



CS-114 - Fundamental of Programing

Home Tasks - 5 (Lab Manual 5)

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**HOME TASK 1:**

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

Code:

```
1  #include <iostream>
2
3  using namespace std;
4  int main()
5  {
6      // HOME TASK 1
7      int x;
8      int y;
9      int hcf;
10     cout<<"Please enter the two numbers, and make sure the second number is the lower: "<<endl;
11     cin>>x>>y;
12     if(x>y){hcf=y;}
13     if(y>x){cout<<"Please follow the instructions"<<endl;return 0;}
14     do{
15         if(x%hcf == 0 && y%hcf == 0 && hcf<=y){break;}
16         else{hcf-=1;}
17     }while(x>1);
18     cout<<"hcf check: "<<hcf<<endl;
19     cout<<"The LCM is: "<<(x*y)/hcf<<endl;
20
21     return 0;
22 }
```

Result:

```
Please enter the two numbers, and make sure the second number is the lower:
516
48
hcf check: 12
The LCM is: 2064

-----
Process exited after 3.948 seconds with return value 0
Press any key to continue . . .
```

**HOME TASK 2:**

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

Code:

```
1  #include <iostream>
2
3  using namespace std;
4  int main()
5  {
6      // HOME TASK 2
7      int a;
8      int n;
9      int d;
10     int sum;
11     int t;
12     cout<<"Please enter the first term: "<<endl;
13     cin>>a;
14     cout<<"Please enter the number of terms: "<<endl;
15     cin>>n;
16     cout<<"Please enter the common difference: "<<endl;
17     cin>>d;
18     for(int i = 1; i <= n; i+=1){
19         t = a + (i-1)*d;
20         sum = sum+t;
21     }
22     cout<<"The sum is : "<<sum<<endl;
23
24     return 0;
25 }
```

Result:

```
Please enter the first term:
1
Please enter the number of terms:
10
Please enter the common difference:
2
The sum is :100

-----
Process exited after 9.133 seconds with return value 0
Press any key to continue . . .
```

**HOME TASK 3:**

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

Code:

```

1  #include <iostream>
2
3  using namespace std;
4  int main()
5  {
6  // HOME TASK 3
7  int rows;
8  int x;
9  cout<<"Please enter the rows of the pyramid (only odd numbers):"<<endl;
10 cin>>rows;
11 if(rows % 2 == 0 || rows <1){cout<<"Please enter a valid number"<<endl; return 0;}
12 else{
13     for(int k=0; k<=rows/2; k+=1){
14         for(int i=rows/2-k; i>0; i-=1){
15             cout<<" ";
16             for(int z=1; z<=4*k+2; z+=2){
17                 if(z%2==0){continue;}
18                 cout<<"*";
19             }
20             cout<<endl;
21
22             for(int k=0; k<rows/2; k+=1){
23                 for(int i=-1; i<k; i+=1){
24                     cout<<" ";
25                     for(int z=rows-2*k-2; z>0; z-=1){
26                         cout<<"*";
27                     }
28                     cout<<endl;
29                 }
30             }
31         }
32     }
33     return 0;
34 }

```

Result:

```

Please enter the rows of the pyramid (only odd numbers):
9
  *
 ***
*****
*****
*****
*****
  ***
   *

-----
Process exited after 1.407 seconds with return value 0
Press any key to continue . . .

```

```

Please enter the rows of the pyramid (only odd numbers):
17
  *
 ***
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
*****
  ***
   *

-----
Process exited after 0.7831 seconds with return value 0
Press any key to continue . . .

```

**HOME TASK 4:**

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

Code:

```
1  #include <iostream>
2
3  using namespace std;
4  int main()
5  {
6      // HOME TASK 4
7      int num;
8      int bin;
9      int rem;
10     int t = 1;
11     cout<<"Please enter the number: "<<endl;
12     cin>>num;
13     do{
14         rem = num % 2;
15         num = (num-rem)/2;
16         bin = bin + rem*t;
17         t=t*10;
18     }while(num >= 1);
19     cout<<"The number in binary is: "<<bin<<endl;
20     return 0;
21 }
```

Result:

```
Please enter the number:
47
The number in binary is: 101111

-----
Process exited after 0.6332 seconds with return value 0
Press any key to continue . . .
```