## Lab Assignments (Lab-5)

| Q# | Experiment Details | Input | Output |
|---|---|---|---|
| 1 | WAP to find the largest between two numbers. | Enter two numbers:<br>80, 990 | The largest number is 990 |
| 2 | WAP to read an alphabet from the user and convert it into uppercase if the entered alphabet is in lowercase, otherwise display an appropriate message. | Set 1<br>Enter an alphabet: k<br>Set 2<br>Enter an alphabet: M | Set 1<br>The upper case of the entered letter is 'K'<br>Set 2<br>You have entered 'M' which is already in upper case |
| 3 | WAP to read a character from the user and test it whether it a vowel or consonant or not an alphabet. | Set 1:<br>Enter an alphabet: B<br><br>Set 2 :<br>Enter an alphabet: % | Set 1:<br>The entered character B is a consonant<br><br>Set 2:<br>The entered character % is not an alphabet |
| 4 | WAP to determine whether a year entered through the keyboard is a leap year or not. | Set 1:<br>Enter the year:2005<br><br>Set 2:<br>Enter the year:1996 | Set 1:<br>2005 is not a leap year.<br>Set 2:<br>1996 is a leap year. |
| 5 | WAP to find the roots of a quadratic equation ax2+bx+c=0 using if-else statement. | **Set1**<br>Input values for a, b and c=>1<br>2<br>1<br><br>**Set2**<br>Input values for a, b and c=>1 8 3<br><br>**Set 2**<br>Input values for a, b and c=>3 5 7 | **Set1**<br>Input values for a, b and c=>1<br>2<br>1<br><br>**Set2**<br>The Roots are real & unequal.<br>Roots are -0.39 and -7.61<br>**Set 3**<br>The Roots are imaginary<br>Root1=-0.17+i1.28<br>Root2=-0.17-i1.28 |

| | | | |
|---|---|---|---|
| 6 | WAP to display the grade system of KIIT University based on total marks secured by a student in a semester. Assume marks are integer values. Use multiple if-else statement. The grade is calculated is as follows:<br>Marks Grade<br>90 to 100 O<br>80 to 89 E<br>70 to 79 A<br>60 to 69 B<br>50 to 59 C<br>40 to 49 D<br>< 40 F | **Set-1**<br>Enter total mark secured by a student: 55<br>Secured grade is C<br><br>**Set-2**<br>Enter total mark secured by a student: 95<br>Secured grade is O | **Set-1**<br><br>Secured grade is C<br><br>**Set-2**<br>Secured grade is O |

**Home Assignments (Practice Problems)**

| Q# | Experiment Details | Input | Output |
|---|---|---|---|
| 1 | WAP to test whether a number entered through keyboard is ODD or EVEN. | Set 1<br>Enter a number : 19<br>Set 2<br>Enter a number : 100 | Set 1<br>19 is an ODD number<br>Set 2<br>100 is an even number |
| 2 | Write a C program to determine eligibility for admission based on the following criteria:<br><br>Eligibility Criteria :<br>Marks in Maths >=65 and Marks in Phy >=55 and Marks in Chem>=50 and<br>Total in all three subject >=190 or Total in Maths and Physics >=140 | Input the marks obtained in Physics :65<br>Input the marks obtained in Chemistry :51<br>Input the marks obtained in Mathematics :72 | The candidate is not eligible for admission. |
| 3 | Write a C Program to check whether the triangle is equilateral isosceles or scalene (Triangle consists of three sides of provided lengths n1, n2 and n3 units). | Set 1: n1=3, n2=3, n3=4 | Set 1: isosceles |

**Logic**

2. (Lower to Upper)

```
if(ch >= 'a' && ch<= 'z')

ch = ch -32
```

4.

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.

For example,

- 1999 is not a leap year
- 2000 is a leap year

5.

The standard form of a quadratic equation is:

```
ax2 + bx + c = 0, where

a, b and c are real numbers and

a != 0
```

The term `b2; - 4ac` is known as the **discriminant** of a quadratic equation. It tells the nature of the roots.

- If the discriminant is greater than `0`, the roots are real and different.
- If the discriminant is equal to `0`, the roots are real and equal.
- If the discriminant is less than `0`, the roots are complex and different.

If the discriminant > 0,

$$root1 = \frac{-b + \sqrt{(b^2 - 4ac)}}{2a}$$

$$root2 = \frac{-b - \sqrt{(b^2 - 4ac)}}{2a}$$

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If the discriminant = 0,

$$root1 = root2 = \frac{-b}{2a}$$

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If the discriminant < 0,

$$root1 = \frac{-b}{2a} + \frac{i\sqrt{-(b^2 - 4ac)}}{2a}$$

$$root2 = \frac{-b}{2a} - \frac{i\sqrt{-(b^2 - 4ac)}}{2a}$$

Figure: Roots of a Quadratic Equation