

Date 5/10/2020

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Subject :- oop Lab

Semester :- 8th semester.

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

Ans] Find the parameter of a triangle :-
Given side (a,b,c) of a triangle, we have to find the perimeter of a triangle.

* Perimeter :-

Perimeter 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.

Perimeter of a triangle can simply be evaluated = $(a+b+c)$.

* Example :-

```
// Java program to find perimeter
```

```
// of Triangle
```

```
class Test {
```

```
    static float findPerimeter(float a,
```

```
    float b, float c)
```

```
{ // Formule for Perimeter of a triangle return (a+b+c)
```

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// Driver method

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

```
{  
    float a = 2.0, b = 3.0, c = 5.0;
```

```
    System.out.println ("Find perimeter (a,b,c)");  
}
```

output :-
10.0

Q3 :: How to check leap year in java using object oriented approach?

Ans 1: import java.util.Scanner; class leap year

2. public static void main (String arg [] {

3. if (year % 4 == 0) { if (year % 400 == 0)

4. System.out.println ("year " + year + " is a leap year) else if (year % 100 == 0)

5. else if (year % 4 == 0) System.out.println ("year " + year + " is a leap year) else

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

7. System.out.println ("year zero does not exist");

* Example :-

```
import java.util.Scanner;  
class leap year
```

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

```
{  
    long a, y, c;  
    Scanner sc = new Scanner (System.in);
```

```

*****
System.out.println("enter any calendar year:");
x = sc.nextInt();

```

```

if (x != 0)
{

```

```

    a = (x % 400 == 0) ? (c = 1) : (x % 100 == 0) ? (c = 0) :
    c (x % 4 == 0) ? (c = 1) : (c = 0));

```

```

if (a == 1)
{

```

```

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

```

```

    else

```

```

    System.out.println("Year zero does not exist");
}

```

```

}

```

```

else

```

```

System.out.println("Year zero does not exist");
}
}

```

```

}

```

```

}

```

Output:-

1. enter any calendar year : 1950
2. 1950 is not a leap year

1. enter any calendar year : 1948
2. 1948 is a leap year.

Q 4:- How to check that the input from the user is the value or not in java using object oriented approach?

Ans :- Example:-

```

public class vowel consonant {
    public static void main (String [] args) {

```

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```
*****  
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)

Example 2 :-

```
public class vowel consonant {  
    public static void main (String[] args) {  
        char ch='g';  
        switch (ch) {  
            case 'a' : ;  
            case 'e' : ;  
            case 'i' : ;  
            case 'o' : ;  
            case 'u' : ;
```

```
            System.out.println(ch+" is vowel");  
            break;  
            default ;  
                System.out.println(ch+" is consonant");  
        }  
    }  
}
```

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Output:

Z is consonant

in the above program instead of using along `if` condition we replace it with a `switch case` statement if `ch` is either of cases.

('a', 'e', 'i', 'o', 'u') vowel is executed and consonant is printed on the screen.

Q 5:- How to use Power of a number in java using object oriented approach?

Ans:- Power of a number using a value loop

```

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);
    }
}

```

Out Put

Answer = 81

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Answer = 81

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

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

In this case, we multiply `results` by base 4 times in total, so $\text{result} = 1 * 3 * 3 * 3 * 3 = 81$.

Example:

```
Public class Power {
```

```
    Public static void main (String [] args) {
```

```
        int base = 3, exponent = -4;
```

```
        double result = Math.pow(base, exponent);
```

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

```
    }
```

```
}
```

Output :-

Answer = 0.0123456789012345678

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Qd:- How to calculate diameter of a circle in java using object oriented approach?

Ans:- Find diameter of a circle:-

Example:-

```
" Program to find diameter, circumference and java.util.Scanner.
class circle {
Public static void main (String [] args) {
" Declare constant for PI
final double PI = 3.141592653;
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, circumference and area of circle.*/
int d = 2 * r;
double circumference = 2 * PI * r;
double area = PI * r * r;
/* Print diameter circumference and area of circle */
System.out.println ("Diameter of circle is " + d);
System.out.println ("Circumference of circle: " + circumference);
System.out.println ("Area of circle is: " + area);
```

Here we declaring a constant variable \boxed{PI} through final keyword

Instead of declaring our custom constant for \boxed{PI} we can java predefined constant for \boxed{PI} define in Math class i.e. $\boxed{Math.PI}$

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Math is built-in class in java, available in java.lang package. π is a static `final double` type variable of math. Because π is static, so we can use it without creating object of math class. And `PI` is `final` also, so we cannot change its value in our program.

Output:-

please enter radius of the circle: 20
Diameter of circle is: 40
Circumference of circle is: 125.66370612
Area of circles is 1255.6372012