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Subject	C++	Class	
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## I N D E X

No.	Experiment Description	Experiment Date	Submission Date	Remarks / Signature
01	Write a C++ program to find the sum of and average of 'n' no.s.	22/1/20	05/02/20	Late submission M. Fazil 5/2/2020
2	Write C++ program to check the entered number is a prime or not.	22/1/20	05/02/20	
3	Write a C++ program to calculate the volume of cube, cylinder and rectangle using function overloading.	29/1/20	05/02/20	M. Fazil 5/2/2020
4	Write a C++ program to compare two number entered by user using nesting of function.	29/1/20	05/02/20	M. Fazil 5/2/2020
5	Write a C++ program to read two numbers and find division of these two using exception handling.			

# I N D E X

Sr. No.	Experiment Description	Experiment Date	Submission Date	Remarks / Sign
6.	Write a C++ program to bubble sort using template function.			
7.	Write a C++ program to overload == operator to compare two strings.			
8.	Write a C++ program to perform swapping of two integer numbers, float numbers and two characters using function overloading.			
9.	Write a program to find Sum of series $x - (n^2/3!) + (n^5/5!) - \dots$			
10.	Write a C++ program to open a file and count number of characters, vowels and new line characters present in line.			

Program No. 01

Object :- Write a C++ program to find the sum and average of  $n$  numbers.

Program :-

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

```
int main()
```

```
{
    int n, i, sum = 0, average;
```

```
    cout << "Enter the value of n:";
    cin >> n;
```

```
    for (i = 1; i <= n; i++)
    {
        sum = sum + i;
    }
```

```
    average = sum / n;
```

```
    cout << "Sum = " << sum;
```

```
    cout << "Average = " << average;
```

```
    return 0;
}
```

Output:-

Enter value of  $n$ :- 5

Sum = 15

Average = 3



Program No. - 02

Object :- Write a C++ program to check the entered number is a prime number or not.

program :-

```
#include <iostream>
```

```
using namespace std;
```

```
int main ()
```

```
{
```

```
    int i, n, K=0;
```

```
    cout << "Enter any number : ";
```

```
    cin >> n;
```

```
    for (i=2; i <= (n/2); i++)
```

```
{
```

```
        if (n%i == 0)
```

```
        { K++; break; } }
```

```
    if (K > 0)
```

```
    { cout << n << " is not prime number "; }
```

```
    else
```

```
    { cout << n << " is a prime number "; }
```

```
    return 0; }
```

output

Enter any number:- 13

13 is a prime No.



## Program No- 03

Object:- Write a C++ program to calculate the volume of cube, cylinder and rectangle using function overloading.

Programming:-

```
#include <iostream>
```

```
using namespace std;
```

```
void volume (int a)
```

```
{
```

```
    int vol;
```

```
    vol =  $a * a * a$ ;
```

```
    cout << "Volume of cube" << vol; }
```

```
void volume (int r, int h)
```

```
{
```

```
    float vol;
```

```
    vol =  $3.14 * r * r * h$ ;
```

```
    cout << "Volume of cylinder is" << vol; }
```

```
void volume (int l, int b, int h)
```

```
{
```

```
    int volume;
```

```
    volume =  $l * b * h$ ;
```

```
    cout << "Volume of rectangle is" << volume; }
```

```
int main()
```

```
{
```

```
int a, r, l, b, h;
```

```
cout << "Enter the side of cube:";
```

```
cin >> a;
```

```
volume(a);
```

```
cout << "Enter the radius and height of cylinder:";
```

```
cin >> r >> h;
```

```
volume(r, h);
```

```
cout << "Enter length, breadth and height  
of rectangle";
```

```
cin >> l >> b >> h;
```

```
volume(l, b, h);
```

```
return 0;
```

```
}
```



Output:-

Enter a Side of Cube : 5  
Volume of Cube is 125

Enter the radius and height of  
Cylinder = 7 10

Volume of Cylinder is 1539.38

Enter length, breadth and height of  
rectangle:- 2 4 9

Volume of rectangle is 54

Program No:- 04

Object:- Write a C++ program to compare two numbers entered by user using calling of functions.

Programming:-

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

Class compare

{

int a, b;

public:

void getdata()

{

cout << "Enter the values";  
cin >> a >> b;

int compare()

{

if (a > b)

return a;

if (a < b)

return b;

void putdata()

{

cout << "The greatest value is" << compare();

}

int main()

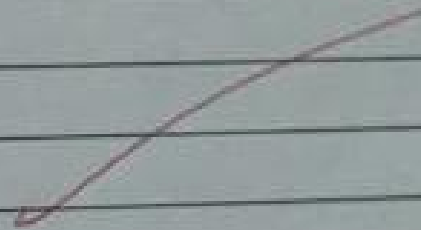
{

compare obj;

obj.getdata();

obj.putdata();

return 0;



*Signature*  
17/12/2020

output:-

Enter the values:- 15 21

The greatest value is 21

## Experiment No:- 5

Object :- Write a C++ program to read two numbers and find division of these two using exception handling.

```
Program: #include <iostream>
```

```
#include <stdexcept>
```

```
using namespace std;
```

```
float Division (float num, float den)
```

```
{  
    if (den == 0) {  
        throw runtime_error("can't divide by 0");  
    }
```

```
    return (num/den);  
}
```

```
int main()
```

```
{  
    float numerator, denominator, result;  
    cout << "Enter numerator and denominator";  
    cin >> numerator >> denominator;
```

```
try {
```

```
    cout << "The result is: " << Division  
        (numerator, denominator);  
}
```

```
catch (runtime_error & e) {
```

```
    cout << "Exception occurred" << e.what();  
}
```

```
return 0;  
}
```

Output 1-

Enter Numerator and Denominator: 8 0

Exception occurred: Can't divide by 0.

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~~1~~

## Experiment No: 1-6

Object:- Write a C++ program to bubble sort using template function.

Program:- #include <iostream>  
using namespace std;

template < class bubble >  
void bubble (bubble a[], int n)

```
{  
    int i, j;  
    for (i = 0; i < n - 1; i++)  
    {  
        for (j = i + 1; j < n; j++)  
        {  
            if (a[i] > a[j])  
            {  
                bubble element;  
                element = a[i];  
                a[i] = a[j];  
                a[j] = element;  
            }  
        }  
    }  
}
```

void main()

```
{  
    int a[10];  
    char b[10];
```

```
int an, bn;  
cout << "Enter no. of integers: ";  
cin >> an;  
for (int i = 0; i < an; i++)  
{  
    cout << "Enter next integer ";  
    cin >> a[i];  
}  
bubble (a, an);  
for (int i = 0; i < an; i++)  
{  
    cout << a[i] << " ";  
}
```

```
cout << "Enter no. of characters: ";  
cin >> bn;  
for (int j = 0; j < bn; j++)  
{  
    cin >> b[j];  
}
```

```
bubble (b, bn)
```

```
cout << "The sorted array is: ";
```

```
{  
    for (int j = 0; j < bn; j++)  
        cout << b[j] << " ";  
}
```



Output:-

Enter no. of integers: 7

Enter integers: 4 1 3 2 6 5 7

Sorted array is: 1 2 3 4 5 6 7

Enter no. of characters: 4

b a i g

The sorted array is: a b g i

## Experiment No-7

Obj:- Write a C++ program to overload == operator to compare two strings.

```
#include <iostream>
#include <string.h>
#include <string>
using namespace std;
```

```
class CompareString {
```

```
public:
```

```
    char Str[25];
```

```
    CompareString(char Str1[])
```

```
{
```

```
    strcpy(Str, Str1);
```

```
int operator==(CompareString S2)
```

```
{
```

```
    if (strcmp(Str, S2.Str) == 0)
```

```
        return 1;
```

```
    else
```

```
        return 0;
```

```
}
```

```
void compare(CompareString S1, CompareString S2)
```

```
{
```

```
    if (S1 == S2)
```

```
        cout << S1.Str << " is equal to " << S2.Str << endl;
```

else

cout &lt;&lt; S1 &lt;&lt; " is not equal to " &lt;&lt; S2 &lt;&lt; endl;

}

int main()

{

char S1[25], S2[25];

cout &lt;&lt; "Enter First String: ";

cin &gt;&gt; S1;

cout &lt;&lt; "Enter Second String: ";

cin &gt;&gt; S2;

cout &lt;&lt; "Comparing " &lt;&lt; S1 &lt;&lt; " and " &lt;&lt; S2 &lt;&lt; endl;

compareString S1(S1);

compareString S2(S2);

compare(S1, S2);

return 0;

Output is

Enter first String : Kanpur

Enter Second String : Kanpur

Comparing Kanpur and Kanpur

Kanpur is equal to Kanpur

## Experiment No. 8

Obj:- Write a C++ program to perform swapping of two integer numbers, float numbers and two characters using function overloading.

Program:- #include <iostream>

using namespace std;

void swap (int &a, int &b)

{ int temp;

temp = a;

a = b; b = temp; }

void swap (float &a, float &b)

{ float temp = a;

a = b; b = temp; }

void swap (char &a, char &b)

{ char temp = a;

a = b; b = temp; }

int main()

{ int in, iy;

float fu, fy;

char cu, cy;

cout << "Enter 2 integers: ";

cin >> in >> iy;

cout << "Enter 2 floating point: ";

```
cin >> px >> py;
```

```
cout << "Enter 2 character";
```

```
cin >> cx >> cy;
```

```
cout << "\n Integer : ";
```

```
cout << "\n ix = " << ix << "\n iy = " << iy;
```

```
Swap (ix, iy);
```

```
cout << "\n After Swapping";
```

```
cout << "\n ix = " << ix << "\n iy = " << iy;
```

```
cout << "\n Floating numbers : ";
```

```
cout << "\n px = " << px;
```

```
cout << "\n py = " << py;
```

```
Swap (px, py);
```

```
cout << "\n After Swapping";
```

```
cout << "\n px = " << px << "\n py = " << py;
```

```
cout << "Character : ";
```

```
cout << "\n cx = " << cx << "\n cy = " << cy;
```

```
return 0; }
```

Output :-

Enter 2 integers: 7 9

Enter 2 floating point nos: 3.9 7.12

Enter 2 Characters: Z B

Integers:  $x = 7$

$y = 9$

After Swapping:  $x = 9$

$y = 7$

Floating numbers:  $x = 3.9$

$y = 7.12$

After Swapping:  $x = 7.12$

$y = 3.9$

Characters:  $ch = Z$

$cy = B$

After Swapping:  $ch = B$

$cy = Z$

## Experiment No. 9

Object :-

Write a program to find sum of  
Series  $x = (n^2/3) + (n^2/5) + \dots$

Program :- `#include <iostream>`  
`using namespace std;`

```
void Sum (int n, float x)
```

```
{
```

```
    float sum, t;
```

```
    sum = t = x;
```

```
    for (int i = 1; i <= n; i++)
```

```
    {
```

```
        t = (t * (1 - 2 * x * x)) / (2 * i * (2 * i + 1));
```

```
        sum += t;
```

```
    }  
    cout << "value of sum = " << sum;
```

```
}  
int main ()
```

```
{
```

```
    int n;
```

```
    float x;
```

```
    cout << "Enter the value for x:";
```

```
    cin >> x;
```

```
    cout << "Enter the value for n:";
```

```
    cin >> n;
```

```
    Sum (n, x);
```

```
    return 0;
```



Outputs -

Enter the value for  $n1$ : 3

Enter the value for  $n2$ : 5

value of Sum = 0.1409

## Experiment No-10

Object :- Write a C++ program to open a file and count number of characters vowel and newline characters present in line.

Program :-

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

```
void main()
```

```
{
```

```
FILE *fp;
```

```
char ch, filename[100];
```

```
int charcount = 0, vowel = 0, newline = 0;
```

```
cout << "Enter a filename: ";
```

```
cin >> filename;
```

```
fp = fopen(filename, "r");
```

```
{ if (fp)
```

```

while (ch = getc(fp)) != EOF
{
    if (ch != ' ' && ch != '\n')
        ++CharCount;

    if (ch == 'a' || ch == 'e' || ch == 'i'
        || ch == 'o' || ch == 'u')
        ++vowel;

    if (ch == '\n')
        ++newLine;
}

else
{
    cout << "Failed to open file";
}

cout << "No. of Characters: " << CharCount;
cout << "No. of vowels: " << vowel;
cout << "No. of lines: " << newLine;
}

```

Adpt:-

Enter a filename: List.txt

Number of characters: 980

Number of vowels: 571

Number of lines: 91