



National University of Science and  
technology  
(NUST)

**CS-114 - Fundamental of Programing**

**Lab Manual # 05**

**Lab Tasks**

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## TASK 1:

Convert the following while loop to a do-while loop

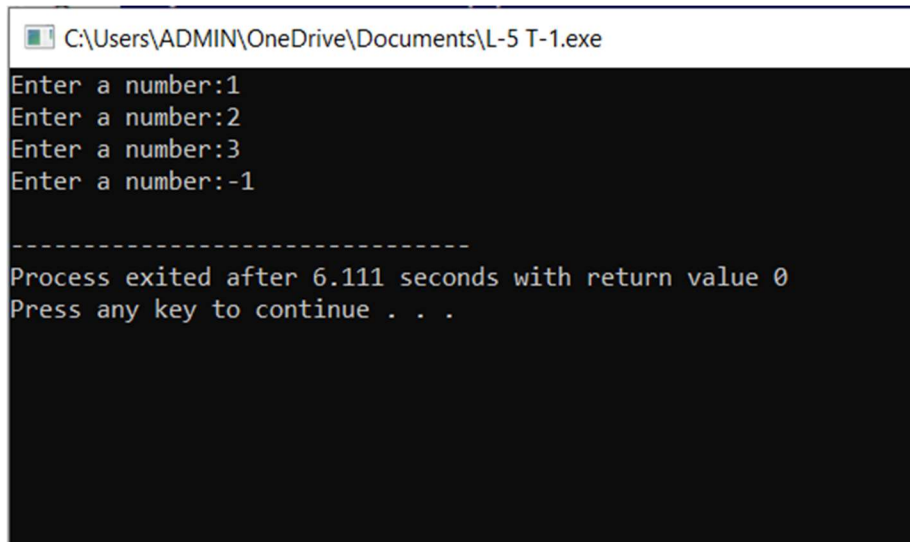
```
int x = 1;
while (x > 0)
{
    cout << "enter a number: ";
    cin >> x;
}
```

### C++ Code:

```
#include <iostream>
using namespace std;
int main(){
    int x=1;
    do{
        cout<<"Enter a number:";
        cin>>x;
    }while(x>0);
```

```
return 0;
}
```

## Result:



```
C:\Users\ADMIN\OneDrive\Documents\L-5 T-1.exe
Enter a number:1
Enter a number:2
Enter a number:3
Enter a number:-1

-----
Process exited after 6.111 seconds with return value 0
Press any key to continue . . .
```

## TASK 2:

Use a do while loop to make a simple calculator for two numbers.  
Insert buttons for it to ask again and for termination.

## Code:

```
#include <iostream>
using namespace std;
int main(){
    char en;
    do{
        int x,o,y,sum,sub,mul,div,en;
        cout<<"Enter First Nummber:";
```

```
cin>>x;
```

```
cout<<"Enter Second Number:";
```

```
cin>>y;
```

```
cout<<"1-Addition(+)"<<endl;
```

```
cout<<"2-Subtraction(-)"<<endl;
```

```
cout<<"3-Multiplication(*)"<<endl;
```

```
cout<<"4-Division(/)"<<endl;
```

```
cout<<"Chose the operation:";
```

```
cin>>o;
```

```
switch(o){
```

```
    case 1:
```

```
        sum=x+y;
```

```
        cout<<"Sum of the numbers is ="<<sum<<endl;
```

```
        break;
```

```
    case 2:
```

```
        sub=x-y;
```

```
        cout<<"Subtraction of the numbers ="<<sub<<endl;
```

```
        break;
```

```
    case 3:
```

```
        mul=x*y;
```

```
        cout<<"Multiplication of numbers ="<<mul<<endl;
```

```
        break;
```

```
    case 4:
```

```
        div=x/y;
```

```
        cout<<"division of numbers ="<<div<<endl;
```

```
        break;
```

```

    }

    cout<<"To stop the calculator, press 'a':";

    cin>>en;

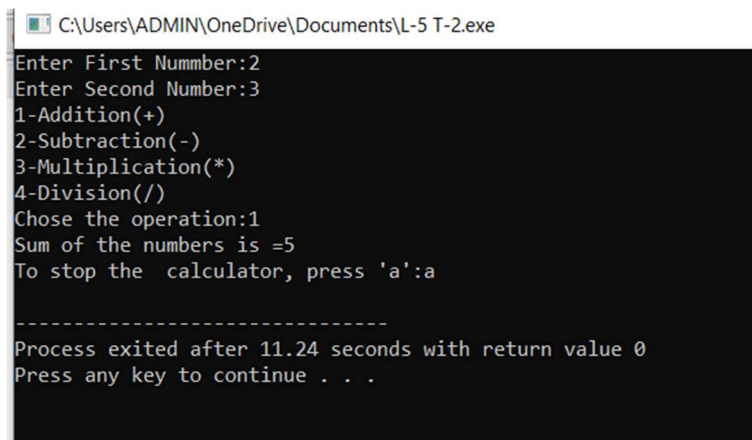
    }while(en=='a');

    return 0;

}

```

## Result:

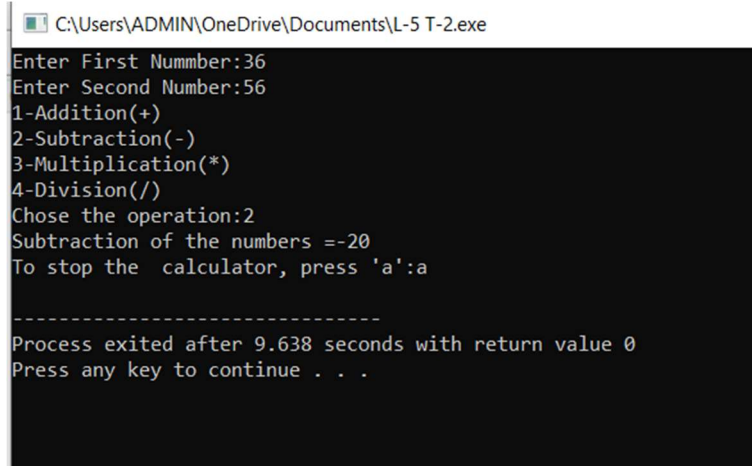


```

C:\Users\ADMIN\OneDrive\Documents\L-5 T-2.exe
Enter First Number:2
Enter Second Number:3
1-Addition(+)
2-Subtraction(-)
3-Multiplication(*)
4-Division(/)
Chose the operation:1
Sum of the numbers is =5
To stop the calculator, press 'a':a

-----
Process exited after 11.24 seconds with return value 0
Press any key to continue . . .

```



```

C:\Users\ADMIN\OneDrive\Documents\L-5 T-2.exe
Enter First Number:36
Enter Second Number:56
1-Addition(+)
2-Subtraction(-)
3-Multiplication(*)
4-Division(/)
Chose the operation:2
Subtraction of the numbers =-20
To stop the calculator, press 'a':a

-----
Process exited after 9.638 seconds with return value 0
Press any key to continue . . .

```

```
C:\Users\ADMIN\OneDrive\Documents\L-5 T-2.exe
Enter First Number:45
Enter Second Number:54
1-Addition(+)
2-Subtraction(-)
3-Multiplication(*)
4-Division(/)
Chose the operation:3
Multiplication of numbers=2430
To stop the calculator, press 'a':a

-----
Process exited after 9.686 seconds with return value 0
Press any key to continue . . .
```

## TASK 3:

Write programs with while or do while loops that compute:

- The sum of all even numbers between 2 and 100 (inclusive).

### Code:

```
#include <iostream>

using namespace std;

int main(){

    int num1=2,num2=0;

    while(num1<101){

        num2+=num1;

        num1=num1+2;

    }

    cout<<"The Sum of even nummbers from 1 to 100 ="<<num2;

    return 0;

}
```

## Result:

C:\Users\ADMIN\OneDrive\Documents\L-5 T-3 a.exe

```
the Sum of even nummbers from 1 to 100 =2550
-----
Process exited after 0.1267 seconds with return value 0
Press any key to continue . . .
```

## Part b

b. The sum of all squares between 1 and 100 (inclusive)

## Code:

```
#include <iostream>

using namespace std;

int main(){

    int num1=1,num2=0;

    while(num1<101){

        num1*num1;

        num2+=num1;

        num1++;

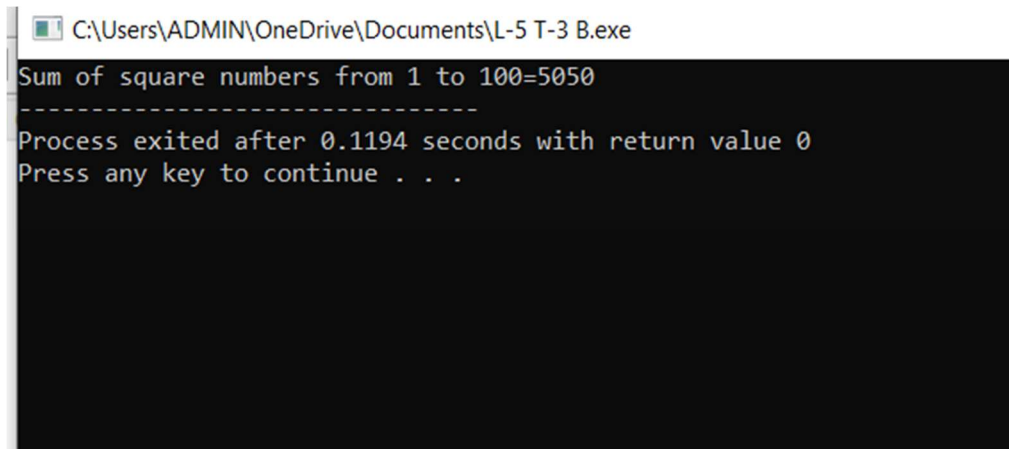
    }

    cout<<"Sum of square numbers from 1 to 100="<<num2;

    return 0;

}
```

## Result:



```
C:\Users\ADMIN\OneDrive\Documents\L-5 T-3 B.exe
Sum of square numbers from 1 to 100=5050
-----
Process exited after 0.1194 seconds with return value 0
Press any key to continue . . .
```

## Task 4:

Write programs with while or do while loops that compute:

Part-A

a. All powers of 2 from 20 up to 220

## Code:

```
#include <iostream>
#include <math.h>
using namespace std;
int main(){
    int i=0,a;

    while(i<21){
        pow(2,i);
        a=pow(2,i);
        cout<<a<<" ";
```



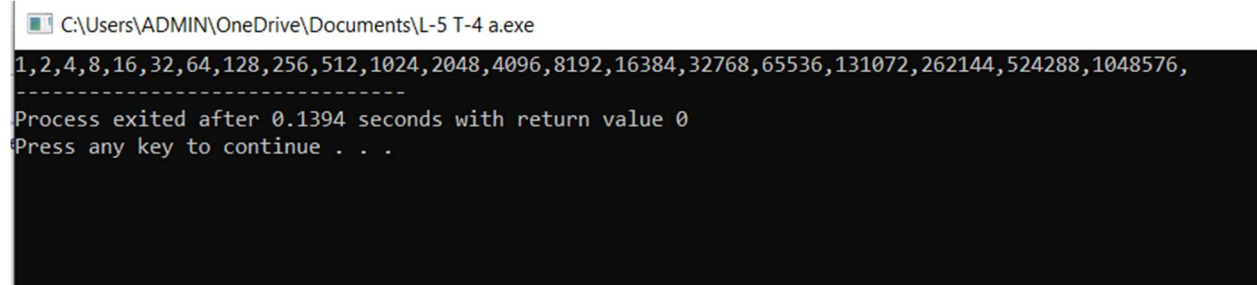
```

        i++;
    }

    return 0;
}

```

## Result:



```

C:\Users\ADMIN\OneDrive\Documents\L-5 T-4 a.exe
1,2,4,8,16,32,64,128,256,512,1024,2048,4096,8192,16384,32768,65536,131072,262144,524288,1048576,
-----
Process exited after 0.1394 seconds with return value 0
Press any key to continue . . .

```

## Part-b:

The sum of all odd numbers between a and b (inclusive), where a and b are inputs

## Code:

```

#include <iostream>

#include <math.h>

using namespace std;

int main(){

    int a,b,x,sum,res;

    cout<<"Enter first number:";

    cin>>a;

    cout<<"Enter Second number:";

    cin>>b;

    x=a;

    while(x>=a&&x<=b){

        if(x%2!=0){

```

```
        sum+=x;
    }

    x++;

}

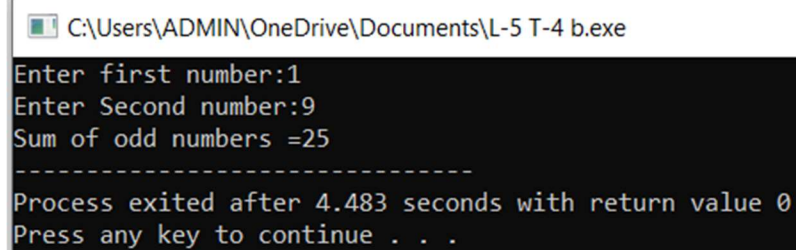
res=sum-1;

cout<<"Sum of odd numbers ="<<res;

return 0;

}
```

## Result:



C:\Users\ADMIN\OneDrive\Documents\L-5 T-4 b.exe

```
Enter first number:1
Enter Second number:9
Sum of odd numbers =25
-----
Process exited after 4.483 seconds with return value 0
Press any key to continue . . .
```

