



Final Term Exam Summer 2020
Object Oriented Programming (Lab)

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BS(SE)

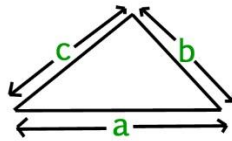
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Q1. How to calculate parameter of a triangle in java using object oriented approach?

Answer:

Parameter of a triangle is the sum of the length of side of a triangle.



where a, b, c are length of side of a triangle.

Parameter of a triangle can simply be evaluated using following formula :

Examples :

Input : a = 2.0, b = 3.0, c = 5.0

Output : 10.0

Input : a = 5.0, b = 6.0, c = 7.0

Output : 18.0

```
// Java program to find parameter
// of triangle
class Test {
    static float findParameter(float a, float b, float c)
    {
        // Formula for Parameter of triangle
        return (a + b + c);
    }

    // Driver method
    public static void main(String[] args)
    {
        float a = 2.0, b = 3.0, c = 5.0;
        System.out.println(findParameter(a, b, c));
    }
}
```

Output :

10.0

Q2. How to calculate diameter of a circle in java using object oriented approach?

Answer:

Calculating a circle's diameter is easy if you know any of the other dimensions of the circle: the radius, the circumference, or the area. It's also possible if you don't know any of the above dimensions but you do have a drawing of the circle.

Calculating the Diameter of a Circle Using the Radius:

If you know the radius of the circle, double it to get the diameter. The radius is the distance from the center of the circle to its edge.

Example:

If the radius of the circle is 4 cm, then the diameter of the circle is $4 \text{ cm} \times 2$, or 8 cm

```
/* Program to find diameter of circle.*/
import java.util.Scanner;

public class Circle {

    public static void main(String[] args)
    {

        Scanner in = new Scanner(System.in);

        /* Input radius of circle from user. */
        System.out.println("Please enter radius of the circle : ");
        int r = in.nextInt();

        /* Calculate diameter. */
        int d = 2 * r;

        /* Print diameter of circle. */
        System.out.println("Diameter of circle is : " + d);
    }
}
```

Output :

```
Please enter radius of the circle : 33
Diameter of circle is : 66
```

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

Answer:

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 –

- It is evenly divisible by 100
- If it is divisible by 100, then it should also be divisible by 400

- Except this, all other years evenly divisible by 4 are leap years.

Algorithm

- Take integer variable year
- Assign a value to the variable
- Check if the year is divisible by 4 but not 100, DISPLAY "leap year"
- Check if the year is divisible by 400, DISPLAY "leap year"
- Otherwise, DISPLAY "not leap year"

Example:

```
import java.util.Scanner;
public class LeapYear {
    public static void main(String[] args){
        int year;
        System.out.print("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
```

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

Answer:

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.

```
/* using switch case print vowel or consonant javaJava */
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?

Answer:

As we all know, the power of a number is the times a number is multiplied with itself. The power of a number, in more simpler terms, is the number of times you have to multiply the number by itself.

For example: 5^3 is called as 5 to the power of 3.

Here, $5^3 = 5*5*5 = 125$.

Similarly, $5^{(-2)} = (1/5)^2 = 1/25$.

The power of 0 will always give the result as 1, no matter what the number is, unless if it is undefined or infinite.

As given in the photo above, the powers of the number 11 from 0 to 11 are mentioned there. It is clearly seen that 11 is multiplied by the result once after the other as the power increases.

Thus, the manifold ways to calculate the power of a number in Java programming are as follows:

```
/*Using for loop*/
class Power
{
    public static void main(String arg[])
    {
        long n,p,r=1;

        Scanner sc=new Scanner(System.in);

        System.out.println("enter number");

        n=sc.nextLong();

        System.out.println("enter power");

        p=sc.nextLong();

        if(n>=0&&p==0)
        {
            r =1;
        }
        else if(n==0&&p>=1)
        {
            r=0;
        }
        else
        {
            for(int i=1;i<=p;i++)
            {
                r=r *n;
            }
        }

        System.out.println(n+"^"+p+"="+r);

    }
}
```

Output:

```
enter number
6
enter power
```

6

$$6^6=46656$$