Department of Computer Science

Final Term Exam Summer 2020

Subject: Object Oriented Programming (Lab)

BS (CS,SE)   Instructor: M.Ayub Khan

There are total **5** questions in this paper.

Note:

At the top of the answer sheet there must be the ID, Name and semester of the concerned Student.

Students must have to provide the output of their respective programs. Students have same answers or programs will be considered fail. Programs in Java and codes should be explained clearly.

As this paper is online so incase of any ambiguity my Whatsapp no. is 03449121116.

Each question carry equal marks.
Please answer briefly.

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ID   :   **6833**

Subject   : **Object Oriented Programming(LAB)**

Submitted To   :   **Sir M.Ayub Khan**

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

Answer:

```java
/*
 This program demonstrates: object-oriented thinking to calculate perimeter
triangle! ! !
 */
class Test {

  int a;
  int b;
  int c;

  public int zhouchang() {
    return a + b + c;
  }


}

public class Triangle {

  /**
   * @param args
   */
  public static void main(String[] args) {
    Test triangle = new Test();
    triangle.a = 3;
    triangle.b = 4;
    triangle.c = 5;
    System.out.println("Perimeter ++++" + triangle.zhouchang());
```

```
    }

}
```

Output:

Result

```
Perimeter ++++12
```

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

Answer:

```java
/**
 * Program to find diameter */
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, circumference and area of circle. */
```

System.out.println("Diameter of circle is : " + d);

    }
}

Output:
Please enter radius of the circle : 10
Diameter of circle is : 20

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

Java Program to Check Leap Year

In this program, you'll learn to check if the given year is a leap year or not.

This is checked using a if else statement.

A leap year is exactly divisible by 4 except for century years (years ending with 00). The century year is a leap year only if it is perfectly divisible by 400.

Example: Java Program to Check a Leap Year

```java
public class LeapYear {

    public static void main(String[] args) {

        int year = 1900;
        boolean leap = false;

        if(year % 4 == 0)
        {
            if( year % 100 == 0)
            {
                // year is divisible by 400, hence the year is a leap year
                if ( year % 400 == 0)
                    leap = true;
                else
                    leap = false;
```

```
                }
            else
                leap = true;
        }
        else
            leap = false;

        if(leap)
            System.out.println(year + " is a leap year.");
        else
            System.out.println(year + " is not a leap year.");
    }
}
```

Output

```
1900 is not a leap year.
```

When you change the value of year to 2012, the output will be:

```
2012 is a leap year.
```

In the above program, the given year 1900 is stored in the variable `year`.
Since 1900 is divisible by 4 and is also a century year (ending with 00), it has
been divisible by 400 for a leap year. Since it's not divisible by 400, 1900 is
not a leap year.

But, if we change `year` to 2000, it is divisible by 4, is a century year, and is
also divisible by 400. So, 2000 is a leap year.
Likewise, If we change `year` to 2012, it is divisible by 4 and is not a century
year, so 2012 a leap year. We don't need to check if 2012 is divisible by 400
or not.

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

Answer:

Check Vowel or Not

To check whether the input alphabet is a vowel or not in Java Programming, you have to ask to the user to enter a character (alphabet) and check if the entered character is equal to a, A, e, E, i, I, o, O, u, U. If it is equal to any one of the 10, then it will be vowel otherwise it will not be a vowel.

Java Programming Code to Check Vowel or Not

Following Java Program ask to the user to enter an alphabet to check whether it is a vowel or not, then display the result on the screen:
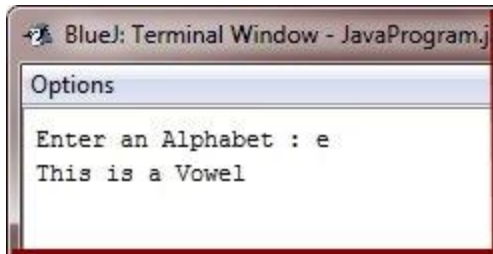
```java
/* Java Program Example - Check for Vowel */

import java.util.Scanner;

public class JavaProgram
{
    public static void main(String args[])
    {
        char ch;
        Scanner scan = new Scanner(System.in);

        System.out.print("Enter an Alphabet : ");
        ch = scan.next().charAt(0);

        if(ch=='a' || ch=='A' || ch=='e' || ch=='E' ||
        ch=='i' || ch=='I' || ch=='o' || ch=='O' ||
        ch=='u' || ch=='U')
        {
            System.out.print("This is a Vowel");
        }
        else
        {
            System.out.print("This is not a Vowel");
        }
    }
}
```
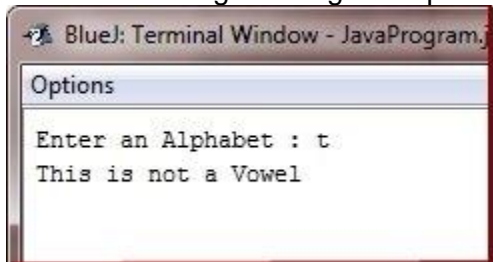
When the above Java Program is compile and executed, it will produce the following result. Above Java Programming Example Output (for vowel):

Above Java Programming Example Output (for not vowel):

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

Answer:

Read the base and exponent values from the user. Multiply the base number by itself and multiply the resultant with base (again) repeat this n times where n is the exponent value.

```
2 ^ 5 = 2 X 2 X 2 X 2 X 2 (5 times)
```

Example

```java
import java.util.Scanner;

public class PowerOfNumber {

   public static void main(String args[]){

      Scanner sc = new Scanner(System.in);

      System.out.println("Enter the base number ::");

      int base = sc.nextInt();

      int temp = base;

      System.out.println("Enter the exponent number ::");

      int exp = sc.nextInt();
```

```java
    for (int i=1; i<exp; i++){

        temp = temp*temp;

    }

    System.out.println("Result of "+base+" power "+exp+" is
"+temp);

    }

}
```

Output

```
Enter the base number ::
12
Enter the exponent number ::
2
Result of 12 power 2 is 144
```

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<END>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>