

School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering



CS-114 - Fundamentals of Programming

Lab Manual # 5

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HOME TASKS

1. Write a program in C++ to find LCM of any two numbers using HCF.

main.cpp	Output
<pre>1 // Online C++ compiler to find LCM from HCF 2 #include <iostream> 3 using namespace std; 4 5 int main() { 6 int a,b,c;//declaring 7 double lcm, hcf; 8 cout<<"Insert first number:"<<endl; 9 cin>>a; 10 cout<<"Insert second number:"<<endl; 11 cin>>b; 12 if (b>a)//arranging numbers so a=highest 13 { 14 c=a;a=b;b=c; 15 } 16 for(int n=b;n>=1;n--)//loop to check divisibility on all numbers 17 { 18 if(a%n==0 && b%n==0) 19 { 20 hcf=n; 21 cout<<"H.C.F="<<n<<endl; 22 break;}//end loop when first factor found 23 else 24 {continue; 25 }} 26 lcm=a*b/hcf;// formula for relation between hcf,lcm 27 cout<<"L.C.M="<<lcm;//output 28 return 0; 29 }</pre>	<pre>/tmp/fzfffN6uZH.o Insert first number: 70 Insert second number: 13 H.C.F=1 L.C.M=910</pre>

2. Write a program in C++ to find out the sum of an Arithmetic progression series.

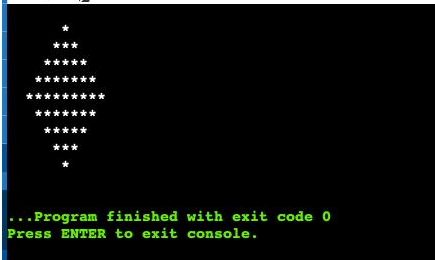
main.cpp	Output
<pre>1 // Online C++ compiler to find sum of arithmetic progression 2 #include <iostream> 3 using namespace std; 4 5 int main() { 6 int a,n,d,s;//initialising 7 //user inputs 8 cout<<"Insert the first term of the progression:"<<endl; 9 cin>>a; 10 cout<<"What is the difference between two consecutive terms?"<<endl; 11 cin>>d; 12 cout<<"enter the number of terms to be summed:"<<endl; 13 cin>>n; 14 s=0; 15 for (int x=1;x<=n;x++)//loop statement 16 { 17 s=s+a+(x-1)*d;//formula for sum 18 } 19 cout<<"The sum of first "<<n<<" terms in this progression="<<s;//output 20 return 0; 21 }</pre>	<pre>/tmp/6oG457fVuJ.o Insert the first term of the progression: 5 What is the difference between two consecutive terms? 3 enter the number of terms to be summed: 2 The sum of first 2 terms in this progression=13</pre>

3. Write a program in C++ to create a diamond.

```
main.cpp
1 // Online C++ compiler to print diamond
2 #include <iostream>
3 using namespace std;
4 int main() {
5     int j,k;
6     j=0;
7     k=11;
8     //this loop is for the upper triangle
9     for (int x=1;x<=5;x++) //main loop, changes row
10    {
11        cout<<"\n";
12        j++; // to change number of empty spaces in every row
13        k=k-2; // to change number of asterisks in every row
14        for (int b=j;b<7;b++) //to give empty space
15            cout<<" ";
16        for (int c=k;c<=10;c++) //to print asterisk
17            cout<<"*";
18    } //this loop is for the lower triangle
19    for (int y=1;y<=5;y++) //main loop, changes row
20    {
21        cout<<"\n";
22        j--; // to change number of empty spaces in every row
23        k=k+2; // to change number of asterisks in every row
24        for (int b=j;b<7;b++) //to give empty space
25            cout<<" ";
26        for (int c=k;c<=10;c++) //to print asterisk
27            cout<<"*";
28    }
29    return 0;
}
```


Code

```
1 // Online C++ compiler to print diamond
2 #include <iostream>
3 using namespace std;
4 int main() {
5     int j,k;
6     j=0;
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25            cout<<" ";
26        for (int c=k;c<=10;c++) //to print asterisk
27            cout<<"*";
28    }
29    return 0;
}
```



Output

4. Write a program in C++ to convert a decimal number to binary number.

main.cpp	Run	Output
<pre>1 // Online C++ compiler to convert decimal to binary 2 #include <iostream> 3 using namespace std; 4 5 int main() { 6 int d,b,r; //declaring 7 cout<<"Insert Decimal Number:"; 8 cin>>d; //input from user 9 cout<<"The Binary equivalent is:"<<endl; 10 do 11 { 12 r=d%2; 13 cout<<r<<endl; //output 14 d=d/2; 15 } 16 while (d>0); 17 18 return 0; 19 } 20 21</pre>		<pre>/tmp/885FR0USBp.o Insert Decimal Number:47 The Binary equivalent is: 1 1 1 1 0 1</pre>