School Of Mechanical & Manufacturing Engineering, NUST

Department of Mechanical Engineering

CS-114 - Fundamental of Programing

Lab and Home Tasks - 6
(Lab Manual 6)

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LAB TASK 1:

1. Generate the Fibonacci sequence using nested loops.

Code:

```
#include <iostream>

using namespace std;
int main()
{
//  LAB TASK 1
    int t;
    int x=1;
    int p=1;
    int s;
    cout<<"Please enter the number of terms"<<endl;
    cin>>t;
    for(int i=0; i<t; i+=1){
        for(int j=1; j<=i; j+=1)
        s=p + x;
        cout<<x+s<<" ";
        p=x;
        x=s;
    }
    return 0;
}
```

Result:

```
Please enter the number of terms
10
1 1 2 3 5 8 13 21 34 55
--------------------------------
Process exited after 0.6219 seconds with return value 0
Press any key to continue . . .
```

LAB TASK 2:

2. Create Floyd's triangle with nested loops.

Code:

```
#include <iostream>

using namespace std;
int main()
{
//  LAB TASK 2
    int r;
    int n = 1;
    cout<<"Please enter the number of rows"<<endl;
    cin>>r;
    for(int i=0; i<r; i+=1){
        for(int j=0; j<=i; j+=1){
            cout<<n<<" ";
            n=n+1;
            }
        cout<<endl;
     }
    return 0;
}
```

Result:

```
Please enter the number of rows
5
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

--------------------------------
Process exited after 0.3625 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 1:

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

Code:

```
#include <iostream>

using namespace std;
int main()
{
//  HOME TASK 1
    int sum;
    for(int i=2; i<=50; i+=1){
        for(int j=2; j<=i; j+=1){
        if(i%j==0 && j==i){sum = sum+i; break;}
        if(i%j==0){break;}
        }
    }
    cout<<"The sum of all prime numbers from 0-50 is: "<<sum<<endl;
    return 0;
}
```

Result:

```
The sum of all prime numbers from 0-50 is: 328

--------------------------------
Process exited after 0.1418 seconds with return value 0
Press any key to continue . . .
```

HOME TASK 2:

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

1

1 2

1 2 3

1 2 3 4

1 2 3 4 5

Code:

```
#include <iostream>

using namespace std;
int main()
{
//  HOME TASK 2
    int r;
    cout<<"Please enter the number of rows."<<endl;
    cin>>r;
    for(int i=1; i<=r; i+=1){
        for(int j=1; j<=i; j+=1){
        cout<<j<<" ";}
        cout<<endl;
    }
    return 0;
}
```

Result:

```
Please enter the number of rows.
5
1
1 2
1 2 3
1 2 3 4
1 2 3 4 5
```

HOME TASK 3:

3. Write a C++ program to print:

1

2 2

4 4 4 4

6 6 6 6 6 6

Code:

```cpp
#include <iostream>

using namespace std;
int main()
{
//  HOME TASK 3
    int rows;
    cout<<"Please enter the number of rows."<<endl;
    cin>>rows;
    cout<<1<<endl;
    for(int i=1; i<rows; i+=1){
        for(int j=1; j<=2*i; j+=1){
        cout<<2*i<<" ";}
        cout<<endl;
    }
    return 0;
}
```

Result:

```
Please enter the number of rows.
5
1
2 2
4 4 4 4
6 6 6 6 6 6
8 8 8 8 8 8 8 8
```