' :
            case 'o' :
            case 'u' :
            case 'A' :
            case 'E' :
            case 'I' :
```

```
    case 'O' :
    case 'U' :i++;
}
if(i==1)
System.out.println("Entered character "+ch+" is Vowel");
else
    if((ch>='a'&&ch<='z') || (ch>='A'&&ch<='Z'))
        System.out.println("Entered character "+ch+" is
Consonent");
    else
        System.out.println("Not an alphabet");
}
}
```

OUTPUT

Enter a Character:

A

Entered character A is vowel

Q5. How to use power of a number in java using object oriented approach?

ANS

Program to calculate power of a number using while loop

```
public class JavaExample {  
    public static void main(String[] args) {  
        int number = 5, p = 2;  
        long result = 1;  
  
        int i=p;  
        while (i != 0)  
        {  
            result *= number;  
            --i;  
        }  
        System.out.println(number+"^"+p+" = "+result);  
    }  
}
```

OUTPUT

$$5^2=25$$