

How to use Dev-C++

Introduction

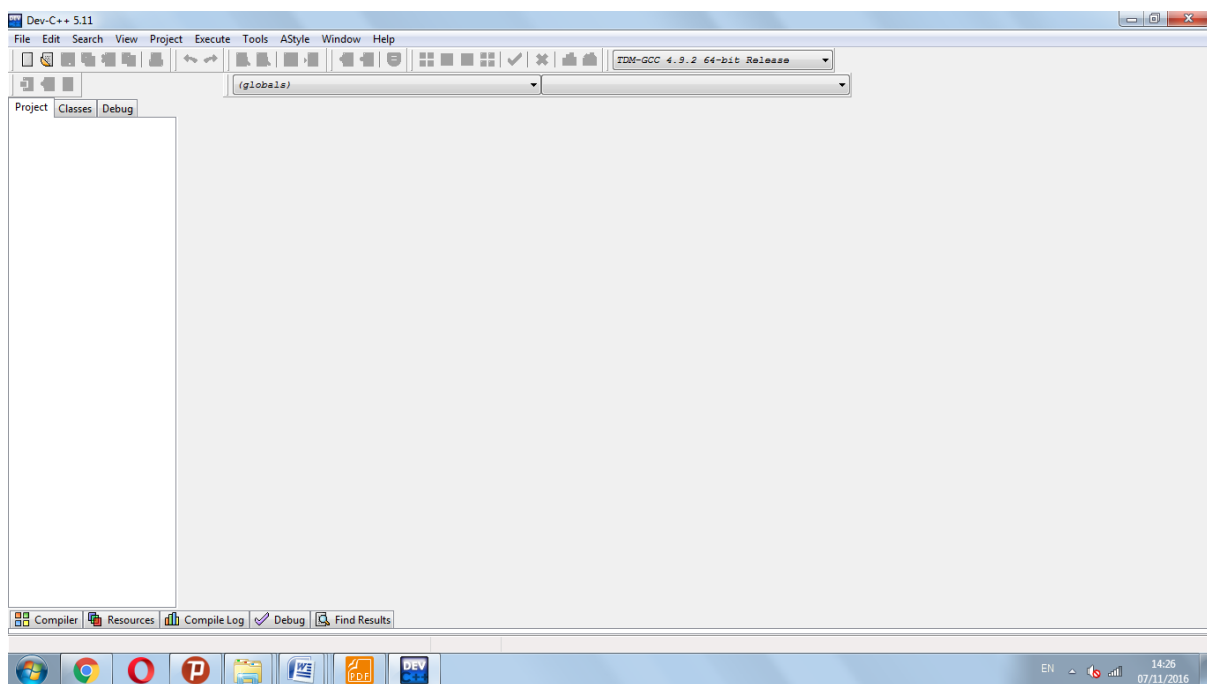
Dev-C++ is a full-featured integrated development environment (IDE), which is able to create Windows or DOS-based C/C++ programs using the Mingw compiler system (included with the package), or the Cygwin compiler.

Dev-C++ allows you to write, compile and run a C or C++ program.

C++ programming language is an enhanced version of C language that provides object-oriented programming (OOP) capabilities. It is a superset of C, which means that you can use a C++ compiler to compile C programs. Object oriented programming techniques differ significantly from the sequential programming used in C programming language.

Dev-C++ interface

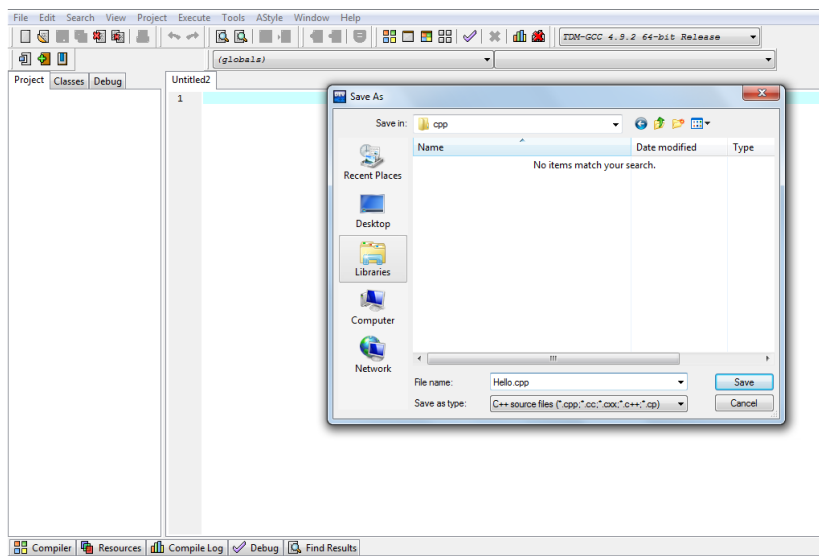
When you click on the Dev-C++ icon on your desktop, the program window opens (see figure below).



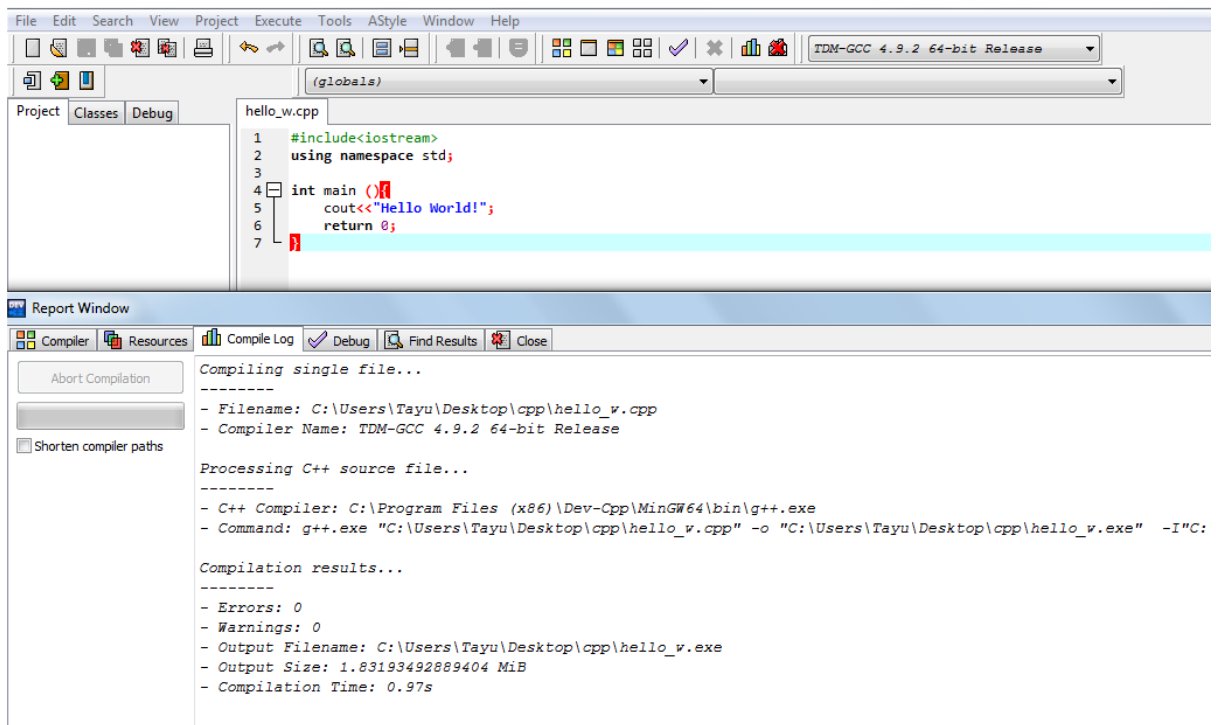
Click on each menu on the Menu bar and study the menu options. Note the icons that are shown next to the menu items. You can find the identical icons on the toolbar. In the first part of the course you will write, compile and run a program that is written as a single source file. For this you will use only a few buttons (or menu options) from the toolbar. Later you will learn how to create a project that consists of many separate files.

Using Dev-C++ Compiler

- Select **File => New source file** from the Menu bar or click on the “**New source file**” button on the toolbar. The editor window opens with the template of a C source code.
- Replace the words “Insert comments here” with your name and the name of the program. State the purpose of this program inside of the comments.
- Type your code between the opening brace of the main() function { and the statement **system(“PAUSE”)**. This last statement will prevent the DOS-prompt window from closing automatically when your program finishes. It will ask the user to press **Enter** to continue. The “**pause**” command is specific for Windows/DOS and will not work in UNIX environment.

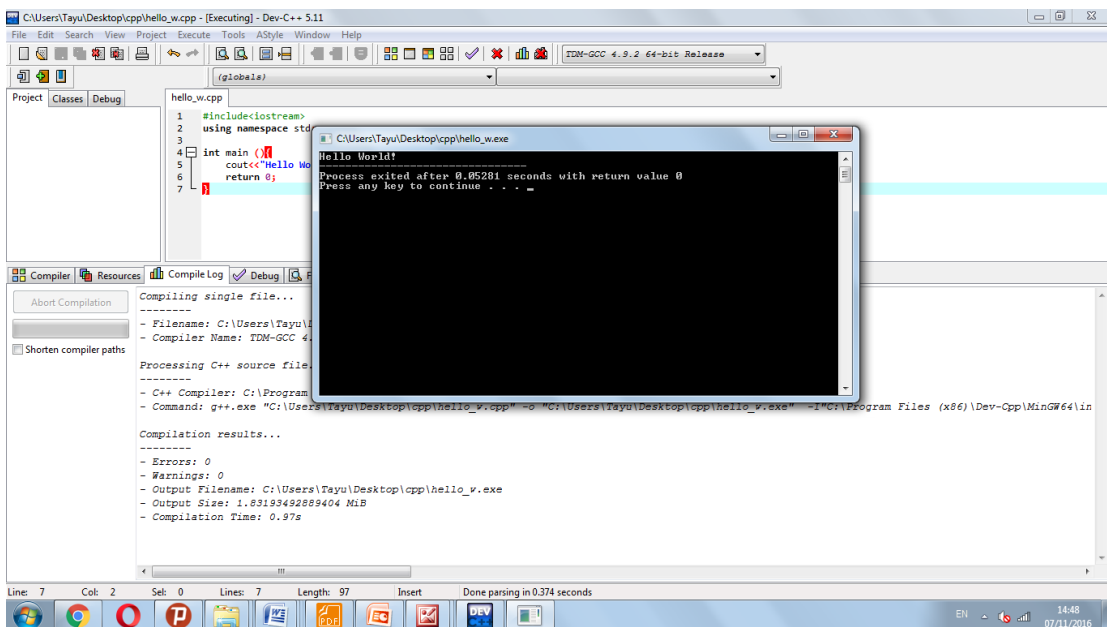


- Click on the **Save** button or select **File => Save unit as...**. On your home drive create a directory C++ Programs and save the file as C++ source file.
- Click “**Compile**” button or select **Execute => Compile** option from the Menu bar. The Compilation dialog box appears (see figure below). The Compiler results are shown at the bottom of the window.



When your program compiles successfully the executable file is created in the same directory where the source file is. It has the same name as the source code file and extension .exe.

- Finally, click **Execute** => **run** option to see the result of the program. Once you **run** the program a command prompt(black window) appears as follows.



VARIABLE, OPERATOR & EXPRESSION

[SET – 1]

Question 1 *Write a program to print HELLO WORLD on screen.*

Question 2 *Write a program to display the following output using a single cout statement.*

<i>Subject</i>	<i>Marks</i>
<i>Mathematics</i>	<i>90</i>
<i>Computer</i>	<i>77</i>
<i>Chemistry</i>	<i>69</i>

Question 3 *Write a program which accept two numbers and print their sum.*

Question 4 *Write a program which accept temperature in Fahrenheit and print it in centigrade.*

Question 5 *Write a program which accept principle, rate and time from user and print the simple interest.*

Question 6 *Write a program which accepts a character and display its ASCII value.*

Question 7 *Write a program to swap the values of two variables.*

Question 8 *Write a program to calculate area of circle.*

Question 9 *Write a program to check whether the given number is positive or negative (using ? : ternary operator)*

Question 10 *Write a program to check whether the given number is even or odd (using ? : ternary operator)*

VARIABLE, OPERATOR & EXPRESSION

[SET – 2]

Question 1 Write a program to swap value of two variables without using third variable.

Question 2 Write a program which input three numbers and display the largest number using ternary operator.

Question 3 Write a program which accepts amount as integer and display total number of Notes of Rs. 500, 100, 50, 20, 10, 5 and 1.

*For example, when user enter a number, 575,
the results would be like this...*

500: 1
100: 0
50: 1
20: 1
10: 0
5: 1
1: 0

Question 4 Write a program which accepts a character and display its next character.

Question 5 Write a program which accepts days as integer and display total number of years, months and days in it.

for example : If user input as 856 days the output should be 2 years 4 months 6 days.

Question 6 What is the output of following program?

```
int result = 4 + 5 * 6 + 2;  
cout << result;
```

```
int a = 5 + 7 % 2;  
cout << a;
```

Question 7 What is the output of following program?

```
int x = 10, y;  
y = x++;  
cout << y;
```

```
int x = 10, y;  
y = x++;  
cout << x;
```

```
int x = 10;  
x++;  
cout << x;
```

```
int x = 10, y;  
y = ++x;  
cout << y;
```

```
int x = 10;  
cout << ++x;
```

```
int x = 10;  
cout << x++;
```

Question 8 *What is the output of following program?*

```
int x = 10, y;  
y = x + x++;  
cout << y;
```

```
int x = 10, y;  
y = ++x + x++ + x;  
cout << y;
```

```
int x = 10, y;  
y = x++ + x + ++x;  
cout << y;
```

Question 9 *What is the output of following program?*

```
cout << setw(5) << 77 << endl;  
cout << setw(5) << 100 << endl;  
cout << setw(5) << 12312 << endl;
```

Question 10 *What is the output of following program?*

```
float net = 5689.2356;  
cout.precision(2);  
cout.setf(ios::fixed | ios::showpoint);  
cout << net << endl;
```

VARIABLE, OPERATOR & EXPRESSION

[SET – 3]

Question 1 Write a program that takes length as input in feet and inches. The program should then convert the lengths in centimeters and display it on screen. Assume that the given lengths in feet and inches are integers.

Based on the problem, you need to design an algorithm as follows:

- 1. Get the length in feet and inches.*
- 2. Convert the length into total inches.*
- 3. Convert total inches into centimeters.*
- 4. Output centimeters.*

To calculate the equivalent length in centimeters, you need to multiply the total inches by 2.54. Instead of using the value 2.54 directly in the program, you will declare this value as a named constant. Similarly, to find the total inches, you need to multiply the feet by 12 and add the inches. Instead of using 12 directly in the program, you will also declare this value as a named constant. Using a named constant makes it easier to modify the program later.

To write the complete length conversion program, follow these steps:

- 1. Begin the program with comments for documentation.*
- 2. Include header files, if any are used in the program.*
- 3. Declare named constants, if any.*
- 4. Write the definition of the function main.*

CONTROL STRUCTURE

[SET – 1]

- Question 1** *Any integer is input by the user. Write a program to find out whether it is an odd number or even number.*
- Question 2** *Find the absolute value of a number entered by the user.*
- Question 3** *Write a program to calculate the total expenses. Quantity and price per item are input by the user and discount of 10% is offered if the expense is more than 5000.*
- Question 4** *Write a program to determine whether the seller has made profit or incurred loss. Also determine how much profit he made or loss he incurred. Cost price and selling price of an item is input by the user.*
- Question 5** *If the ages of Ram, Sulabh and Ajay are input by the user, write a program to determine the youngest of the three.*
- Question 6** *Write a program to check whether a triangle is valid or not, when the three angles of the triangle are entered by the user. A triangle is valid if the sum of all the three angles is equal to 180 degrees.*
- Question 7** *Any year is input by the user. Write a program to determine whether the year is a leap year or not.*
- Question 8** *In a company an employee is paid as under:
If his basic salary is less than Rs. 1500, then HRA = 10% of basic salary and DA = 90% of basic salary.
If his salary is either equal to or above Rs. 1500, then HRA = Rs. 500 and DA = 98% of basic salary.
If the employee's salary is input by the user write a program to find his gross salary.*
- Question 9** *Write a program to calculate the monthly telephone bills as per the following rule:
Minimum Rs. 200 for upto 100 calls.
Plus Rs. 0.60 per call for next 50 calls.
Plus Rs. 0.50 per call for next 50 calls.
Plus Rs. 0.40 per call for any call beyond 200 calls.*
- Question 10** *Write a program to find the roots of and quadratic equation of type ax^2+bx+c where a is not equal to zero.*
- Question 11** *The marks obtained by a student in 5 different subjects are input by the user. The student gets a division as per the following rules:
Percentage above or equal to 60 - First division
Percentage between 50 and 59 - Second division
Percentage between 40 and 49 - Third division
Percentage less than 40 - Fail
Write a program to calculate the division obtained by the student.*
- Question 12** *Any character is entered by the user; write a program to determine whether the character entered is a capital letter, a small case letter, a digit or a special symbol. The following table shows the range of ASCII*

values for various characters.

Characters	ASCII Values
A – Z	65 – 90
a – z	97 – 122
0 – 9	48 – 57
special symbols	0 - 47, 58 - 64, 91 - 96, 123 – 127

CONTROL STRUCTURE

[SET – 2]

- Question 1** Write a program to print number from 1 to 10.
- Question 2** Write a program to calculate the sum of first 10 natural number.
- Question 3** Write a program to find the factorial value of any number entered through the keyboard.
- Question 4** Two numbers are entered through the keyboard. Write a program to find the value of one number raised to the power of another.
- Question 5** Write a program to reverse any given integer number.
- Question 6** Write a program to sum of digits of given integer number.
- Question 7** Write a program to check given number is prime or not.
- Question 8** Write a program to calculate HCF of Two given number.
- Question 9** Write a program to enter the numbers till the user wants and at the end it should display the count of positive, negative and zeros entered.
- Question 10** Write a program to enter the numbers till the user wants and at the end it should display the maximum and minimum number entered.
- Question 11** Write a program to print out all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.
For example $153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)$
- Question 12** Write a program to print Fibonacci series of n terms where n is input by user
:
0 1 1 2 3 5 8 13 24

Question 13 Write a program to calculate the sum of following series where n is input by user.

$$1 + 1/2 + 1/3 + 1/4 + 1/5 + \dots + 1/n$$

Question 14 Compute the natural logarithm of 2, by adding up to n terms in the series

$$1 - 1/2 + 1/3 - 1/4 + 1/5 - \dots + 1/n$$

where n is a positive integer and input by user.

CONTROL STRUCTURE [SET – 3]

Question 1

<p>i) ***** ***** ***** *****</p>	<p>ii) * ** *** **** *****</p>	<p>iii) * ** *** **** *****</p>
<p>iv) * *** ***** ***** *****</p>	<p>v) 1 222 33333 4444444 555555555</p>	<p>vi) 1 212 32123 4321234 543212345</p>

Question 2 Write a program to compute $\sin x$ for given x . The user should supply x and a positive integer n . We compute the sine of x using the series and the computation should use all terms in the series up through the term involving x^n

$$\sin x = x - x^3/3! + x^5/5! - x^7/7! + x^9/9! - \dots$$

Question 3 Write a program to compute the cosine of x . The user should supply x and a positive integer n . We compute the cosine of x using the series and the computation should use all terms in the series up through the term involving x^n

$$\cos x = 1 - x^2/2! + x^4/4! - x^6/6! + \dots$$

STRINGS

[SET – 1]

- Question 1** Write a program to find the length of string.
- Question 2** Write a program to display string from backward.
- Question 3** Write a program to count number of words in string.
- Question 4** Write a program to concatenate one string contents to another.
- Question 5** Write a program to compare two strings they are exact equal or not.
- Question 6** Write a program to find a substring within a string. If found display its starting position.
- Question 7** Write a program to reverse a string.
- Question 8** Write a program to convert a string in lowercase.
- Question 9** Write a program to convert a string in uppercase.
- Question 10** Write the output of the following program
- ```
#include <iostream.h>
#include <ctype.h>
void Encrypt(char T[])
{
 for (int i=0;T[i]!='\0';i+=2)
 if (T[i]=='A' || T[i]=='E')
 T[i]='#';
 else if (islower(T[i]))
 T[i]=toupper(T[i]);
 else
 T[i]='@';
}
void main()
{
 char Text[]="SaVE EArtH";
 Encrypt(Text);
 cout<<Text<<endl;
}
```
- Question 11** Give the output of the following program segment
- ```
char *NAME = "CoMPutER";
for (int x = 0; x < strlen(NAME); x++)
    if (islower(NAME [x]))
        NAME [x] = toupper(NAME[x]);
    else
        if (isupper(NAME[x])
            if (x%2 ==0)
                NAME[x] = tolower(NAME[x]);
            else
                NAME[x] =NAME[x-1];

puts(NAME);
```

ARRAY-SINGLE DIMENSION

[SET – 1]

- Question 1** Write a C++ program to find the sum and average of one dimensional integer array.
- Question 2** Write a C++ program to swap first and last element of an integer 1-d array.
- Question 3** Write a C++ program to reverse the element of an integer 1-D array.
- Question 4** Write a C++ program to find the largest and smallest element of an array.
- Question 5** Write a menu driven C++ program with following option
a. Accept elements of an array
b. Display elements of an array
c. Sort the array using insertion sort method
d. Sort the array using selection sort method
e. Sort the array using bubble sort method
Write C++ functions for all options. The functions should have two parameters name of the array and number of elements in the array.
- Question 6** P is one-dimensional array of integers. Write a C++ function to efficiently search for a data VAL from P. If VAL is present in the array then the function should return value 1 and 0 otherwise.
- Question 7** Suppose a one-dimensional array AR containing integers is arranged in ascending order. Write a user-defined function in C++ to search for an integer from AR with the help of Binary search method, returning an integer 0 to show absence of the number and integer 1 to show presence of the number in the array. Function should have three parameters : (i) array AR (ii) the number to be searched and (iii) the number of elements N in the array.
- Question 8** Suppose A, B, C are arrays of integers of size M, N, and M + N respectively. The numbers in array A appear in ascending order while the numbers in array B appear in descending order. Write a user defined function in C++ to produce third array C by merging arrays A and B in ascending order. Use A, B and C as arguments in the function.
- Question 9** Suppose X, Y, Z are arrays of integers of size M, N, and M + N respectively. The numbers in array X and Y appear in descending order. Write a user-defined function in C++ to produce third array Z by merging arrays X and Y in descending order.
- Question 10** Given two arrays of integers A and B of sizes M and N respectively. Write a function named MIX () with four arguments, which will produce a third array named C. such that the following sequence is followed.
All even numbers of A from left to right are copied into C from left to right.
All odd numbers of A from left to right are copied into C from right to left.
All even numbers of B from left to right are copied into C from left to right.

All old numbers of B from left to right are copied into C from right to left. A, B and C are passed as arguments to MIX (. e.g., A is {3, 2, 1, 7, 6, 3} and B is {9, 3, 5, 6, 2, 8, 10} the resultant array C is {2, 6, 6, 2, 8, 10, 5, 3, 9, 3, 7, 1, 3}

ARRAY - TWO DIMENSION

[SET – 1]

Question 1 Write a menu driven C++ program to do following operation on two dimensional array A of size $m \times n$. You should use user-defined functions which accept 2-D array A, and its size m and n as arguments. The options are:

- To input elements into matrix of size $m \times n$
- To display elements of matrix of size $m \times n$
- Sum of all elements of matrix of size $m \times n$
- To display row-wise sum of matrix of size $m \times n$
- To display column-wise sum of matrix of size $m \times n$
- To create transpose of matrix B of size $n \times m$

Question 2 Write user defined functions for square matrix to calculate

- Left diagonal sum
- Right diagonal sum

Question 3 Write a user-defined function in C++ to display the multiplication of row element of two-dimensional array A[4][6] containing integer.

Question 4 Write a user defined function named Upper-half() which takes a two dimensional array A, with size N rows and N columns as argument and prints the upper half of the array.

e.g.,

2 3 1 5 0	2 3 1 5 0
7 1 5 3 1	1 5 3 1
2 5 7 8 1	1 7 8
0 1 5 0 1	0 1
3 4 9 1 5	5

The output will be

Question 5 Write a function in C++ which accepts a 2D array of integers and its size as arguments and displays the elements of middle row and the elements of middle column.

[Assuming the 2D Array to be a square matrix with odd dimension i.e. 3×3 ,

5x5, 7x7 etc...]

Example, if the array contents is

```
3 5 4
7 6 9
2 1 8
```

Output through the function should be :

Middle Row : 7 6 9

Middle column : 5 6 1

Question 6 Write a program to add two array A and B of size $m \times n$.

Question 7 Write a program to multiply array A and B of order $N \times L$ and $L \times M$

STRUCTURE

[SET – 1]

Question 1 Give the output of the following program

```
#include<iostream.h>
struct Pixel
{
    int C,R;
};
void Display(Pixel P)
{
    cout<<"Col"<<P.C<<"Row"<<P.R<<endl;
}
void main()
{
    Pixel X={40,50},Y,Z;
    Z=X;
    X.C+=10;
    Y=Z;
    Y.C+=10;
    Y.R+=20;
    Z.C-=15;
    Display(X);
    Display(Y);
    Display(Z);
}
```

Question 2 Find the output of the following program:

```
#include <iostream.h>
struct PLAY
{
```

```

        int Score, Bonus;
    };
    void Calculate(PLAY &P, int N=10)
    {
        P.Score++;
        P.Bonus+=N;
    }
    void main()
    {
        PLAY PL={10,15};
        Calculate(PL,5);
        cout<<PL.Score<<": "<<PL.Bonus<<endl;
        Calculate(PL);
        cout<<PL.Score<<": "<<PL.Bonus<<endl;
        Calculate(PL,15);
        cout<<PL.Score<<": "<<PL.Bonus<<endl;
    }

```

Question 3 `#include<iostream.h>`

```

struct MyBox
{
    int Length, Breadth, Height;
};
void Dimension (MyBox M)
{
    cout<<M.Length<<"x"<<M.Breadth<<"x";
    cout<<M.Height<<endl;
}
void main ()
{
    MyBox B1={10,15,5}, B2, B3;
    ++B1.Height;
    Dimension(B1);
    B3 = B1;
    ++B3.Length;
    B3.Breadth++;
    Dimension(B3);
    B2 = B3;
    B2.Height+=5;
    B2.Length--;
    Dimension(B2);
}

```

Question 4 Rewrite the following program after removing the syntactical errors (if any). Underline each correction.

```

#include <iostream.h>
struct Pixels
{

```

```

        int Color, Style;
    }
    void ShowPoint(Pixels P)
    {
        cout<<P.Color, P.Style<<endl;
    }
    void main()
    {
        Pixels Point1=(5,3);
        ShowPoint(Point1);
        Pixels Point2=Point1;
        Color.Point1+=2;
        ShowPoint(Point2);
    }

```

- Question 5** *Declare a structure to represent a complex number (a number having a real part and imaginary part). Write C++ functions to add, subtract, multiply and divide two complex numbers.*
- Question 6** *An array stores details of 25 students (rollno, name, marks in three subject). Write a program to create such an array and print out a list of students who have failed in more than one subject.*

USER DEFINED FUNCTION

[SET – 1]

- Question 1** *Write a program using function which accept two integers as an argument and return its sum. Call this function from main() and print the results in main().*
- Question 2** *Write a function to calculate the factorial value of any integer as an argument. Call this function from main() and print the results in main().*
- Question 3** *Write a function that receives two numbers as an argument and display all prime numbers between these two numbers. Call this function from main().*
- Question 4** *Raising a number to a power p is the same as multiplying n by itself p times. Write a function called power that takes two arguments, a double value for n and an int value for p, and return the result as double value. Use default argument of 2 for p, so that if this argument is omitted the number will be squared. Write the main function that gets value from the user to test power function.*
- Question 5** *Write a function called zero_small() that has two integer arguments being passed by reference and sets the smaller of the two numbers to 0. Write the main program to access the function.*

Question 6 Write the output of the following program :

```
#include <iostream.h>
void X(int &A, int &B)
{
    A = A + B;
    B = A - B;
    A=A-B;
}
void main()
{
    int a = 4, b =18;
    X(a,b);
    cout<<a<<" "<<b;
}
```

Question 7 Write the output of the following program:

```
#include <iostream.h>
void X(int A, int &B)
{
    A = A+B;
    B = A-B;
    A = A-B;
}
void main()
{
    int a=4, b=18;
    X(a,b);
    cout<< a <<" "<<b;
}
```

Question 8 Write the output of the following program:

```
# include <iostream.h>
void Execute(int &B, int C=100)
{
    int TEMP = B + C;
    B += TEMP;
    if (C == 100)
        cout<<TEMP<<" "<<B<<" "<<C<<endl;
}
void main()
{
    int M= 90, N = 10;
    Execute(M);
    cout << M << " " << N << endl;
    Execute(M,N);
    cout << M<<" " <<N<< endl;
}
```

Question 9 Give the output of the following program

```
# include <iostream.h>
```

```

int global = 10;
void func(int &x, int y)
{
    x = x - y;
    y = x * 10;
    cout << x << << y << '\n';
}
void main()
{
    int global = 7;
    func (::global, global);
    cout << global << ", " << ::global << '\n';
    func(global, :: global);
    cout << global << " " << ::global << '\n';
}

```

Question 10 Write the output of the following program :

```

#include <iostream.h>
static int i=100;
void abc()
{
    static int i=8;
    cout<< "first=" <<i++>>
}
main()
{
    static int i = 2;
    abc();
    cout << "second =" << i << endl;
    abc();
}

```

Question 11 Write the output of the following program:

```

#include <iostream.h>
int func(int &x, int y = 10)
{
    if (x%y == 0)
        return ++x;
    else
        return y--;
}
void main()
{
    int p=20, q=23;
    q=func (p,q);
    cout << p << " " << " " << q << endl;
    p=func (q);
    cout<< p << " " << " " << q << endl;
    q=func (p);
}

```

```

    cout << p << " " << " " << q << endl;
}

```

USER DEFINED FUNCTION

[SET – 2]

- Question 1** Write a program that lets the user perform arithmetic operations on two numbers. Your program must be menu driven, allowing the use to select the operation (+, -, *, or /) and input the numbers. Furthermore, your program must consist of following functions:
1. Function showChoice: This function shows the options to the user and explains how to enter data.
 2. Function add: This function accepts two number as arguments and returns sum.
 3. Function subtract: This function accepts two number as arguments and returns their difference.
 4. Function multiply: This function accepts two number as arguments and returns product.
 5. Function divide: This function accepts two number as arguments and returns quotient.

FILE HANDLING - TEXT FILE

[SET – 1]

- Question 1** Write a C++ program to write number 1 to 100 in a data file NOTES.TXT.
- Question 2** Write a C++ program, which initializes a string variable to the content "Time is a great teacher but unfortunately it kills all its pupils. Berlioz" and outputs the string to the disk file OUT.TXT. you have to include all the header files if required.
- Question 3** Write a user-defined function in C++ to read the content from a text file OUT.TXT, count and display the number of alphabets present in it.
- Question 4** Write a function to count the number of blank present in a text file named "OUT.TXT".
- Question 5** Write a function to count number of words in a text file named "OUT.TXT".

- Question 6** Write a function in C++ to print the count of word the as an independent word in a text file *STORY.TXT*.
for example, if the content of the file *STORY.TXT* is
There was a monkey in the zoo. The monkey was very naughty.
- Then the output of the program should be 2.
- Question 7** Write a function in C++ to count and display the number of lines not starting with alphabet 'A' present in a text file "*STORY.TXT*".
Example:
If the file "*STORY.TXT*" contains the following lines,
The rose is red.
A girl is playing there.
There is a playground.
An aeroplane is in the sky.
Numbers are not allowed in the password.
- The function should display the output as 3.
- Question 8** Assuming that a text file named *FIRST.TXT* contains some text written into it, write a function named *copyupper()*, that reads the file *FIRST.TXT* and creates a new file named *SECOND.TXT* contains all words from the file *FIRST.TXT* in uppercase.
- Question 9** Assuming that a text file named *FIRST.TXT* contains some text written into it, write a function named *vowelwords()*, that reads the file *FIRST.TXT* and creates a new file named *SECOND.TXT*, to contain only those words from the file *FIRST.TXT* which start with a lowercase vowel (i.e., with 'a', 'e', 'i', 'o', 'u').
For example, if the file *FIRST.TXT* contains
Carry umbrella and overcoat when it rains
Then the file *SECOND.TXT* shall contain
umbrella and overcoat it