

Operators, Conditional Statements, Loops, Functions, Arrays, Pointers and Structures

OBJECT ORIENTED PROGRAMMING LAB



ASSIGNMENT #01

Submitted By:

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(20P-0070)

Submitted to:

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**DEPARTMENT OF COMPUTER SCIENCE
FAST NATIONAL UNIVERSITY OF
COMPUTER AND EMERGING SCIENCES,
PESHAWAR**

Session 2020-2024

ASSIGNMENT #01

Operators, Conditional Statements, Loops, Functions, Arrays, Pointers and Structures Object Oriented Programming - Lab

Operators

Qno1:

Write C++ program that will convert dollar to rupees(Dollar to Rupees Conversing Calculator).

```
#include <iostream>
using namespace std;

int main()
{
    float rupee,dollar,DinR;           //DinR=dollar in rupee today
    cout<<"Enter please today 1dollar rate in pakistan: ";
    cin>>DinR;
    cout<<"Enter Dollars: ";
    cin >> dollar;
    rupee=(dollar*DinR);
    cout<<dollar<<"Dollar = "<<rupee<<"rupees"<<endl;
    return 0;
}
```

Output

```
Enter please today 1dollar rate in pakistan: 150.95
Enter Dollars: 2
2Dollar = 301.9rupees
```

Qno2

Write C++ program that will convert rupees to dollar (Rupees to Dollar Conversion Calculator).

```
#include <iostream>
using namespace std;

int main()
{
    float rupee,dollar,DinR;           //DinR=dollar in ruppee today
    cout<<"Enter please today 1dollar rate in pakistan: ";
    cin>>DinR;
    cout<<"Enter Rupees: ";
    cin >> rupee;
    dollar=(rupee/DinR);
    cout<<rupee<<"rupees = "<<dollar<<"Dollar"<<endl;
    return 0;
}
```

OUTPUT

```
Enter please today 1dollar rate in pakistan: 150.95
Enter Rupees: 150.95
150.95rupees = 1Dollar
```

QNO3

Write a C++ program that will convert centigrade to Fahrenheit.

```
#include <iostream>
using namespace std;

float Conversion(float value)
{
    float Cval; //converted value
    Cval = (value -32) * 0.5556; // -Formula--(32°F - 32) ÷ 0.5556 = 0°C---
    return Cval;
}
int main()
{
    float Fval; //Fahrenheit value
    cout<<"Enter the input to convert Fahrenheit to Celsius: ";
    cin >> Fval;
    cout<<"Conversion "<<Fval<<" Fahrenheit to Celsius = "<<Conversion(Fval)<<"Celsius"<<endl;
    return 0;
}
```

Output:-

```
Enter the input to convert Fahrenheit to Celsius: 32
Conversion 32 Fahrenheit to Celsius = 0Celsius
```

QNO4

Take student name and marks of your 2nd semester from user and then generate DMC which will contain obtained marks out of total and percentage.

```

#include <iostream>
using namespace std;
int main()
{
    char fname[10],sname[10];
    string S_name[10];
    int S_marks[10],subj,gainmarks=0,totalmarks;
    float perc,SGPA,mytotalmarks;
    cout<<"Enter Your firstName Please: ";
    cin >> fname;
    cout<<"Enter Your SecondName Please: ";
    cin >> sname;
    cout<<"Total marks of your Smaster: ";
    cin>>totalmarks;
    cout<<"Enter total subjects: ";
    cin >> subj;
    cout<<"Enter Your Subject Name(Without space & try to use short name) and then Marks \n";
    for(int i=0;i<subj;i++)
    {
        cout<<"Subject Name: ";
        cin>>S_name[i]; //subject name
        cout<<"Subject Gained Marks: ";
        cin>>S_marks[i]; //subject marks
        gainmarks=gainmarks+S_marks[i];
    }
    mytotalmarks=totalmarks;
    mytotalmarks=gainmarks/mytotalmarks;
    perc=(mytotalmarks)*100;
    if(perc>=90 && perc<100)
        SGPA=4.0;
    else if(perc>=75 && perc<90)
        SGPA=3.0;
    else if(perc>=60 && perc<75)
        SGPA=2.0;
    else if(perc>=33 && perc<60)
        SGPA=1.0;
    else
        SGPA=0.0;
    cout<<"\n\n      NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES  \n";
    cout<<"          DMC 2ND SMASTER      \n";
    cout<<"Name: "<<fname<<" "<<sname<<endl;
    cout<<"No. "<<"Subject Name"<<"    \t"<<"Subject Marks\n";
    for(int i=0;i<subj;i++)
    {
        cout<<i+1<<"\t"<<S_name[i]<<"      \t\t"<<S_marks[i]<<endl;
    }
    cout<<"Gained Marks = "<<gainmarks<<"\t"<<"Total Marks = "<<totalmarks<<endl;
    cout<<"Percentage = "<<perc<<"%"<<" \t"<<"Your SGPA = "<<SGPA<<"\n";
    return 0;
}

```

OUTPUT:

```
Enter Your FirstName Please: Qasim
Enter Your SecondName Please: Ali
Total marks of your Smaster: 500
Enter total subjects: 5
Enter Your Subject Name(Without space & try to use short name) and then Marks
Subject Name: DLD
Subject Gained Marks: 94
Subject Name: OOP
Subject Gained Marks: 95
Subject Name: CALCULUS
Subject Gained Marks: 96
Subject Name: ISLAMIMATE
Subject Gained Marks: 96
Subject Name: ENGLISH
Subject Gained Marks: 80
```

NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES
DMC 2ND SMASTER

Name: Qasim Ali
No. Subject Name Subject Marks
1 DLD 94
2 OOP 95
3 CALCULUS 96
4 ISLAMIMATE 96
5 ENGLISH 80
Gained Marks = 461 Total Marks = 500
Percentage = 92.2% Your SGPA = 4

Q NO #05:-In lab manual 2.3 math functions (Other Math Functions) are listed in the form of table you all are directed to implement all these functions using C++ program.

```

#include <iostream>
#include <cmath>
using namespace std;

int main()
{
    //finding abs(x)
    double num, num2,num3;
    cout<<"Enter the number: ";
    cin >> num;
    cout<<"Enter the number2: ";
    cin >> num2;
    cout<<"Enter the number3: ";
    cin >> num3;
    float Abs=abs(num);                                //first function
    cout<<"Absolute of "<<num<<" = "<<Abs<<endl;

    //Returns the arccosine of x
    float arccosine=acos(num);                         //second function
    cout<<"Arccosine of "<<num<<" = "<<arccosine<<endl;

    //Returns the arcsine of x
    float arcsine=acos(num);                           //third function
    cout<<"Arcsine of "<<num<<" = "<<arcsine<<endl;

    //Returns the arctangent of x
    float arctangent=atan(num);                        //4th function
    cout<<"Arctangent of "<<num<<" = "<<arctangent<<endl;

    //Returns the cube root of x
    float cube_root=cbrt(num);                         //5th function
    cout<<"cube root of "<<num<<" = "<<cube_root<<endl;

    //Returns the value of x rounded up to its nearest integer
    float round=ceil(num);                            //6th function
    cout<<"the value "<<num<<" rounded up to its nearest integer: "<<round<<endl;

    //Returns the cosine of x
    float cosine=cos(num);                            //7th function
    cout<<"cosine of "<<num<<" = "<<cosine<<endl;

    //Returns the hyperbolic cosine of x
    float cosinex=cosh(num);                          //8th function
    cout<<"hyperbolic cosine of "<<num<<" = "<<cosinex<<endl;

    //Returns the value of Ex^x
    float expon=exp(num);                            //9th function
    cout<<"Exponent of "<<num<<" = "<<expon<<endl;
}

```

Its next part is below for complete function

```

//expm1(x) Returns ex-1
float expmn-expm1(num);                                //10th function
cout<<"expm1 of "<<num<<" = "<<expmn<<endl;

//Returns the absolute value of a floating x
float abs_of_f-fabs(num);                            //10th function
cout<<"absolute value of a floating "<<num<<" = "<<abs_of_f<<endl;

//Returns the value of x rounded down to its nearest integer
float fround-floor(num);                            //12th function
cout<<"the value "<<num<<" rounded up to its nearest integer: "<<fround<<endl;

//Returns the sine of x (x is in radians)
float radians-sin(num);                            //13th function
cout<<"the sine of "<<num<<" = "<<radians<<" ("<<radians<<") is in radians."<<endl;

//Returns the hyperbolic sine of a double value
float hsine-sin(num);                            //14th function
cout<<"hyperbolic sine of "<<num<<" = "<<hsine<<endl;

//Returns the tangent of an angle
float t_angle-cos(num);                            //15th function
cout<<"the tangent of an angle of "<<num<<" = "<<t_angle<<endl;

//Returns the hyperbolic tangent of a double value
float htan-sin(num);                            //16th function
cout<<"hyperbolic tangent of a double "<<num<<" = "<<htan<<endl;

//Returns the positive difference between x and y
float pdifference-fdim(num,num2);                //11th function
cout<<"the positive difference between "<<num<<" and "<<num2<<" = "<<pdifference<<endl;

//hypot(x, y) Returns sqrt(x2+y2) without intermediate overflow or underflow    //17th function
float hyp-hypot(num,num2);
cout<<"hypot(x,y) = "<<hyp<<endl;

//fmax(x, y) Returns the highest value of a floating x and y
cout<<"Highest value is: "<<fmax(num,num2)<<endl;           //18th function

//fmin(x, y) Returns the lowest value of a floating x and y
cout<<"lowest value is: "<<fmin(num,num2)<<endl;           //19th function

//fmod(x, y) Returns the floating point remainder of x/y
cout<<"floating point remainder of "<<num<<"/"<<num2<<" is: "<<fmod(num,num2)<<endl;           //20th function

//pow(x, y) Returns the value of x to the power of y
cout<<"the value of "<<num<<" to the power of "<<num2<<" is: "<<pow(num,num2)<<endl;           //21th function

//fma(x, y, z) Returns x*y+z without losing precision
float result = fma(num, num2, num3);
cout << "fma(x, y, z) = " << result << endl;
return 0;
}

```

OUTPUT :

```
Enter the number: 90
Enter the number2: 80
Enter the number3: 60
Absolute of 90 = 90
Arccosine of 90 = nan
Arcsine of 90 = nan
Arctangent of 90 = 1.55969
cube_root of 90 = 4.4814
the value 90 rounded up to its nearest integer: 90
cosine of 90 = -0.448074
hyperbolic cosine of 90 = inf
Exponent of 90 = inf
expm1 of 90 = inf
absolute value of a floating 90 = 90
the value 90 rounded up to its nearest integer: 90
the sine of 90 = 0.893997 (0.893997) is in radians.
hyperbolic sine of 90 = 0.893997
the tangent of an angle of 90 = -0.448074
hyperbolic tangent of a double 90 = 0.893997
floating point remainder of 90/80 is: 10
the value of 90 to the power of 80 is: 2.18475e+156
fma(x, y, z) = 7260
```

Conditional Statements

QNO1 Find positive and negative numbers using if else statement.

```
#include <iostream>
using namespace std;

int main()
{
    int Mynum;
    cout<<"Enter a number: ";
    cin >> Mynum;
    if(Mynum>0)
        cout<<Mynum<<" is positive number.";
    else
        cout<<Mynum<<" is a negative number.";
    return 0;
}
```

Output:-

```
Enter a number: -6
-6 is a negative number.
```

```
Enter a number: 6
6 is positive number.
```

Q2:

QNO2 Find even and odd numbers using if else statement.

```
#include <iostream>
using namespace std;

int main()
{
    int Mynum;
    cout<<"Enter a number: ";
    cin >> Mynum;
    if([Mynum%2==0])
        cout<<Mynum<<" is even number.";
    else
        cout<<Mynum<<" is a odd number.";
    return 0;
}
```

Output:-

```
Enter a number: 3
3 is a odd number.
```

```
Enter a number: 6
6 is even number.
```

Q No 3:-

QNO3Find leap year using if else statement.Leap year Hints:
common year has 365 days (feb 28 days) year%4==0 and year %
400 == 0 leap year not year % 100 != 0 Leap year has 366 days
(feb 29 days)

```
1 #include <iostream>
2 #include <math.h>
3 using namespace std;
4 int main(){
5     //User enter the number
6     int year;
7     cout<<"Enter the year they are cheak it leap year or not : ";
8     cin>>year;
9     char choise;
10    do {
11        //if condition cheak a year they are leap or not
12        if ((year%4==0) && (year%100 != 0))
13        {
14            cout<<" Its a leap year : " <<year<<endl ;
15        }
16        //else if condition cheak a year
17        if (year % 400 == 0)
18        {
19            cout<<" Its a leap year : " <<year <<endl;
20        }
21        //else condition cheak a year
22        else {
23            cout <<"ITS not a leap year : " <<year<<endl;
24        }
25        //while loop function
26        cout<<"Do you want agina cheak a year (y/n) "<<endl;
27        cin>>choise;
28        //cheak condition
29    } while (choise != 'n' && choise !='N');
30    return 0;
31}
```

OUTPUT

```
(base) qasim@qasim-OptiPlex-5090:~/Desktop/5 SE
Enter the year they are cheak it leap year or not : 2000
Its a leap year : 2000
Do you want agina cheak a year (y/n)
y
```

Q.No 4:

```
> qasim > Desktop > 3 Semester > oop LAB > Assessment > Assesment No1 > if else > Q4.cpp > main()
#include<iostream>
#include<math.h>
using namespace std;

int main()
{
    //user enter a number num1 and num2
    float num1 , num2;
    cout<<"Enter the number1 : ";
    cin>>num1;
    cout<<"Enter the number2 : ";
    cin>>num2;
    //if condition cheak which number is great than number 2
    if (num1 >=num2 )
    {
        cout<<"The number1 is great than number2 : "<<num1<<endl;
    }
    //else print less number
    else{
        cout<<"The number2 is great than number1 : "<<num2<<endl;
    }
    return 0;
}
```

Output :

```
./"Q4"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Deskt
Enter the number1 : 45
Enter the number2 : 455
The number2 is great than number1 : 455
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Deskt
```

If-else-if else

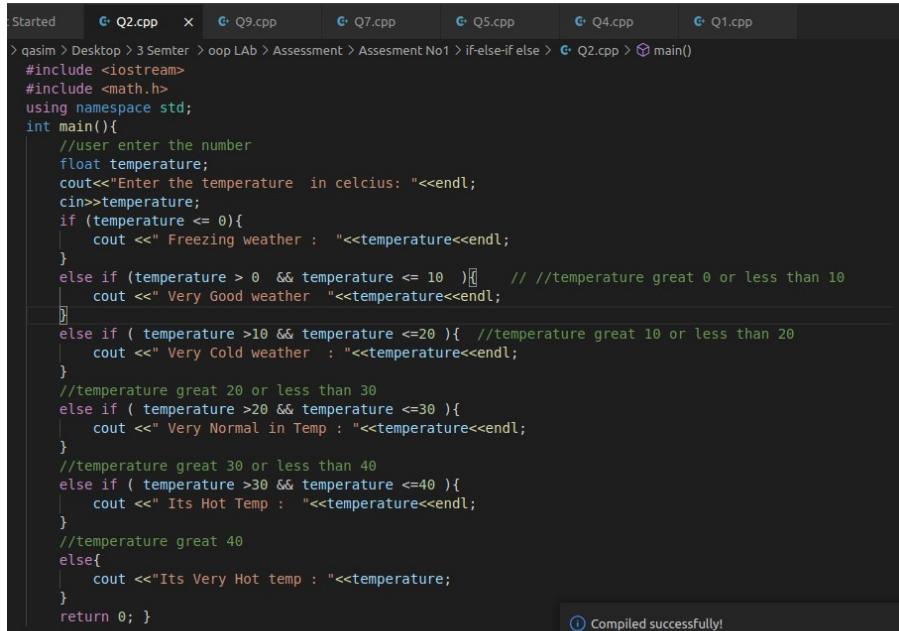
```
home / Desktop / QSemster / oop_LAb / Assessment / Assesment_NDT / if_Else_if_Else / C / Q1.cpp / ...  
QNO1 Find positive, negative and neutral numbers  
using if-else-if else.  
4 #include<iostream>  
5 #include<math.h>  
6 using namespace std;  
7  
8 int main(){  
9     //user enter the number  
10    int number;  
11    cout<<"Enter the number : ";  
12    cin>>number;  
13 //if esle if condition  
14 //number is great than 0  
15    if (number > 0)  
16    {  
17        cout<<"The number is positive number : "<<number<<endl;  
18    }  
19    //number is less than 0  
20    else if (number < 0)  
21    {  
22        cout<<"The number is negative number : "<<number<<endl;  
23    }  
24    //number is neutral or == 0  
25    else if (number == 0)  
26    {  
27        cout<<"The number is neutral number : "<<number<<endl;  
28    }  
29    return 0;  
30 }
```

Compiled successfully!

OUTPUT

```
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/De  
Enter the number : -45  
The number is negative number : -45  
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/De  
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/De  
asim/Desktop/3 Semter /oop LAb/Assessment/Assesment  
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/De  
Enter the number : 455  
The number is positive number :- 455  
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/De
```

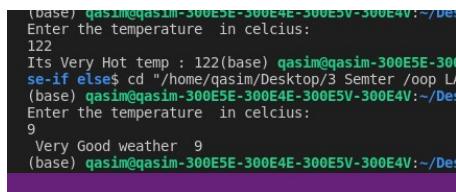
QNO2 : Take value of temperature from user and find status of weather accordingly.



```
Started  Q2.cpp  X  Q9.cpp  Q7.cpp  Q5.cpp  Q4.cpp  Q1.cpp
> qasim > Desktop > 3 Semter > oop LAB > Assessment > Assessment No1 > if-else-if else > Q2.cpp > main()
#include <iostream>
#include <math.h>
using namespace std;
int main(){
    //user enter the number
    float temperature;
    cout<<"Enter the temperature in celcius: "<<endl;
    cin>>temperature;
    if (temperature <= 0){
        cout <<" Freezing weather : "<<temperature<<endl;
    }
    else if (temperature > 0 && temperature <= 10 )// //temperature great 0 or less than 10
        cout <<" Very Good weather "<<temperature<<endl;
    }
    else if ( temperature >10 && temperature <=20 ){ //temperature great 10 or less than 20
        cout <<" Very Cold weather : "<<temperature<<endl;
    }
    //temperature great 20 or less than 30
    else if ( temperature >20 && temperature <=30 ){
        cout <<" Very Normal in Temp : "<<temperature<<endl;
    }
    //temperature great 30 or less than 40
    else if ( temperature >30 && temperature <=40 ){
        cout <<" Its Hot Temp : "<<temperature<<endl;
    }
    //temperature great 40
    else{
        cout <<"Its Very Hot temp : "<<temperature;
    }
    return 0; }
```

Compiled successfully!

OUTPUT



```
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop$ Enter the temperature in celcius:
122
Its Very Hot temp : 122(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop$ se-if else$ cd "/home/qasim/Desktop/3 Semter /oop L
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop$ Enter the temperature in celcius:
9
Very Good weather 9
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop$
```

Q.No 03:Take value of percentage from user and find grades based on percentage value.

```
home > qasim > Desktop > Untitled-1.cpp < Q6.cpp < Q6.cpp < Q5.cpp < Q4.cpp -./Assesment/No02
1 #include <iostream>
2 #include<math.h>
3 using namespace std;
4 int main(){
5 //user enter the percentages of student
6 float percentages ;
7 cout<<"Enter the percentage : ";
8 cin>>percentages;
9 //if percentages grad than 94
10 if ( percentages >= 94)
11 {
12 cout<<"The percentages is "<< percentages<< " = " <<" A+ "<<endl;
13 }
14 //if percentages 85-93
15 else if ( percentages >=85 && percentages <=93 )
16 {
17 cout<<"The percentages is "<< percentages<< " = " <<" A "<<endl;
18 }
19 //if percentages 80-84
20 else if ( percentages >=80 && percentages <=84 )
21 {
22 cout<<"The percentages is "<< percentages<< " = " <<" A- "<<endl;
23 }
24 //if percentages 75-79
25 else if ( percentages >=75 && percentages <=79 )
26 {
27 cout<<"The percentages is "<< percentages<< " = " <<" B+ "<<endl;
28 }
29 //if percentages 70-74
30 else if ( percentages >=70 && percentages <= 74)
31 {
32 cout<<"The percentages is "<< percentages<< " = " <<" B "<<endl;
33 }
34 //if percentages 67-69
35 else if ( percentages >=67 && percentages <=69 )
36 {
37 cout<<"The percentages is "<< percentages<< " = " <<" B- "<<endl;
38 }
39 //if percentages 64-66
40 else if ( percentages >=64 && percentages <=66 )
41 {
42 cout<<"The percentages is "<< percentages<< " = " <<" C+ "<<endl;
43 }
44 //if percentages 60-63
45 else if ( percentages >=60 && percentages <=63 )
46 {
47 cout<<"The percentages is "<< percentages<< " = " <<" C "<<endl;
48 }
49 //if percentages 57-59
50 else if ( percentages >=57 && percentages <=59 )
51 {
52 cout<<"The percentages is "<< percentages<< " = " <<" C- "<<endl;
53 }
54 //if percentages 54-56
55 else if ( percentages >=54 && percentages <=56 ){
56 cout<<"The percentages is "<< percentages<< " = " <<" D+ "<<endl;
57 }
58 //if percentages 50-53
59 else if ( percentages >=50 && percentages <=53 )
60 {
61 cout<<"The percentages is "<< percentages<< " = " <<" D "<<endl;
62 }
63 //if percentages less than < 50
64 else
65 {
66 cout<<"This is not a percentages : "<< percentages<< " = " <<" FAIL "<<endl;
67 }
68 return 0;
69 }
```

Output:-

```
cd "/home/qasim/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else"
./"Q3"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home/qasim/Desktop/3 Semter /oop LAb/Assesment No1/if-else-if else"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else"
se$ ./"Q3"
Enter the percentage : 100
The percentages is 100 = A+
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else"
se$ ~^C
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else"
se$ cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/Asesment No1/if-else-if else"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Asesment No1/if-else-if else"
se$ ./"Q3"
Enter the percentage : 78
The percentages is 78 = B+
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/if-else-if else"
se$ cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/Asesment No1/if-else-if else"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Asesment No1/if-else-if else"
se$ ./"Q3"
Enter the percentage : 40
This is not a percentages : 40 = FAIL
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Asesment No1/if-else-if else"
se$ [ ① Compiled successfully]
```

The code was too long sir:

QNO4 : Make a calculator using if-else-if else statement which perform the addition, subtraction, multiplication, division and remainder operations. Take values and operator from user on runtime.

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

using namespace std;
int main(){
//int a cin for number and reuslt storge a ans
int first_number , second_number ,result;
//char operation (+ , - ,/ ,*)
char operater, choice;
// using a do while loop for a function
do
{
cout<<"Enter the first number = "; //user enter the first input in user
cin>>first_number;
cout<<"Enter the second number = "; //user enter the second input
cin>>second_number;
cout<<"Enter the operation (+ , - ,/ ,*,%) = ";//user enter the operation that can work funcion

cin>>operater;
if (operater == '+'){ //if condition used the operation == to + the iner fuction exction
result=first_number + second_number; //first_number and second number add and storge in result
cout<<"The result of Addition is : "<<first_number<<"+ "<<second_number << " =
"<<result<<endl;
}
else if (operater == '-'){
//first_number subtraction second_number and storge in result
result = first_number - second_number;
cout<<"The result of Subtraction is : "<<first_number<<" - "<<second_number << " =
"<<result<<endl;
}
else if (operater == '/') //also same conditional operation == / the function can work
{
//if condition for the second number == 0 the function was not work other wiashe also condition
if (second_number == 0)
{
cout<<"The number was not divided by 0 = " <<second_number<<endl;
}
// if condition flase they ex in else condition
else{
//first_number divide second_number and storge in result
}
```

```

result = first_number / second_number;
cout<<"The result of divide is : "<<first_number<< " / "<<second_number << " = "
<<result<<endl;
} }

////also same conditional operation == * the function can work
else if (operator == '*') {
//first_number multiplication second_number and storge in result
result= first_number * second_number;
cout<<"The result of multiplication is : "<<first_number<< " * "<<second_number << " =
"<<result<<endl;
}

////also same conditional operation == * the function can work
else if (operator == '%') {
{
result= first_number % second_number;
cout<<"The result of multiplication is : "<<first_number<< " % "<<second_number << " =
"<<result<<endl;
}

//else the operation was worrge , thay can no work any fuction
else {
//cout the worry operation in output
cout<<"You get a worry input in operation in fuctoin : "<<operator<<endl;
cout<<"agina try = "<<operator<<endl; }

cout << "Do you want to do another calculation? (y/n)> ";
//enter you choose please
cin >> choice;
//while you choose
} while(choice != 'n' && choice != 'N');

return 0;
}

```

Out put:

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL
cd "/home/qasim/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else/" && g++ Q4.cpp -o Q
/3 Semter /oop LAb/Assessment/Assesment No1/if-else-if else/"04
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home/qasim/Desktop/3 Semter /oop LAb/Assessment/
else/" && g++ Q4.cpp -o Q4 && "/home/qasim/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-else-i
Enter the first number = 23
Enter the second number = 2
Enter the operation (+, -, /, *, %) = +
The result of Addition is : 23 + 2 = 25
Do you want to do another calculation? (y/n)> y
Enter the first number = 3
Enter the second number = 9
Enter the operation (+, -, /, *, %) = /
The result of divide is : 3 / 9 = 0
Do you want to do another calculation? (y/n)> y
Enter the first number = 7
Enter the second number = 0
Enter the operation (+, -, /, *, %) = /
The number was not divided by 0 = 0
Do you want to do another calculation? (y/n)> n
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/Assessment/Assesment No1/if-

```

Conditional Operator (?:)

QNO1

Write a C++ program which will get two numbers from user and find large number between them using conditional operator

```
home > qasim > Desktop > 3 Semter > oop LAB > Assessment > Assessment No1 > Conditional Operator (?:) 1 - 3 missin > Q1.cpp > main()
1 #include<iostream>
2 #include<math.h>
3
4 using namespace std;
5
6 int main(){}
7     //user enter the number in float
8     float num1 ,num2 ;
9     cout<<"Enter the num1 : ";
10    cin>>num1;
11    cout<<"Enter the num2 : ";
12    cin>>num2;
13
14    //The Conditional Operator (?:)
15    //cout > the large number is
16    (num1 > num2 )? cout<<num1 << " : The first number is greater \n":cout<<num2<<
17    " : Second number is greater than ";
18
19    return 0;
20 }
```

Output :

```
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /o
- 3 missin$ ./"Q1"
Enter the num1 : 34
Enter the num2 : 56
56 : Second number is greater than (base) qasim@qasim-300E5E-300E4
ment No1/Conditional Operator (?:) 1 - 3 missin$ cd "/home/qasim/Des
Operator (?:) 1 - 3 missin"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /o
- 3 missin$ ./"Q1"
Enter the num1 : -56
Enter the num2 : 8
8 : Second number is greater than (base) qasim@qasim-300E5E-300E4E
ent No1/Conditional Operator (?:) 1 - 3 missin"
```

QNO2: Find positive and negative numbers using conditional operator.

```

/home > qasim > Desktop > 3 Semter > oop LAB > Assessment > Assesment No1 > Operators > C positive_and_negative2.cpp > main()
1 #include<iostream>
2 #include<math.h>
3
4 using namespace std;
5
6 int main(){}
7     int mynum;
8     cout<<"Enter the number : ";
9     cin>>mynum;
10
11 //putting condition
12 (mynum > 0)?cout<<mynum<<" :Positive number .":cout<<mynum<<" :is negative number .\n";
13
14
15 return 0;
16

```

Output :

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```

(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
negative2"
Enter the number : -56
-56 :is negative number .
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
negative2"
Enter the number : 56
56 :Positive number . (base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
rs$ █

```

Q NO3: Find even and odd numbers using conditional operator.

```

1 #include<iostream>
2 #include<math.h>
3
4 using namespace std;
5
6 int main(){}
7     int mynum;
8     cout<<"Enter the number : ";
9     cin>>mynum;
10
11 //putting condition
12 (mynum %2 == 0)?cout<<mynum<<" : is Even number .":cout<<mynum<<" :is odd number .\n";
13
14
15 return 0;
16

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL

```

Enter the number : 56
56 :Positive number . (base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
rs$ cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
Enter the number : 44
44 : is Even number . (base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
rs$ cd "/home/qasim/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
Enter the number : 23
23 :is odd number .
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAB/Assessment/Assesment No1/Operators
rs$ █

```

C/C++ Compile Run - Open

Compiled successfully!

The code was too long sir:

Switch Statement

Q.No1: Make a C++ calculator using switch statement which perform the following addition, subtraction, multiplication, division and remainder value. Take value and operator from user on runtime.

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

using namespace std;

int main(){
//int a cin for number and result store a ans
int first_number , second_number ,result;

//char operation (+ , - ,/ ,*)
char operator, choice;

//do while loop
do{
//user enter the first input in user
cout<<"Enter the first number = ";
cin>>first_number;

//user enter the second input
cout<<"Enter the second number = ";
cin>>second_number;

//user enter the operation that can work function
cout<<"Enter the operation (+ , - ,/ ,*, % ) = ";
cin>>operator;

//switch function start
switch (operator)
{

//case of Add
case '+':
//Add a number a storage in result
result=first_number + second_number;
cout<<"The result of Addition is : "<<first_number<<" + "<<second_number << " = "
}
```

```

<<result<<endl;
break;
//Subraction operation
case '-':


//Subraction a number a storge in result
result = first_number - second_number;
cout<<"The result of Subraction is : "<<first_number<<" - "<<second_number << " = "
<<result<<endl;
break;

//divide operation
case '/':
//divide a number a storge in result
result = first_number / second_number;
cout<<"The result of divide is : "<<first_number<<" / "<<second_number << " = "
<<result<<endl;
break ;


// multiplication operation
case '*':


//multiplication a number a storge in result
result= first_number * second_number;
cout<<"The result of multiplication is : "<<first_number<<" * "<<second_number << " = "
<<result<<endl;
break ;


// remainder operation
case '%':


//remainder a number a storage in result
result= first_number % second_number;
cout<<"The result of remainder is : "<<first_number<<" % "<<second_number << " = "
<<result<<endl;
break ;


//default mean the all case is flase after run default
default:
cout<<"You get a worry input in operation in fuctoin : " <<operator<<endl;
cout<<"agina try = "<<operator<<endl;
break;
}

// chosse you are start angin the whole function

```

```

cout << "Do you want to do another calculation? (y/n)> ";
//enter your choice
cin >> choice;
//using a while loop
}while(choice != 'n' && choice != 'N');

return 0;
}

```

Out put:

```

cd "/home/qasim/Desktop/3 Semester/oop Lab/Assessment/Assesment No1/Switch Statement"
./Q1
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home/qasim/Desktop/3 Semester/oop Lab/Assessment/Assesment No1/Switch Statement"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semester/oop Lab/Assessment/Assesment No1/Switch Statement$ ./Q1
Enter the first number = 2
Enter the second number = 3
Enter the operation (+ , - , / , * , % ) = +
The result of Addition is : 2 + 3 = 5
Do you want to do another calculation? (y/n)> y
Enter the first number = 5
Enter the second number = 2
Enter the operation (+ , - , / , * , % ) = /
The result of divide is : 5 / 2 = 2
Do you want to do another calculation? (y/n)> y
Enter the first number = 6
Enter the second number = 0
Enter the operation (+ , - , / , * , % ) = /
Floating point exception (core dumped)
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semester/oop Lab/Assessment/Assesment No1/Switch Statement$ 

```

Q No2: Write a C++ program using switch statement which get month name from user and display month number accordingly.

```

#include <iostream>
#include <string.h>

using namespace std;

int main(){

//User enter the name
int month_name;
cout <<"Enter the month (1-12) : ";
cin>>month_name;

//switch a program of case

```

```

switch (month_name)
{
case 1:
cout<<"The mounth number is : "<<"January "<<endl;
break;
case 2:
cout<<"The month number is : "<<" February "<<endl;
break;
case 3:
cout<<"The month number is : "<<" March "<<endl;
break;
case 4:
cout<<"The month number is : "<<" April "<<endl;
break;
case 5:
cout<<"The month number is : "<<" May "<<endl;
break;
case 6:
cout<<"The month number is : "<<" June "<<endl;
break;
case 7:
cout<<"The month number is : "<<" July "<<endl;
break;
case 8:
cout<<"The month number is : "<<" August "<<endl;
break;
case 9:
cout<<"The month number is : "<<" September "<<endl;
break;
case 10:
cout<<"The month number is : "<<" October "<<endl;
break;
case 11:
cout<<"The month number is : "<<" November "<<endl;
break;
case 12:
cout<<"The month number is : "<<" December "<<endl;
break;
default:
cout<<"You did a wroge name enter in : "<<month_name<<endl;
break;
}

return 0;
}

```

output:

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL
command 'hcd' from deb hfsutils (3.2.6-14)

Try: sudo apt install <deb name>

(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Des
Enter the month (1-12) : 12
The month number is : December
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Des
```

LOOPS:-

QNO1 Write a C++ program which display first 10 number using for loop.

```
#include <iostream>
using namespace std;

int main()
{
    int num=10;
    for (int i = 0; i < num; i++)
    {
        cout<<i+1<<" ";
    }
    cout<<endl;
    return 0;
}
```

OutPut:-

```
1 2 3 4 5 6 7 8 9 10
```

QNO2 Write a C++ program which display even and odd number us

```
#include <iostream>
using namespace std;

int main()
{
    int num;
    cout<<"Enter range: ";
    cin >> num;
    cout<<"Even numbers are: \n";
    for (int i = 0; i < num; i++)
    {
        if(i%2==0)
            cout<<i<<" ";
    }
    cout<<endl;
    return 0;
}
```

Output:-

```
Enter range: 10
Even numbers are:
0 2 4 6 8
```

QNO3 Take a number from user and make a table of that number using for

```
#include <iostream>
using namespace std;

int main()
{
    int num;
    cout<<"Enter table: ";
    cin >> num;
    cout<<"Table of "<<num<<" is \n\n";
    for (int i = 0; i < 10; i++)
    {
        cout<<num<<" * "<<i+1<<" = "<<num*(i+1)<<endl;
    }
    cout<<endl;
    return 0;
}
```

OUTPUT

```
Enter table: 5
Table of 5 is

5 * 1 = 5
5 * 2 = 10
5 * 3 = 15
5 * 4 = 20
5 * 5 = 25
5 * 6 = 30
5 * 7 = 35
5 * 8 = 40
5 * 9 = 45
5 * 10 = 50
```

QNO4 Take a number from user and find factorial of that number using for loop.

```
#include <iostream>
using namespace std;

int main()
{
    int num,fact=1;
    cout<<"Enter NUM: ";
    cin >> num;
    cout<<"FACTORIAL OF "<<num<<" = ";
    for (int i = 0; i < num; i++)
    {
        fact=fact*(i+1);
    }
    cout<<fact;
    cout<<endl;
    return 0;
}
```

OUTPUT

```
Enter NUM: 5
FACTORIAL OF 5 = 120
```

While loop

QNO1 Write a C++ program which display first 10 number using while loop.

```
#include <iostream>
using namespace std;

int main()
{
    int num=10,i=0;
    while (i<num)
    {
        cout<<i+1<<" ";
        i++;
    }

    cout<<endl;
    return 0;
}
```

Output:-

```
1 2 3 4 5 6 7 8 9 10
```

QNO2 Write a C++ program which display even and odd number using while loop.

```
#include <iostream>
using namespace std;

int main()
{
    int num;
    cout<<"Enter range: ";
    cin >> num;
    int i=0;
    cout<<"Even numbers are: \n";
    while (i<=num)
    {
        if(i%2==0)
            cout<<i<<" ";
        i++;
    }
    cout<<endl;
    return 0;
}
```

OUTPUT:-

```
Enter range: 10
Even numbers are:
0 2 4 6 8 10
```

QNO5 Make a calculator using **While** loop?

```
#include <iostream>
using namespace std;
void choiceforoperation()
{
    cout<<"You can do following operation by this calculator.\n";
    cout<<"For multiplication operations press m or M or *\n";
    cout<<"For subtraction operations press s or S or -\n";
    cout<<"For addition operations press a or A or +\n";
    cout<<"For division operations press d or D or /\n";
    cout<<"For remainder operations press r or R or %\n";
}
int main()
{
    char choice;
    cout<<"Enter the Y,y to do calculation: ";
    cin >>choice;
    while (choice=='y' || choice =='Y')
    {
        int num1,num2;
        char choices;
        cout<<"Enter number1: ";
        cin >> num1;
        cout<<"Enter number2: ";
        cin >> num2;
        choiceforoperation();
        cout<<"Your choice: ";
        cin >> choices;
        if(choices=='m' || choices=='M'|| choices=='*')
        cout<<num1<< " * "<<num2<< " = "<<num1*num2<<endl;
        else if(choices=='s' || choices=='S'|| choices=='-')
        cout<<num1<< " - "<<num2<< " = "<<num1-num2<<endl;
        else if(choices=='a' || choices=='A'|| choices=='+')
        cout<<num1<< " + "<<num2<< " = "<<num1+num2<<endl;
        else if(choices=='d' || choices=='D'|| choices=='/')
        cout<<num1<< " / "<<num2<< " = "<<num1/num2<<endl;
        else if(choices=='r' || choices=='R'|| choices=='%')
        cout<<num1<< " % "<<num2<< " = "<<num1%num2<<endl;
        cout<<"Do you wants to do any operation again if yes then enter y/Y: ";
        cin >>choice;
    }
    return 0;
}
```

OUTPUT

```
Enter the Y,y to do calculation: y
Enter number1: 2
Enter number2: 3
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Your choice: +
2 + 3 = 5
Do you wants to do any operation again if yes then enter y/Y: y
Enter number1: 4
Enter number2: 9
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Your choice: -
4 - 9 = -5
Do you wants to do any operation again if yes then enter y/Y: y
Enter number1: 8
Enter number2: 9
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Your choice: /
8 / 9 = 0
Do you wants to do any operation again if yes then enter y/Y: n
```

DO-WHILE-LOOP

QNO1 Write a C++ program which display first 10 number using do while loop

```
#include <iostream>
using namespace std;

int main()
{
    int i=0;
    do
    {
        cout<<i+1<<" ";
        i++;
    } while ([i<10]);
    return 0;
}
```

Output:-



```
1 2 3 4 5 6 7 8 9 10
```

QNO2 Write a C++ program which display even and odd number using while loop.

```
#include <iostream>
using namespace std;

int main()
{
    int i=0;
    do
    {
        if(i%2==0)
            cout<<i<<" ";
        i++;
    } while (i<=10);
    return 0;
}
```

Output:-

```
0 2 4 6 8 10
```

QNO3Take a number from user and make table of that number using do while loop

```
#include <iostream>
using namespace std;

int main()
{
    int i,num;
    cout<<"Enter number whose table you wants: ";
    cin >> num;
    do
    {
        cout<<num<<" * "<<i+1<<" = "<<(i+1)*num<<endl;
        i++;
    } while (i<10);
    return 0;
}
```

OUTPUT

```
9 * 1 = 9
9 * 2 = 18
9 * 3 = 27
9 * 4 = 36
9 * 5 = 45
9 * 6 = 54
9 * 7 = 63
9 * 8 = 72
9 * 9 = 81
9 * 10 = 90
```

QNO4 Take number from user, find factorial of that number using do while loop.

```
#include <iostream>
using namespace std;

int main()
{
    int i,num,fact=1;
    cout<<"Enter number whose table you wants: ";
    cin >> num;
    do
    {
        if(num<0)
            cout<<"You CANNOT enterd -ve value.\n";
        else
        {
            fact=fact*(i+1);
            i++;
        }
    } while (i<num);
    cout<<"factorial = "<<fact<<endl;
    return 0;
}
```

Output:-

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL
cd "/home/qasim/Desktop/3 Semter /oop LAb/Assessment/Assesment No1"
./"Q3"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~$ cd "/home/qasim/Desktop/3
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/
Enter the whose table you wants : 4
You cannot enterd -ve value .
the factorial of  : 4 = 24
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop LAb/
```

QNO5 Make a calculator using if-else-if else statement AND do-while loop

```
#include <iostream>
using namespace std;
void choiceforoperation()
{
    cout<<"You can do following operation by this calculator.\n";
    cout<<"For multiplication operations press m or M or *\n";
    cout<<"For subtraction operations press s or S or -\n";
    cout<<"For addition operations press a or A or +\n";
    cout<<"For division operations press d or D or /\n";
    cout<<"For remainder operations press r or R or %\n";
}
int main()
{
    char choice;
    do
    {
        int num1,num2;
        char choices;
        cout<<"Enter number1: ";
        cin >> num1;
        cout<<"Enter number2: ";
        cin >> num2;
        choiceforoperation();
        cout<<"Your choice: ";
        cin >> choices;
        if(choices=='m' || choices=='M'|| choices=='*')
            cout<<num1<<" * "<<num2<<" = "<<num1*num2<<endl;
        else if(choices=='s' || choices=='S'|| choices=='-')
            cout<<num1<<" - "<<num2<<" = "<<num1-num2<<endl;
        else if(choices=='a' || choices=='A'|| choices=='+')
            cout<<num1<<" + "<<num2<<" = "<<num1+num2<<endl;
        else if(choices=='d' || choices=='D'|| choices=='/')
            cout<<num1<<" / "<<num2<<" = "<<num1/num2<<endl;
        else if(choices=='r' || choices=='R'|| choices=='%')
            cout<<num1<<" % "<<num2<<" = "<<num1%num2<<endl;

        cout<<"Do you wants to do any operation again if yes then enter y/Y: ";
        cin >>choice;
    } while (choice=='y' || choice =='Y');
    return 0;
}
```

OUTPUT

```
Enter number1: 3
Enter number2: 4
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Your choice: M
3 * 4 = 12
Do you wants to do any operation again if yes then enter y/Y: Y
Enter number1: 7
Enter number2: 8
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Your choice: R
7 % 8 = 7
Do you wants to do any operation again if yes then enter y/Y: N
```

Nested for loop

QNO1 DRAW

```
* * *
*
*
```

```
#include <iostream>
using namespace std;

int main()
{
    int rows;

    cout << "Enter number of rows: ";
    cin >> rows;

    for(int i = rows; i >= 1; --i)
    {
        for(int j = 1; j <= i; ++j)
        {
            cout << "* ";
        }
        cout << endl;
    }

    return 0;
}
```

OUTPUT

```
Enter number of rows: 6
* * * * *
* * * *
* * *
* *
* *
*
```

QNO2 DRAW

```
1 2 3 4  
1 2 3  
1 2  
1
```

```
#include <iostream>
using namespace std;

int main()
{
    int rows;

    cout << "Enter number of rows: ";
    cin >> rows;

    for(int i = rows; i >= 1; --i)
    {
        for(int j = 1; j <= i; ++j)
        {
            cout << j << " ";
        }
        cout << endl;
    }

    return 0;
}
```

OUTPUT

```
Enter number of rows: 5
1 2 3 4 5
1 2 3 4
1 2 3
1 2
1
```

QNO3 use of "setw" ftn DRAW

```
*
 ***
 *****
 *****
```

```

#include <iostream>
#include <iomanip>

using namespace std;

//setw(length)
//setfill(char)|

int height;      //Number of height.
int i;
int main()
{
    cout << "Enter height: ";
    cin >> height;
    for (int i = 1; i <= height; i++)
    {
        cout << setfill (' ') << setw(height - ((i - 1) * 2 + 1) / 2);
        for (int j = 0; j < (i - 1) * 2 + 1; j++)
            cout << '*';
        cout << "\n";
    }
}

```

OUTPUT

```

*
 ***
 *****
 ******
 ******

```

QNO4 //Q4 DRAW

```

// *****
// *****
// *****
// *****
// ***
// *

```

```
#include <iostream>
#include <iomanip>

using namespace std;

//setw(length)
//setfill(char)

int height;      //Number of height.
int i;
int main()
{
    cout << "Enter height: ";
    cin >> height;
    for (int i = height; i >=1; i--)
    {
        cout << setfill (' ') << setw(height - ((i - 1) * 2 + 1) / 2);
        for (int j = 0; j < (i - 1) * 2 + 1; j++)
            cout << '*';
        cout << "\n";
    }
}
```

OUTPUT

```
Enter height: 5
*****
 *****
 ****
 ***
 *
```

rrays

1D

A

Arrays

O1

Write a C++ program that will add two single dimensional array elements. Take values from user at runtime.

```
#include <iostream>
using namespace std;

int main()
{
    int array1[100],array2[100],Sumarr[100],size;
    cout<<"Enter the size: ";
    cin >> size;
    //initializing the array and adding
    for(int i=0;i<size;i++)
    {
        cout<<"Enter value for 1st Array: ";
        cin >> array1[i];
        cout<<"Enter value for 2nd Array: ";
        cin >> array2[i];
        Sumarr[i]=array1[i]+array2[i];
    }
    cout<<"Sum of two arrays is \n";
    for(int j=0;j<size;j++)
    {
        cout<<Sumarr[j]<< " ";
    }
    cout<<"\n";
    return 0;
}
```

OUTPUT

```
Enter the size: 5
Enter value for 1st Array: 1
Enter value for 2nd Array: 2
Enter value for 1st Array: 3
Enter value for 2nd Array: 4
Enter value for 1st Array: 5
Enter value for 2nd Array: 6
Enter value for 1st Array: 7
Enter value for 2nd Array: 7
Enter value for 1st Array: 8
Enter value for 2nd Array: 8
Sum of two arrays is
3 7 11 14 16
```

QNO2

How to generate random number C++, write a simple C++ program that will generate random number from 1 to 100?

```
#include<iostream>
// #include<cstdlib>
#include <ctime>
using namespace std;

int main()
{
    int n;
    srand(time(0));
    n = rand() % 100 + 1;
    cout<<"The randomly selected number is :"<<n;

    return 0;
}
```

OUTPUT

```
try: sudo apt install <deb name>
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop Lab/Assessment No1$ cd "/home/qasim/Desktop/3 Semter /oop Lab/Assessment No1"
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop Lab/Assessment No1$ ./random_number
The randomly selected is : 97
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop Lab/Assessment No1$ ./random_number
The randomly selected is : 13
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop Lab/Assessment No1$ ./random_number
The randomly selected is : 100
(base) qasim@qasim-300E5E-300E4E-300E5V-300E4V:~/Desktop/3 Semter /oop Lab/Assessment No1$
```

QNO3

Write a C++ program that will add two single dimensional arrays elements using random numbers?

```
#include<iostream>
// #include<cstdlib>
#include <ctime>
using namespace std;

int main()
{
    int n,m,size,arr1[1000],arr2[1000],arr3[1000],range;
    cout<<"Enter the size of arrays: ";
    cin >> size;
    cout<<"Enter the ranges of numbers which you wants: \n";
    cin >> range;
    srand(time(0));
    for(int i=0;i<size;i++)
    {
        n = rand() % range + 1;
        arr1[i]=n;
    }
    for(int i=0;i<size;i++)
    {
        m = rand() % range + 1;
        arr2[i]=m;
    }
    for(int i=0;i<size;i++)
    {
        arr3[i]=arr1[i]+arr2[i];
    }
    //Dispalying arrays
    cout<<"Array1: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr1[i]<< " ";
    }
    cout<<"\n";
    cout<<"Array2: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr2[i]<< " ";
    }
    cout<<"\n";
    cout<<"Sum of arrays: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr3[i]<< " ";
    }
    cout<<"\n";
    return 0;
}
```

OUTPUT

```
Enter the size of arrays: 4
Enter the ranges of numbers which you wants:
10
Array1:
3 2 3 10
Array2:
10 7 5 2
Sum of arrays:
13 9 8 12
```

QNO4 Write a C++ program that will find maximum number in an array?

```
#include <iostream>
using namespace std;

int main()
{
    int array[100],size,val;
    cout<<"Enter the size: ";
    cin >> size;
    //initializing the array
    for(int i=0;i<size;i++)
    {
        cout<<"Enter value for Array: ";
        cin >> array[i];
    }
    val=array[0];
    for(int j=0;j<size;j++)
    {
        if(array[j]>val)
            val=array[j];
        // else
        // max=array[j];
    }
    cout<<"Maximum Number = "<<val<<endl;
    return 0;
}
```

OUTPUT

```
Enter the size: 4
Enter value for Array: 1
Enter value for Array: 2
Enter value for Array: 3
Enter value for Array: 3
Maximum Number = 3
```

QNO5 Write a C++ program that will find minimum number in an array?

```
#include <iostream>
using namespace std;

int main()
{
    int array[100],size,val;
    cout<<"Enter the size: ";
    cin >> size;
    //initializing the array
    for(int i=0;i<size;i++)
    {
        cout<<"Enter value for Array: ";
        cin >> array[i];
    }
    val=array[0];
    for(int j=0;j<size;j++)
    {
        if(array[j]<val)
            val=array[j];
        // else
        // max=array[j];
    }
    cout<<"Minimum Number = "<<val<<endl;
    return 0;
}
```

OUTPUT

```
Enter the size: 4
Enter value for Array: 99
Enter value for Array: 45
Enter value for Array: 67
Enter value for Array: 33
Minimum Number = 33
```

2D Arrays

1. Write a C++ program that will create 2D array using random numbers and then show these values.

```
#include<iostream>
// #include<cstdlib>
#include <ctime>
using namespace std;
int main()
{
    int r,c,myarr[100][100];
    int range,n;
    cout<<"Enter rows of array: ";
    cin >> r;
    cout<<"Enter columns of array: ";
    cin >> c;
    cout<<"Enter the range to generate the numbers: ";
    cin >> range;
    srand(time(0));
    //initializing arrays
    for(int rows=0;rows<r;rows++)
    {
        for(int col=0;col<c;col++)
        {
            myarr[rows][col]=rand() % range + 1;
        }
    }
    //Displaying the array
    for(int rows=0;rows<r;rows++)
    {
        for(int col=0;col<c;col++)
        {
            cout<<myarr[rows][col]<< " ";
        }
        cout<<"\n";
    }
    return 0;
}
```

OUTPUT

```
Enter rows of array: 4
Enter columns of array: 4
Enter the range to generate the nums: 50
33 1 31 13
10 12 18 40
9 33 10 15
24 10 36 19
```

QNO 2: Write a C++ program that will find maximum and minimum number in 2D array.
Note array elements must be random values?

```
#include<iostream>
// #include<cstdlib>
#include <ctime>
using namespace std;

int main()
{
    int n,m,size,arr1[1000],arr2[1000],arr3[1000],range;
    cout<<"Enter the size of arrays: ";
    cin >> size;
    cout<<"Enter the ranges of numbers which you wants: \n";
    cin >> range;
    srand(time(0));
    for(int i=0;i<size;i++)
    {
        n = rand() % range + 1;
        arr1[i]=n;
    }
    for(int i=0;i<size;i++)
    {
        m = rand() % range + 1;
        arr2[i]=m;
    }
    for(int i=0;i<size;i++)
    {
        arr3[i]=arr1[i]+arr2[i];
    }
    //Dispalying arrays
    cout<<"Array1: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr1[i]<<" ";
    }
    cout<<"\n";
    cout<<"Array2: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr2[i]<<" ";
    }
    cout<<"\n";
    cout<<"Sum of arrays: \n";
    for(int i=0;i<size;i++)
    {
        cout<<arr3[i]<<" ";
    }
    cout<<"\n";
    return 0;
}
```

OUTPUT

```
Enter rows of array: 4
Enter columns of array: 4
Enter the range to generate the nums: 60
42 51 35 58
23 51 17 53
9 26 8 21
50 58 46 32
Maximum Number= 58
Minimum Number= 8
```

QNO3

Write a C++ program that will add two 2D arrays elements. Take values from user runtime. Note display values of 1st, 2nd and their resultant array. Hints: A will be the 1st array, B will be the 2nd array and C will be resultant array. Note: Follow Mathematics Matrix Addition Rules

```
#include <iostream>
using namespace std;

int main()
{
    int array1[100][100],array2[100][100],Sumarr[100][100],rows,col;
    cout<<"Enter the rows size: ";
    cin >> rows;
    cout<<"Enter the column size: ";
    cin >> col;
    //initializing the array and adding
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<"Enter value for array1["<<i<<"]"<<"["<<j<<"]": ";
            cin >> array1[i][j];
            cout<<"Enter value for array2["<<i<<"]"<<"["<<j<<"]": ";
            cin >> array2[i][j];
            Sumarr[i][j]=array1[i][j]+array2[i][j];
        }
    }
    cout<<"Displaying Elements of Array1\n" ;
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<array1[i][j]<<" ";
        }
        cout<<endl;
    }
}
```

Question next part is below

```
    cout<<"\n\nDisplaying Elements of Array2\n" ;
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<array2[i][j]<<" ";
        }
        cout<<endl;
    }
    cout<<"\n\nDisplaying Sum of two arrays is \n";
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<Sumarr[i][j]<<" ";
        }
        cout<<endl;
    }

    cout<<"\n";
    return 0;
}
```

OUTPUT

```
Enter the rows size: 4
Enter the column size: 4
Enter value for array1[0][0]: 1
Enter value for array2[0][0]: 2
Enter value for array1[0][1]: 3
Enter value for array2[0][1]: 4
Enter value for array1[0][2]: 5
Enter value for array2[0][2]: 6
Enter value for array1[0][3]: 7
Enter value for array2[0][3]: 8
Enter value for array1[1][0]: 9
Enter value for array2[1][0]: 0
Enter value for array1[1][1]: 1
Enter value for array2[1][1]: 2
Enter value for array1[1][2]: 3
Enter value for array2[1][2]: 4
Enter value for array1[1][3]: 5
Enter value for array2[1][3]: 6
Enter value for array1[2][0]: 7
Enter value for array2[2][0]: 8
Enter value for array1[2][1]: 9
Enter value for array2[2][1]: 0
Enter value for array1[2][2]: 1
Enter value for array2[2][2]: 2
Enter value for array1[2][3]: 3
Enter value for array2[2][3]: 4
Enter value for array1[3][0]: 5
Enter value for array2[3][0]: 6
Enter value for array1[3][1]: 7
Enter value for array2[3][1]: 8
Enter value for array1[3][2]: 9
Enter value for array2[3][2]: 0
Enter value for array1[3][3]: 1
Enter value for array2[3][3]: 2
1 3 5 7
9 1 3 5
7 9 1 3
5 7 9 1
```

```
Displaying Elements of Array2
```

```
2 4 6 8
0 2 4 6
8 0 2 4
6 8 0 2
```

```
Displaying Sum of two arrays is
```

```
3 7 11 15
9 3 7 11
15 9 3 7
11 15 9 3
```

QNO4

```
#include <iostream>
using namespace std;
int main()
{
    int array1[100][100],array2[100][100],mularr[100][100],rows,col;
    cout<<"Enter the rows size: ";
    cin >> rows;
    cout<<"Enter the column size: ";
    cin >> col;
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<"Enter value for array1["<<i<<"]"<< "["<<j<<"]": ";
            cin >> array1[i][j];
            cout<<"Enter value for array2["<<i<<"]"<< "["<<j<<"]": ";
            cin >> array2[i][j];
            mularr[i][j]=array1[i][j]*array2[i][j];
        }
    }
    cout<<"Displaying Elements of Array1\n" ;
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<array1[i][j]<<" ";
        }
        cout<<endl;
    }
    cout<<"\n\nDisplaying Elements of Array2\n" ;
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<array2[i][j]<<" ";
        }
        cout<<endl;
    }
    cout<<"\n\nDisplaying Sum of two arrays is \n";
    for(int i=0;i<rows;i++)
    {
        for(int j=0;j<col;j++)
        {
            cout<<mularr[i][j]<<" ";
        }
        cout<<endl;
    }
    cout<<"\n";
    return 0;
}
```

OUTPUT

```
Enter the rows size: 2
Enter the column size: 2
Enter value for array1[0][0]: 1
Enter value for array2[0][0]: 2
Enter value for array1[0][1]: 3
Enter value for array2[0][1]: 4
Enter value for array1[1][0]: 5
Enter value for array2[1][0]: 6
Enter value for array1[1][1]: 7
Enter value for array2[1][1]: 8
Displaying Elements of Array1
1 3
5 7

Displaying Elements of Array2
2 4
6 8

Displaying Sum of two arrays is
2 12
30 56
```

Functions

QNO1:

function in C++ that will calculate table of a number in C++.
Number must be passed from calling function as an argument to

```
#include <iostream>
using namespace std;
void mytable(int val)
{
    cout<<"Under is the table of "<<val<<endl;
    for(int i=0;i<10;i++)
    {
        cout<<val<<" * "<<i+1<<" = "<<val*(i+1)<<endl;
    }
}

int main()
{
    int num;
    cout<<"Enter the num whose table you wants to creat: ";
    cin >> num;
    mytable(num);
    return 0;
}
```

OUTPUT

```
Enter the num whose table you wants to creat: 4
Under is the table of 4
4 * 1 = 4
4 * 2 = 8
4 * 3 = 12
4 * 4 = 16
4 * 5 = 20
4 * 6 = 24
4 * 7 = 28
4 * 8 = 32
4 * 9 = 36
4 * 10 = 40
```

QNO2

Write function in C++ that will find factorial of a number. Number must be passed from calling function as an argument to function parameters.

```
#include <iostream>
using namespace std;
int myfact(int val)
{
    int fact=1;
    for(int i=0;i<val;i++)
        fact=fact*(i+1);
    return fact;
}

int main()
{
    int num;
    cout<<"Enter the num whose factorial you wants: ";
    cin >> num;
    cout<<"factorial of "<<num<< " = "<<myfact(num)<<endl;
    return 0;
}
```

OUTPUT

```
Enter the num whose factorial you wants: 5
factorial of 5 = 120
```

QNo 3: Update your calculator using functions.

Part A:=

```
Update your calculator using functions
#include <iostream>
using namespace std;
void choices()
{
    cout<<"You can do following operation by this calculator.\n";
    cout<<"For multiplication operations press m or M or *\n";
    cout<<"For subtraction operations press s or S or -\n";
    cout<<"For addition operations press a or A or +\n";
    cout<<"For division operations press d or D or /\n";
    cout<<"For remainder operations press r or R or %\n";
}
int multiplication(int n1,int n2)
{
    return n1*n2;
}
int subtraction(int n1,int n2)
{
    return n1-n2;
}

int addition(int n1,int n2)
{
    return n1+n2;
}
int division(int n1,int n2)
{
    return n1/n2;
}
int remainder(int n1,int n2)
{
    return n1%n2;
}
```

part B:=

```

int main()
{
    int num1,num2;
    char op;
    cout<<"Enter the number1: ";
    cin >> num1;
    cout<<"Enter the number2: ";
    cin >> num2;
    choices();
    cout<<"Enter the operator: ";
    cin >> op;
    if(op=='m' || op=='M' || op=='*')
        cout<<num1<<" * "<<num2<<" = "<<multiplication(num1,num2);
    else if(op=='s' || op=='S' || op=='-')
        cout<<num1<<" - "<<num2<<" = "<<subtraction(num1,num2);
    else if(op=='a' || op=='A' || op=='+')
        cout<<num1<<" + "<<num2<<" = "<<addition(num1,num2);
    else if(op=='d' || op=='D' || op=='/')
        cout<<num1<<" / "<<num2<<" = "<<division(num1,num2);
    else if(op=='r' || op=='R' || op=='%')
        cout<<num1<<" % "<<num2<<" = "<<remainder(num1,num2);
    return 0;
}

```

Output :=

```

Enter the number1: 2
Enter the number2: 3
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Enter the operator: +
2 + 3 = 5
PS
PS
Enter the number1: 6
Enter the number2: 9
You can do following operation by this calculator.
For multiplication operations press m or M or *
For subtraction operations press s or S or -
For addition operations press a or A or +
For division operations press d or D or /
For remainder operations press r or R or %
Enter the operator: -
6 - 9 = -3

```

QNo 4: Write user defined function arrayFunction() in C++ which will initialize array by taking values from user at run time and then call this function in main function which will return this array from the calling function to the called function (to the main function) and then show all items of array in main function using loop.

```
#include <iostream>
Enter the size of array: 4
using Enter the value at myarr[0]= 1
int Enter the value at myarr[1]= 2
{
    Enter the value at myarr[2]= 3
    Enter the value at myarr[3]= 4
    1 2 3 4
    for (int i = 0; i < s; i++)
    {
        cout<<"Enter the value at myarr["<<i<<"]= ";
        cin >> arr[i];
    }
    return *arr;
}
int main()
{
    int size;
    cout<<"Enter the size of array: ";
    cin >> size;
    int myarr[size];
    arrayFunction(myarr,&size);
    for (int i = 0; i < size; i++)
    {
        cout << myarr[i]<< " ";
    }
    cout<<endl;
}
```

Qno5 Type checking program

```
#include <iostream>
using namespace std;
void printType(double n)
{
    cout<<n<<" is double data type.\n";
}
void printType(int n)
{
    cout<<n<<" is an integer data type.\n";
}
void printType(bool n)
{
    if(n==true || n==1)
    {
        cout<<"true is a boolean      ";
        cout<<1<<" is boolean data type.\n";
    }
    else
    {
        cout<<"false is a boolean     ";
        cout<<0<<" is boolean data type.\n";
    }
}

void printType(char n)
{
    cout<<n<<" is a character data type.\n";
}

int main()
{
    printType('A');
    printType(1.24353);
    printType(334345345);
    printType(1);
}
```

OUTPUT :=

```
A is a character data type.
1.24353 is double data type.
334345345 is an integer data type.
1 is an integer data type.
```

The END

Thank you

Sir