

Date 5/10/2020

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Subject = Object Oriented Programming (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)
```

```
{
```

```
    // formula for Perimeter of 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)");
}
```

Out put

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 != 0) { if (year % 400 == 0)

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

5. else if (year % 4 == 0) System.out. ...

6. System.out.println (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);
```

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```
*****
System.out.println("enter any calendar year: ");
y = Sc.nextInt();
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");
System.out.println(y + " is not a leap year");
        else
        System.out.println(y + " is not a leap year");
    }
    else
        System.out.println("year zero does not exist");
}
}
```

* Output:-

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

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

Q4:- How to check that the input from the users is the vowel or not in java using object oriented approach?

Ans EXAMPLE:-

```
public class VowelConsonant {
    public static void main (String[] args) {
```

Solution

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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");
}
}
}

```

Out put:-

i is vowel

EXAMPLE 2:-

```

public class Vowel Consonant {
    public static void main (String[] args) {
        char ch = 'z';
        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 a long `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.

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

Ans

POWER OF A NUMBER USING A WHILE 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);  
    }  
}
```

Output:-

Answer = 81

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Answer = 81

In this program, `base` and `exponent` are assigned values 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 `result` by base 4 times in total, so $result = 1 \times 3 \times 3 \times 3 \times 3 = 81$.

EXAMPLE 2

```
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 = 0.012345679012345678

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Q2:- 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 area of a circle
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 are declaring a constant variable π through final keyword. Instead of declaring our custom constant for π we can use Java predefined constant for π defined in Math class i.e. 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 π 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 Circle is : 1256.6370612