

NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY



CS-114- FUNDAMENTAL OF PROGRAMMING

LAB MANUAL 5

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SECTION:ME-15 (C)

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TASK 1:

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

CODE:

```
#include <iostream>

using namespace std;

int main ()
{
    //for calculating sum of any arithmetic series
    int sum = 0;

    int a,d,n;//declare variables a is first term,d is common difference,n is no of terms
    cout <<"Enter first term : "<<endl;
    cin>>a;
    cout <<"Enter common difference : "<<endl;
    cin>>d;
    cout <<"Enter number of terms : "<<endl;
    cin>>n;
    int i=0;
    while (i<=n){
        sum = n/2*(2*a +(n-1)*d);//formula for calculating sum
        i++;
    }
    cout <<"The sum of arithmetic series is : "<<sum; //result
    return 0;
}
```

RESULT:

```
Enter first term :
45
Enter common difference :
6
Enter number of terms :
9
The sum of arithmetic series is :552
-----
Process exited after 7.121 seconds with return
Press any key to continue
```

TASK 2:

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

CODE:

```
#include <iostream>

using namespace std;

int main() {
    int y; //y used for temporary variables
    int num1, num2;
    int hcf;
    cout << "Enter value of num1: ";
    cin >> num1;
    cout << "Enter value of num2: ";
    cin >> num2;

    for (int i = 1; i <= num2; i++) {
        if (num1 % i == 0 && num2 % i == 0) {
            hcf = i;
        }
    }

    int lcm = (num1 * num2) / hcf;
```

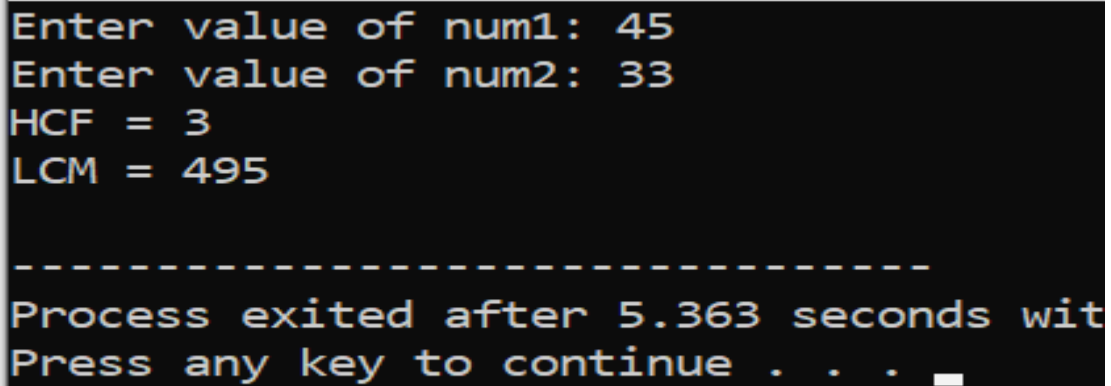
```

    cout << "HCF = " << hcf<<endl;
    cout <<"LCM = " <<lcm<<endl;

    return 0;
}

```

RESULT:



```

Enter value of num1: 45
Enter value of num2: 33
HCF = 3
LCM = 495

-----
Process exited after 5.363 seconds with return code 0
Press any key to continue . . .

```

TASK 3:

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

CODE :

```

#include <iostream>

using namespace std;

int main ()
{
    int n;//n donates the size of diamond
    cout <<"Enter value of n :"<<endl;
    cin >>n;

    //i used for row,j is for spacing,k denotes star
    for (int i = 1;i<=n;i++){
        for (int j = 1;j<=n-i;j++){
            cout <<" ";
        }
    }
}

```

```
for (int k = 1;k<=2*i-1;k++){  
    cout <<"*";  
}  
cout <<endl;  
}  
//lower part  
for (int i=1;i<=n-1;i++){  
    for (int j=1;j<=n-i;j++){  
        cout <<" ";  
    }  
    for (int k =1;k<=2*i-1;k++){  
        cout <<"*";  
    }  
    cout <<endl;  
}  
return 0;  
}
```

RESULT:

```
Enter value of n :  
6  
  
      *  
    ***  
  *****  
*****  
*****  
*****  
*****  
*****  
*****  
*****  
*****  
*****  
*****
```

```
Process exited after 2.732  
Press any key to continue .
```

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

```
// convert decimal to binary
```

```
using namespace std;
```

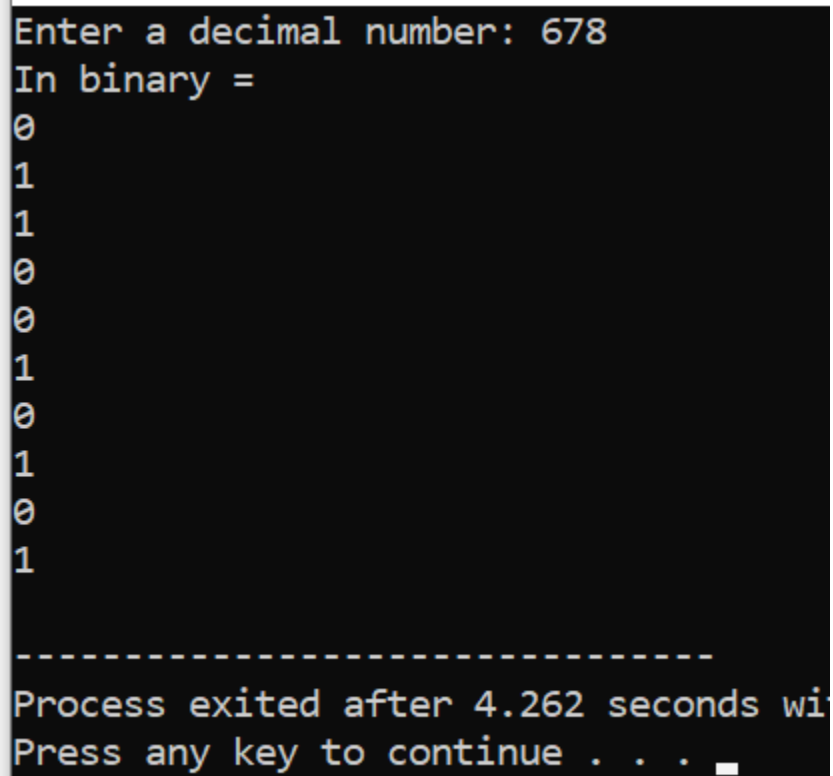
$$\{$$

```
cout << "Enter a decimal number: ";
```

```
cout <<"In binary = "<<endl;
```

```
int rem;
```

```
while (n>0) {  
    rem = n % 2;  
    n = n / 2;  
    cout << rem << endl;  
}  
return 0;  
}
```



The screenshot shows a terminal window with a black background and yellow text. The user enters the decimal number 678. The program outputs the binary representation of 678, which is 1010100110, displayed vertically. Below the output, a dashed line separates the program's execution from the system's exit message. The message states that the process exited after 4.262 seconds and prompts the user to press any key to continue.

```
Enter a decimal number: 678  
In binary =  
0  
1  
1  
0  
0  
1  
0  
1  
0  
1  
  
-----  
Process exited after 4.262 seconds with return code 0  
Press any key to continue . . .
```