**C programming**

**Lab Assignment**

1. Write a program to print all prime numbers from 1 to 300.  
   (Hint: Use nested loops, break, and continue)
2. Write a program to fill the entire screen with a smiling face. The smiling face has an ASCII value 1.
3. Write a program to add first seven terms of the following series using a for loop:  
   1/1! + 2/2! + 3/3! + ...
4. Write a program to generate all combinations of 1, 2 and 3 using for loop.
5. According to a study, the approximate level of intelligence of a person can be calculated using the following formula:  
   i = 2 + (y + 0.5x)

Write a program which will produce a table of values of i, y and x, where y varies from 1 to 6, and, for each value of y, x varies from 5.5 to 12.5 in steps of 0.5.

1. Write a program to produce the following output text

A B C D E F G F E D C B A

A B C D E F F E D C B A

A B C D E E D C B A

A B C D D C B A

A B C C B A

A B B A

A A

1. Write a program to fill the entire screen with diamond and heart alternately. The ASCII value for heart is 3 and that of diamond is 4.
2. Write a program to print the multiplication table of the number entered by the user. The table should get displayed in the following form :

29 \* 1 = 29

29 \* 2 = 58

...

1. Write a program to produce the following output:

1. Write a program to produce the following output:
2. A machine is purchased which will produce earning of Rs. 1000 per year while it lasts. The machine costs Rs. 6000 and will have a salvage of Rs. 2000 when it is condemned. If 12 percent per annum can be earned on alternate investments, what would be the minimum life of the machine to make it a more attractive investment compared to alternative investment?
3. When interest compounds q times per year at an annual rate of r % for n years, the principle p compounds to an amount a as per the following formula:  
   a = p(1 + r/q)^nq
4. Write a program to read 10 sets of p, r, n & q and calculate the corresponding a.
5. The natural logarithm can be approximated by the following series:  
   (x-1)/x = 1/2 \* ((x-1)/x)^2 + 1/2 \* ((x-1)/x)^3 + 1/2 \* ((x-1)/x)^4 + ...

If x is input through the keyboard, write a program to calculate the sum of first seven terms of this series.

1. Ramesh's basic salary is input through the keyboard. His dearness allowance is 40% of basic salary, and house rent allowance is 20% of basic salary. Write a program to calculate his gross salary.
2. The distance between two cities (in km.) is input through the keyboard. Write a program to convert and print this distance in meters, feet, inches and centimeters.
3. If the marks obtained by a student in five different subjects are input through the keyboard, find out the aggregate marks and percentage marks obtained by the student. Assume that the maximum marks that can be obtained by a student in each subject is 100.
4. Temperature of a city in Fahrenheit degrees is input through the keyboard. Write a program to convert this temperature into Centigrade degrees.
5. The length & breadth of a rectangle and radius of a circle are input through the keyboard. Write a program to calculate the area & perimeter of the rectangle, and the area & circumference of the circle.
6. Two numbers are input through the keyboard into two locations C and D. Write a program to interchange the contents of C and D.
7. If a five-digit number is input through the keyboard, write a program to calculate the sum of its digits.  
   (Hint: Use the modulus operator '%')
8. If a five-digit number is input through the keyboard, write a program to reverse the number.
9. A cashier has currency notes of denominations 10, 50 and 100. If the amount to be withdrawn is input through the keyboard in hundreds, find the total number of currency notes of each denomination the cashier will have to give to the withdrawer.
10. If the total selling price of 15 items and the total profit earned on them is input through the keyboard, write a program to find the cost price of one item.
11. If a five-digit number is input through the keyboard, write a program to print a new number by adding one to each of its digits. For example if the number that is input is 12391 then the output should be displayed as 23402.
12. Write a program using conditional operators to determine whether a year entered through the keyboard is a leap year or not.
13. Write a program to find the greatest of the three numbers entered through the keyboard using conditional operators.
14. Determine:  
    (1) Whether the character entered through the keyboard is a lowercase alphabet or not.  
    (2) Whether a character entered through the keyboard is a special symbol or not.