**Question 01:**

Read a positive integer value, and compute the following sequence: If the number is even, halve it; if it's odd, multiply by 3 and add 1. Repeat this process until the value is 1, printing out each value. Finally print out how many of these operations you performed.



**Question 02:**

Write a program containing two functions named:

1. "IterativeSum( )" that iteratively computes and returns the sum of first 10 natural numbers.
2. "RecursiveSum( )" that recursively computes and returns the sum of first 10 natural numbers.

Call the appropriate function based upon the user’s choice from main(). Use appropriate parameters and return type.

**Question 03:**

Write a program containing a function named ‘ArraySum’ that computes and returns the sum of all elements in an array, where the array and its size are given as parameters. Use appropriate parameters and return type.

**Question 04:**

Write a program to print the reverse of an entered array. Your program must contain only one array.

**Question 05:**

An instructor has 30 students in her class. Each student is identified by a number from 1 to 30. Grades are stored in a one-dimensional array. The instructor would like to enter a student number and have the student’s test score printed on the monitor. Develop a program to output the needed information.

**Question 06:**

Write a program to sort all the elements of an array (in ascending order and descending order).

**Question 08:**

Write a program to copy the content of one array into another in reverse order.

**Question 09:**

Write a program in which user enters his NTS and Intermediate marks and your function will help student in selection of university. Based on these marks Student will be allocated a seat at different department of different university.

***University Of Karachi:***

IT: Above 75% in Fsc. and 70 % in NTS

Electronics: Above 70% in Fsc. and 60 % in NTS

Telecommunication Above 70% in Fsc. and 50 % in NTS

***FAST University:***

Computer Science : Above or equal 65% in Fsc. and 50 % in NTS

Electronics: Above 59% in Fsc. and 50 % in NTS

**Question 10:**

Hatim is a student of computer science. He is currently self-studying programming in C language. He wants to develop a program for the purpose of reusability, in which he is performing mathematical operations like addition, subtraction, production, and division. Keep in mind, He wants to perform these mathematical operations in different programs since he may need to use any of these operations in any of the developed programs.

**Question 11:**

Find recursively the gcd (greatest common divisor) of 2 numbers passed as arguments.

**Question 12:**

Write a program containing a function named ‘display’ that computes to print the multiplication table (user supplies the size) as shown below.

1 2 3 4 5 6

1\* 1 2 3 4 5 6

2\* 2 4 6 8 10 12

3\* 3 6 9 12 15 18

4\* 4 8 12 16 20 24

5\* 5 10 15 20 25 30

6\* 6 12 18 24 30 36

**Question 13:**

Teacher asks the student to check the whether the input number is divisible by 7 or not. For checking the divisibility, take last digit and double it take the rest of the digits and subtract the doubled last digit repeat until result is 7, -7 or 0.

For Eg:

10976 -> 1097-12 = 1085 -> 108-10 = 98 -> 9-16 = -7

49 -> 4 - 18 = 14 -> 1 - 8 = -7

**Question 14:**

Point out the errors, if any, in the following programs:

**(a)** main( )

{

int i = 3, j = 4, k, l ;

k = addmult ( i, j ) ;

l = addmult ( i, j ) ;

printf ( "\n%d %d", k, l ) ;

}

addmult ( int ii, int jj )

{

int kk, ll ;

kk = ii + jj ;

ll = ii \* jj ;

return ( kk, ll ) ;

}

**(b)** main( )

{

int a ;

a = message( ) ;

}

message( )

{

printf ( "\nViruses are written in C" ) ;

return ;

}

**(c)** main( )

{

float a = 15.5 ;

char ch = 'C' ;

printit ( a, ch ) ;

}

printit ( a, ch )

{

printf ( "\n%f %c", a, ch ) ;

}

**(d)**

main( )

{

message( ) ;

message( ) ;

}

message( ) ;

{

printf ( "\nPraise worthy and C worthy are synonyms" ) ;

}

**(e)**

main( )

{

let\_us\_c( )

{

printf ( "\nC is a Cimple minded language !" ) ;

printf ( "\nOthers are of course no match !" ) ;

}

}

**(f)**

main( )

{

message( message ( ) ) ;

}

void message( )

{

printf ( "\nPraise worthy and C worthy are synonyms" ) ;

}