

UNIVERSITY OF ENGINEERING AND TECHNOLOGY,TAXILA



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*SOFTWARE ENGINEERING*

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**LAB-11 SOLUTION**

SUBMITTED TO : MS.SABA AWAN

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REG NO : 20-SE-56

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## TASK-1

Write C++ Function named “Reverselt” in which use enter a number, program reverse it and display reversed number on the console as given by the output:

## SOLUTION

CODE

The screenshot shows a C++ IDE with a project named "20-SE-56 LAB 11 TASK1.cpp". The code is as follows:

```

1  #include<iostream>
2  using namespace std;
3  //we declared a function named ReverseIt
4  int ReverseIt(int p);
5
6
7  int main()
8  {
9      20-SE-56 MUHAMMAD ARSALAN          "<<<endl<<<endl;
10     cout<<"//declared and initialized two variables with 0 value
11     int num=0, out_put=0;
12
13     cout<<"PLEASE ENTER THE NUMBER YOU WANT TO REVERSE : ";
14     cin>>num;
15     //passing value to main function form other function
16     out_put=ReverseIt(num);
17     cout<<"OUR REQUIRED REVERSE NUMBER IS : " <<out_put <<<endl;
18 }
19
20 //defining the function
21 int ReverseIt(int p)
22 {
23     int x=0, reverse=0;
24
25     while(p!=0)
26     {
27         //program to reverse the number
28         x=p%10;
29         reverse=(reverse*10)+x;
30         p=p/10;
31     }
32     //returning reverse to main function
33
34     return reverse;
35 }
36

```

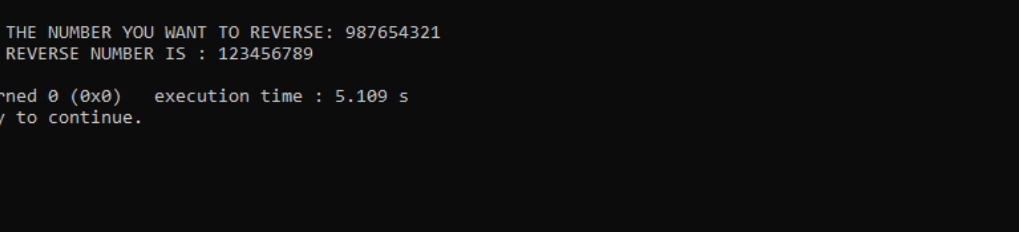
The IDE also shows a "Log & others" panel at the bottom with the following output:

```

CodeBlocks X Search results X C++ X Build log X Build messages X CppCheck/Ver... X CppCheck/Ver... messages X Cscope X Debugger X Doxygen X Fortran info X Closed files list X Thread search X
g++.exe -C "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1\20-SE-56 LAB 11 TASK1.exe" "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1\20-SE-56 LAB 11 TASK1.cpp"
Process terminated with status 0 (0 minute(s), 0 second(s))
0 warning(s), 0 error(s)
Checking for existence: "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1\20-SE-56 LAB 11 TASK1.exe"
Running: "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1\20-SE-56 LAB 11 TASK1.exe" (in "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1")
Set variable: PATH=C:\CodeBlocks\MinGW\bin;C:\CodeBlocks\MinGW\bin\perl\bin;C:\Windows\System32\WindowsPowerShell\v1.0\cmd;C:\Windows\System32\OpenSSH\cmd;C:\MinGW\bin;C:\Users\hnp\AppData\Local\Microsoft\WindowsApps

```

## OUTPUT



```
"C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK1\20-SE-56 LAB 11 TASK1.exe"

20-SE-56 MUHAMMAD ARSALAN

PLEASE ENTER THE NUMBER YOU WANT TO REVERSE: 987654321
OUR REQUIRED REVERSE NUMBER IS : 123456789

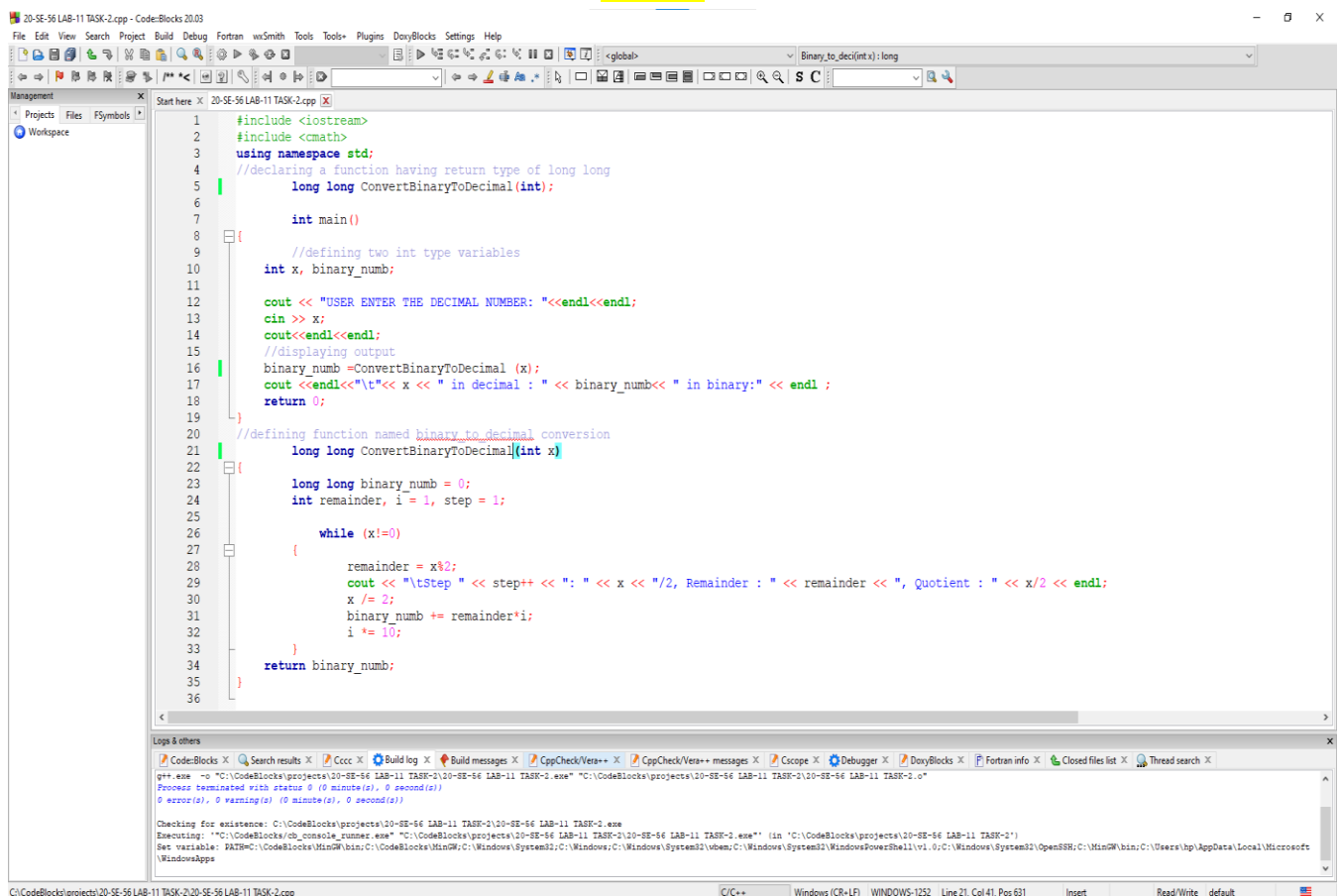
Process returned 0 (0x0)   execution time : 5.109 s
Press any key to continue.
```

## TASK-2

Create a C++ Function named “**ConvertBinaryToDecimal**” that takes decimal number provided by user as input and perform its binary conversion to display the intermediate calculations with file output as given below:

## SOLUTION

### CODE



```
1 #include <iostream>
2 #include <cmath>
3 using namespace std;
4 //declaring a function having return type of long long
5 long long ConvertBinaryToDecimal(int);
6
7 int main()
8 {
9     //defining two int type variables
10    int x, binary_num;
11
12    cout << "USER ENTER THE DECIMAL NUMBER: "<<endl<<endl;
13    cin >> x;
14    cout<<endl<<endl;
15    //displaying output
16    binary_num=ConvertBinaryToDecimal(x);
17    cout<<endl<<"\t"<<x<<" in decimal : "<< binary_num<<" in binary:"<< endl ;
18    return 0;
19 }
20
21 //defining function named binary_to_decimal conversion
22 long long ConvertBinaryToDecimal(int x)
23 {
24    long long binary_num = 0;
25    int remainder, i = 1, step = 1;
26
27    while (x!=0)
28    {
29        remainder = x%2;
30        cout << "\tStep " << step++ << ": " << x << "/2, Remainder : " << remainder << ", Quotient : " << x/2 << endl;
31        x /= 2;
32        binary_num += remainder*i;
33        i *= 10;
34    }
35    return binary_num;
36 }
```

Logs and others

```
g++ .exe -o "C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2\20-SE-56 LAB-11 TASK-2.exe" "C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2\20-SE-56 LAB-11 TASK-2.o"
Process terminated with status 0 (0 minute(s), 0 second(s))
0 error(s), 0 warning(s) (0 minute(s), 0 second(s))
Checking for existence: C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2\20-SE-56 LAB-11 TASK-2.exe
Executing: "C:\CodeBlocks\ob_console_runner.exe" "C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2\20-SE-56 LAB-11 TASK-2.exe" (in "C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2")
Set variable: PATH=C:\CodeBlocks\bin;C:\CodeBlocks\bin;C:\Windows\System32;C:\Windows;C:\Windows\System32\cmd;C:\Windows\System32\WindowsPowerShell\v1.0;C:\Windows\System32\OpenSSH;C:\Users\lap\AppData\Local\Microsoft\WindowsApps
```

## OUTPUT

```
"C:\CodeBlocks\projects\20-SE-56 LAB-11 TASK-2\20-SE-56 LAB-11 TASK-2.exe"
USER ENTER THE DECIMAL NUMBER:
35

Step 1: 35/2, Remainder : 1, Quotient : 17
Step 2: 17/2, Remainder : 1, Quotient : 8
Step 3: 8/2, Remainder : 0, Quotient : 4
Step 4: 4/2, Remainder : 0, Quotient : 2
Step 5: 2/2, Remainder : 0, Quotient : 1
Step 6: 1/2, Remainder : 1, Quotient : 0

35 in decimal : 100011 in binary:

Process returned 0 (0x0)   execution time : 10.476 s
Press any key to continue.
```

## TASK-3

Write a C++ Program to Find Fibonacci Numbers using Recursion up to the number of terms provided by User.

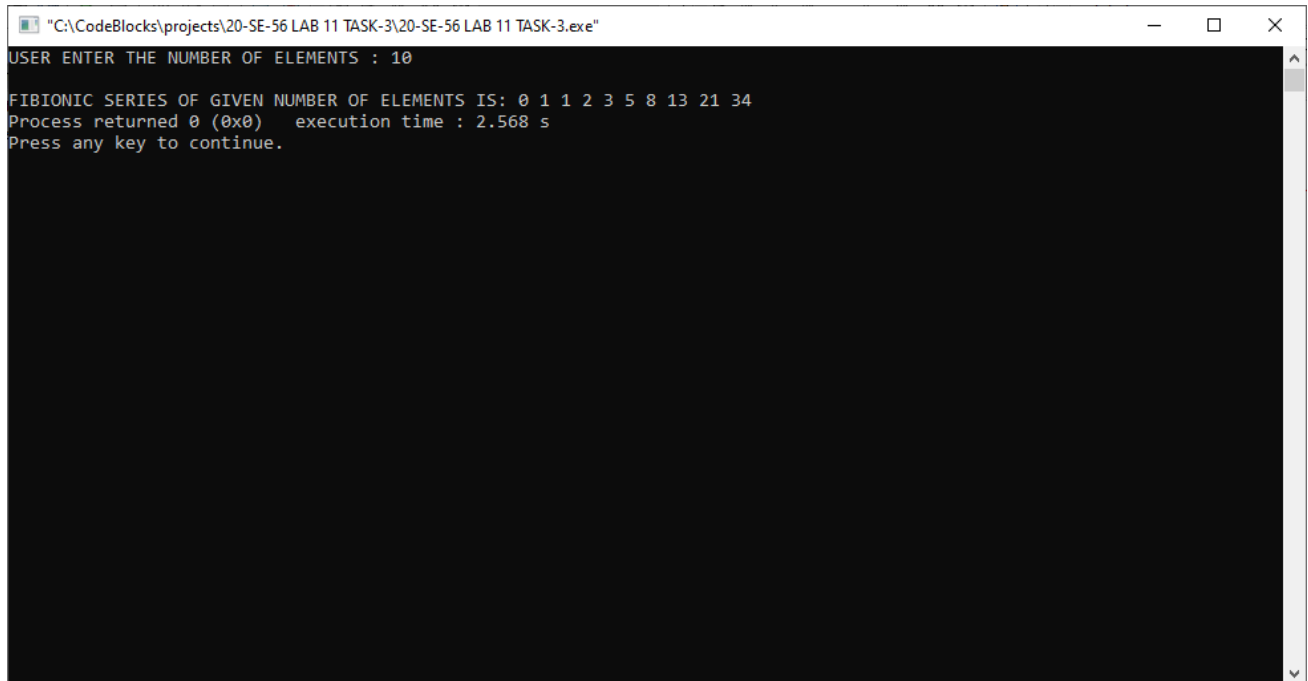
## SOLUTION CODE

```
#include<iostream>
using namespace std;
//DECLARING A FUNCTION FOR FIBONIC SERIES NAMED AS fibonic
void fibonic(int n);
int main(){
    int n;
    cout<<"USER ENTER THE NUMBER OF ELEMENTS : ";
    cin>>n;
    cout<<"\nFIBONIC SERIES OF GIVEN NUMBER OF ELEMENTS IS: ";
    cout<<"0 "<<"1 ";
    fibonic(n-2);
    //n-2 SHOWS THAT 2 OF THESE ARE ALREADY PRINTED
    return 0;

    //DEFINING THE fibonic FUNCTION
    void fibonic(int n){
        //these variables are made static so that they can not be modified again
        static int n1=0, n2=1, n3;
        if(n>0){
            n3 = n1 + n2;
            n1 = n2;
            n2 = n3;
            cout<<n3<<" ";
            fibonic(n-1);
        }
    }
}
```

Build file: "no targets" in "no project" (compiler: unknown) ---  
Build Finished: 0 error(s), 0 warning(s), 0 message(s), 0 second(s) ---

## OUTPUT



```
"C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK-3\20-SE-56 LAB 11 TASK-3.exe"
USER ENTER THE NUMBER OF ELEMENTS : 10
FIBIONIC SERIES OF GIVEN NUMBER OF ELEMENTS IS: 0 1 1 2 3 5 8 13 21 34
Process returned 0 (0x0)   execution time : 2.568 s
Press any key to continue.
```

The screenshot shows a console window titled "C:\CodeBlocks\projects\20-SE-56 LAB 11 TASK-3\20-SE-56 LAB 11 TASK-3.exe". The output text is as follows:

```
USER ENTER THE NUMBER OF ELEMENTS : 10
FIBIONIC SERIES OF GIVEN NUMBER OF ELEMENTS IS: 0 1 1 2 3 5 8 13 21 34
Process returned 0 (0x0)   execution time : 2.568 s
Press any key to continue.
```