FUDAMENTALS OF PROGRAMMING (LAB)

LAB MANUAL # 06

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TASK 1

- 1. Generate the Fibonacci sequence using nested loops

main.cpp

Run

```
int main (){
    int n,x,y,sum;   //declaring variables
cout<<"enter the number of terms in the series"<<endl;
cin>>n;       //taking input from users
    x=1;y=0;  //intializing variables
for(int i =0;i<1;i++){ // for one iteration
    for (int j=0;j<n;j++){
        sum=x+y;
        cout<<sum<<',';
        x=y;
        y=sum;}}
    return 0;
}
```

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

Run

```
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
```

Output

Clear

```
/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
```

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

```
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;}
```

Output

Clear

```
/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

```
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;}
```

Output

Clear

```
/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
```

TASK 5

- Write a C++ program to print:

main.cpp

Run

```
#include<iostream>
using namespace std;
int main(){
 int i,j; //declaring number of rows and columns
for(i=1;i<=6;i++){ //determining number of columns
    if(i==3||i==5){continue;} //removing unwanted rows
      for (j=1;j<=i;j++){ //determinig number of rows
        cout<<i<<" ";
        }
    cout<<endl;
}
return 0;}
```

Output

Clear

```
/tmp/S43AB1riLv.o
1
2 2
4 4 4 4
6 6 6 6 6 6
```

- 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.