

Algorithm Development and Programming Fundamentals

MCA SEM-1

Conditional Statements & Loops

1. Get the lengths of three sides of a triangle from the user. Check whether the triangle can be formed or not. If possible then classify the triangle as equilateral, isosceles or scalene. Otherwise, if the triangle cannot be formed, give the user a chance to re-enter the lengths of the sides or terminate the program. Draw the flowchart and Write an algorithm for the same.

Hint: If the sum of the lengths of any two sides is greater than the length of the third side then a triangle can be formed.

2. Write a program in C to carry out the arithmetic operations addition, subtraction, multiplication, and division between two variables based on users input. Give the user a chance to re-run the operation or terminate the program. Draw the flowchart and Write an algorithm for the same.
3. Write a C program that checks whether a character entered by the user is a vowel or not. Give the user a chance to re-run the program or terminate the program.
4. Write a C program that illustrates the run time field width [*] and precision adjustment while using printf().
5. You are given two 4-digit positive integers. Write a C program to calculate and print out the sum of the products of each pair of digits occupying the same position in the two numbers. For example, if first number is 3445 and second number is 4534, then output will 64 ($3*4 + 4*5 + 4*3 + 5*4 = 64$).

6. Draw the flowchart and write a C program for the following algorithm.

- 1) START
- 2) PRINT "ENTER THE NUMBER: "
- 3) INPUT M
- 4) IF $M < 0$ THEN PRINT "NEGATIVE VALUE IS NOT A VALID INPUT":
GOTO 10
- 5) $S \leftarrow M/2$
- 6) $F \leftarrow S$
- 7) $S \leftarrow (F + M/F)/2$
- 8) IF $(F - S) \geq 0.000001$ THEN GOTO 6
- 9) PRINT S
- 10) STOP