

FUDAMENTALS OF PROGRAMMING (LAB)

LAB MANUAL # 06

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TASK 1

- 1. Generate the Fibonacci sequence using nested loops

main.cpp

```
3 ▾ int main (){  
4     int n,x,y,sum;    //declaring variables  
5     cout<<"enter the number of terms in the series"<<endl;  
6     cin>>n;          //taking input from users  
7     x=1;y=0; //intializing variables  
8 ▾ for(int i =0;i<1;i++){ // for one iteration  
9 ▾     for (int j=0;j<n;j++){  
10         sum=x+y;  
11         cout<<sum<<',';'  
12         x=y;  
13         y=sum;}}  
14     return 0;  
15 }
```

Output

Clear

```
/tmp/Hv8fr5k1AR.o  
enter the number of terms in the series  
8  
1,1,2,3,5,8,13,21,
```

TASK 2

- Create Floyd's triangle with nested loops.

main.cpp		Output
<pre>1 #include<iostream> 2 using namespace std ; 3 int main (){ 4 int x,sum,n; // declaring variables 5 cout<<"enter the number of rows for the floyd's triangle:"<<endl; 6 cin>>n; //taking input from users 7 x=1;sum=0; //initializing variables 8 cout<<"floyd's triangle:"<<endl; 9 for (int i = 0; i<n;i++){ //determining the no. of rows 10 for (int j = 0;j<=i;j++){ 11 sum=sum+x; // forming the triangle 12 cout<<sum<<" ";} 13 cout<<endl;} 14 return 0;} 15 16</pre>	<pre>/tmp/Hv8fr5k1AR.o enter the number of rows for the floyd's triangle: 5 floyd's triangle: 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 </pre>	

TASK 3

- Write a program using break or continue statement that only adds prime numbers from 1 to 50 and display the sum on screen.

main.cpp



Run

Output

Clear

```
1  #include<iostream>
2  using namespace std;
3  int main(){
4      int x,y,z,sum;
5      sum=0;
6      cout<<"Prime numbers less than 50 are:"<<endl;
7      for (x=2;x<50;x++){
8          z=0;
9          for (y=2;y<=x/2;y++){
10             if (x%y==0){
11                 z=1;
12                 break;}}
13     if (z!=1){ cout<<x<<" ";
14         sum=sum+x;}}
15     cout<<endl;
16     cout<<"Sum of prime numbers less than 50 is: "<<sum;
17     return 0;}
```

/tmp/S43AB1riLv.o

Prime numbers less than 50 are:

2 3 5 7 11 13 17 19 23 29 31 37 41 43 47

Sum of prime numbers less than 50 is: 328




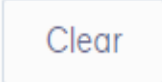
TASK 4

- Write a program in C++ to create the following pattern.

main.cpp			Run	Output	Clear
<pre>1 // task 2 home 2 #include<iostream> 3 using namespace std ; 4 int main (){ 5 int x,sum,n; // declaring variables 6 cout<<"enter the desired number of rows :"; 7 cin>>n; //taking input from users 8 for (int i = 0; i<n;i++){ //determining the no. of rows 9 x=1;sum=0; //initializing variables 10 for (int j = 0;j<=i;j++){ 11 sum=sum+x; // forming the triangle 12 cout<<sum<<" ";} 13 cout<<endl;} 14 return 0;}</pre>	<pre>/tmp/xq0GPkR0eR.o enter the desired number of rows :5 1 1 2 1 2 3 1 2 3 4 1 2 3 4 5 </pre>				

TASK 5

- Write a C++ program to print:

main.cpp	  	Output 
<pre>1 #include<iostream> 2 using namespace std; 3 int main(){ 4 int i,j; //declaring number of rows and columns 5 for(i=1;i<=6;i++){ //determining number of columns 6 if(i==3 i==5){continue;} //removing unwanted rows 7 for (j=1;j<=i;j++){ //determinig number of rows 8 cout<<i<<" "; 9 } 10 cout<<endl; 11 } 12 return 0;}</pre>		<pre>/tmp/S43AB1riLv.o 1 2 2 4 4 4 4 6 6 6 6 6 6</pre>

- All the task performed above utilize nested loops. Loops are used when a task needs to be performed a certain number of times like creating a pattern.
- In Nested loops, a number of loops are placed under a main loop and they only run as long as the condition of the main loop is being fulfilled.
- While creating a pattern as we did in task 4 and 5, the number of rows is determined by the first loop and the second loop determines the number of columns.