

# ***National University of Science and Technology***

**School of Mechanical and Manufacturing Engineering**

## **Lab Task #05**

**CS-114 Fundamentals of Programming**

**Course Instructor:** Khawaja Fahad Iqbal

**Lab Instructor:** Muhammad Affan

### **Introduction:**

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**Section:** ME-15B

**Date:** 27-10-2023

## **Task 1:**

Convert the given while loop to a do while loop.

## **Solution:**

//Task 1 Convert a While loop into do while loop

```
#include <iostream>

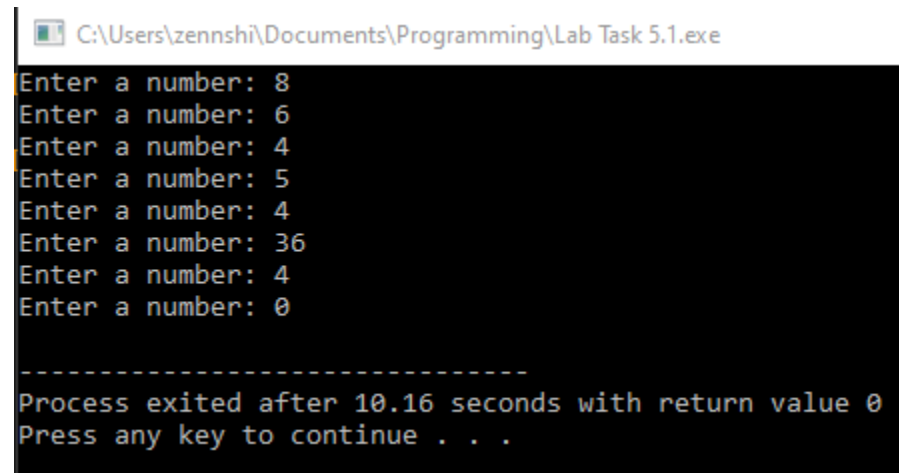
using namespace std;

int main(){
    int x = 1;

    do{
        cout << "Enter a number: ";
        cin >> x;
    }
    while (x>0);

    return 0;
}
```

## **Result:**



```
C:\Users\zennshi\Documents\Programming\Lab Task 5.1.exe
Enter a number: 8
Enter a number: 6
Enter a number: 4
Enter a number: 5
Enter a number: 4
Enter a number: 36
Enter a number: 4
Enter a number: 0

-----
Process exited after 10.16 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.

## **Solution:**

//Task 2 Program To Create a Simple Calculator Using Do While Loop

```
#include <iostream>
```

```
#include <math.h>
```

```
using namespace std;
```

```
int main(){
```

```
int num1,num2;
```

```
float Solution;
```

```
char Operation,t;
```

```
do{
```

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

```
cin>>num1;
```

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

```
cin>>num2;
```

```
cout<<"Enter The Operation To Be Performed: "<<endl;
```

```
cin>>Operation;
```

```
switch(Operation){
```

```
    case '+':
```

```
    Solution=num1+num2;
```

```
    cout<<"The Sum of "<<num1<<" and "<<num2<<" is:"<<Solution<<endl;
```

```
    break;
```

```
    case '-':
```

```

Solution=num1-num2;
cout<<"The Subtraction of "<<num1<<" from "<<num2<<" is:"<<Solution<<endl;
break;

case '*':
Solution=num1*num2;
cout<<"The Multiplication of "<<num1<<" by "<<num2<<" is:"<<Solution<<endl;
break;

case '/':
if(num2==0){
cout<<"Undefined!Please Enter A Non-Zero Denominator."<<endl;
}
else{
Solution=num1/num2;
cout<<"The Division of "<<num1<<" by "<<num2<<" is:"<<Solution<<endl;}
break;

case '^':
Solution=pow(num1,num2);
cout<<"The "<<num1<<" raised to the Power "<<num2<<" is:"<<Solution<<endl;
break;

case '%':
if(num2==0){
cout<<"Undefined!Please Enter A Non-Zero Denominator."<<endl;
}
else{
Solution=num1%num2;
cout<<"The Modulus of "<<num1<<" and "<<num2<<" is:"<<Solution<<endl;}

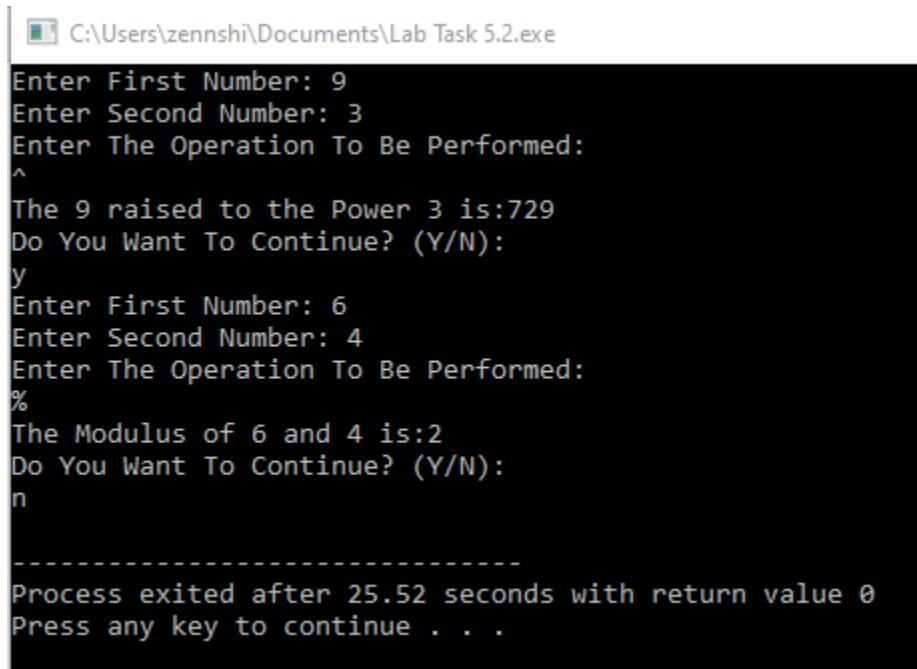
```

```

        break;
    }
    cout<<"Do You Want To Continue? (Y/N):"<<endl;
    cin>>t;}
    while(t=='Y' || t=='y');
    return 0;
}

```

## **Result:**



```

C:\Users\zennshi\Documents\Lab Task 5.2.exe
Enter First Number: 9
Enter Second Number: 3
Enter The Operation To Be Performed:
^
The 9 raised to the Power 3 is:729
Do You Want To Continue? (Y/N):
y
Enter First Number: 6
Enter Second Number: 4
Enter The Operation To Be Performed:
%
The Modulus of 6 and 4 is:2
Do You Want To Continue? (Y/N):
n

-----
Process exited after 25.52 seconds with return value 0
Press any key to continue . . .

```

## **Task 3.1:**

Write a program with while or do while loop that computes the sum of all even numbers between 2 and 100 (inclusive).

## **Solution:**

```

//Task 3.1
#include <iostream>
using namespace std;

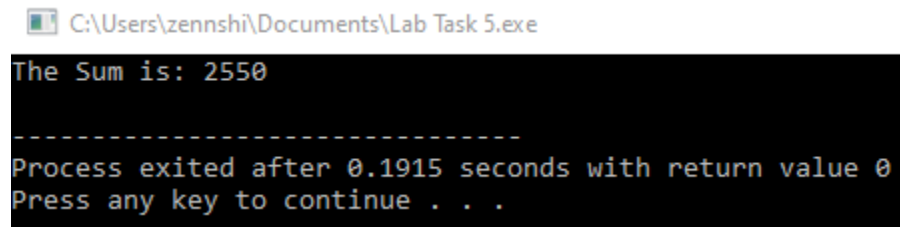
```

```

int main(){
int num=2,i=0;
while(num<=100){
if(num%2==0){
i+=num;
}
num++;
}
cout<<"The Sum is: "<<i<<endl;
return 0;
}

```

## **Result:**



```

C:\Users\zennshi\Documents\Lab Task 5.exe
The Sum is: 2550
-----
Process exited after 0.1915 seconds with return value 0
Press any key to continue . . .

```

## **Task 3.2:**

Write a program with while or do while loop that computes the sum of all squares between 1 and 100.

## **Solution:**

```

//Task 3.2

#include <iostream>

#include<math.h>

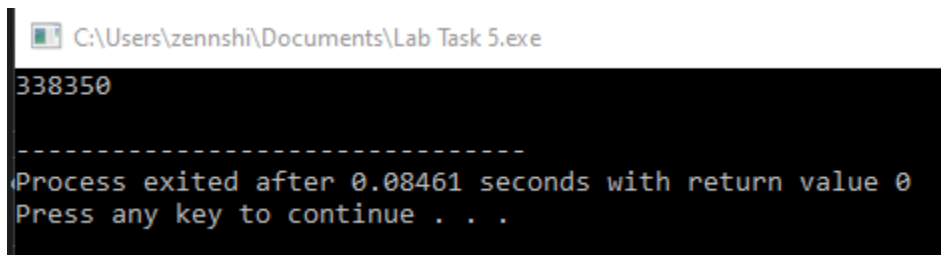
using namespace std;

int main() {

```

```
int i=1,sum=0;
while (i<=100) {
    sum+=i*i;
    i++;
}
cout<<sum<<endl;
return 0;
}
```

## **Result:**



```
C:\Users\zennshi\Documents\Lab Task 5.exe
338350
-----
Process exited after 0.08461 seconds with return value 0
Press any key to continue . . .
```

## **Task 4.1:**

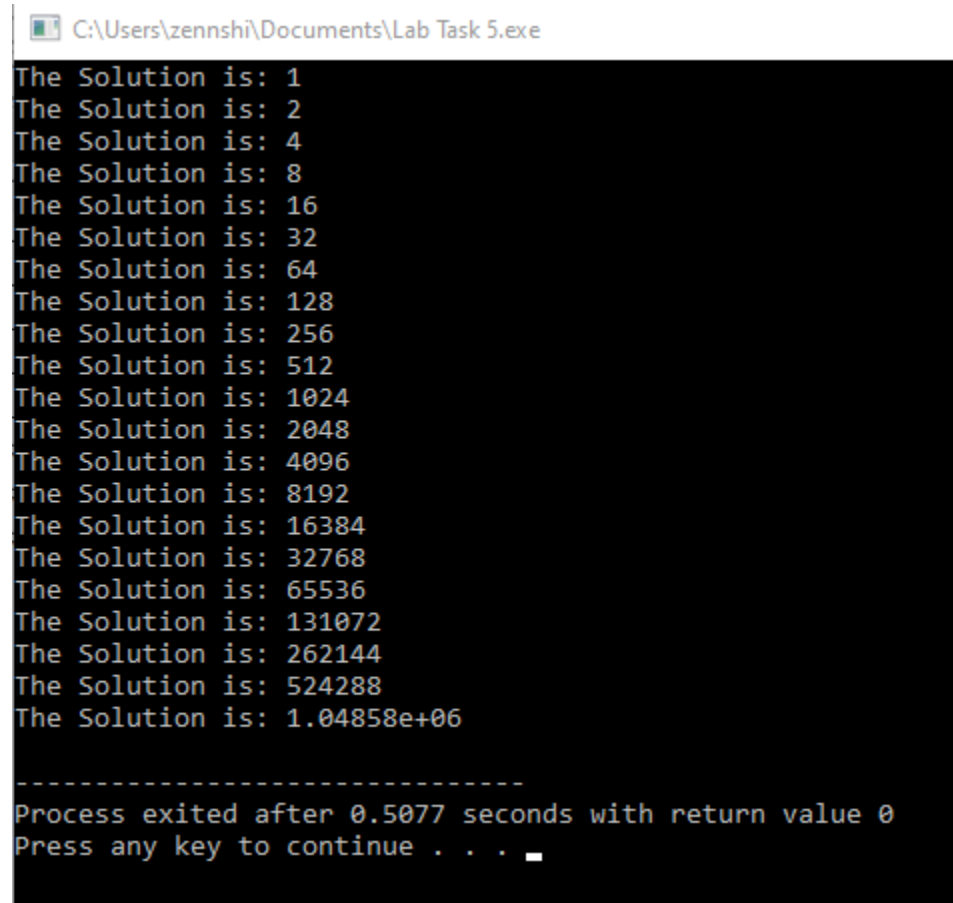
Write a program with while or do while loop that computes all powers of 2 from 20 up to 220.

## **Solution:**

```
//Task 4.1
#include <iostream>
#include<math.h>
using namespace std;
int main() {
int i=0;
while (i<=20) {
```

```
    cout<<"The Solution is: "<<pow(2,i)<<endl;
    i+=1;
}
return 0;
}
```

## **Result:**



```
C:\Users\zennshi\Documents\Lab Task 5.exe
The Solution is: 1
The Solution is: 2
The Solution is: 4
The Solution is: 8
The Solution is: 16
The Solution is: 32
The Solution is: 64
The Solution is: 128
The Solution is: 256
The Solution is: 512
The Solution is: 1024
The Solution is: 2048
The Solution is: 4096
The Solution is: 8192
The Solution is: 16384
The Solution is: 32768
The Solution is: 65536
The Solution is: 131072
The Solution is: 262144
The Solution is: 524288
The Solution is: 1.04858e+06

-----
Process exited after 0.5077 seconds with return value 0
Press any key to continue . . .
```

## **Task 4.2:**

Write a program with while or do while loop that computes the sum of all odd numbers between a and b (inclusive), where a and b are inputs.

## **Solution:**

//Task 4.2

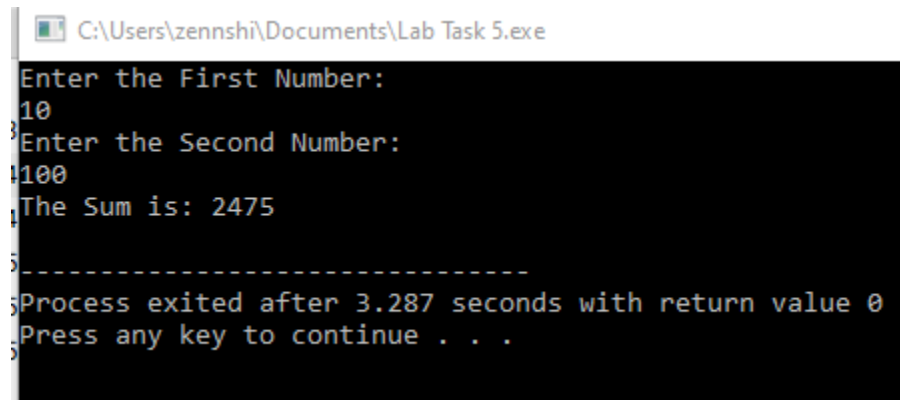


```

#include <iostream>
#include<math.h>
using namespace std;
int main() {
int num1,num2,sum=0 ;
cout<<"Enter the First Number: "<<endl;
cin>>num1;
cout<<"Enter the Second Number: "<<endl;
cin>>num2;
while (num1<=num2) {
    if (num1%2==1 ) {
        sum=sum+num1;
    }
    num1+=1;
}
cout<<"The Sum is: "<<sum<<endl;
return 0;
}

```

## **Result:**



```

C:\Users\zennshi\Documents\Lab Task 5.exe
Enter the First Number:
10
Enter the Second Number:
100
The Sum is: 2475
-----
Process exited after 3.287 seconds with return value 0
Press any key to continue . . .

```

