

Lab Task-4

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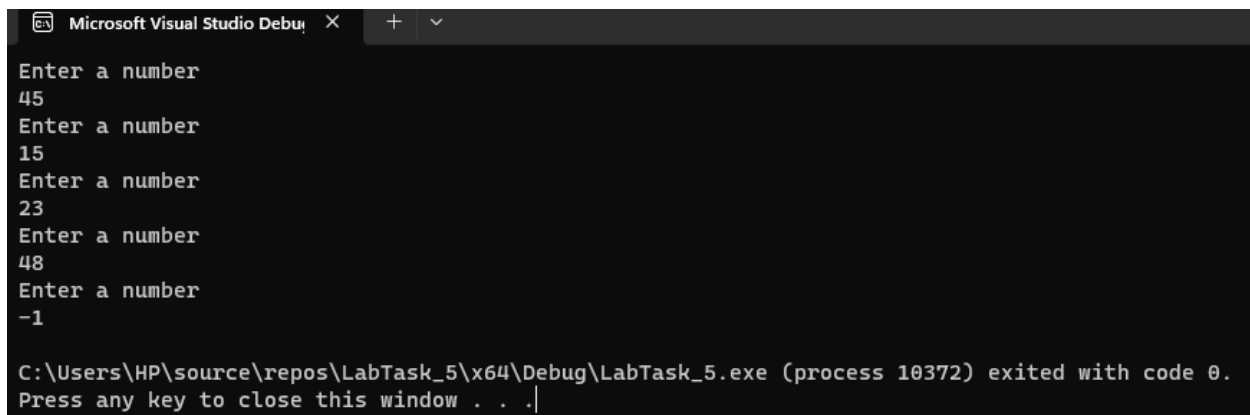
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Task 1:

Convert the following while loop to a do-while loop:

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

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



The screenshot shows the Microsoft Visual Studio Debug Console window. The title bar reads "Microsoft Visual Studio Debug Console". The console output shows the program repeatedly asking "Enter a number" and receiving inputs: 45, 15, 23, 48, and -1. After the input -1, the program terminates with the message: "C:\Users\HP\source\repos\LabTask_5\x64\Debug\LabTask_5.exe (process 10372) exited with code 0. Press any key to close this window . . .".

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.

```
#include <iostream>
```

```

using namespace std;
int main()
{
    double num1 = 0;
    double num2 = 0;
    double result = 0;
    char ope;
    do
    {
        cout << " Enter number 1\n";
        cin >> num1;
        cout << " Enter number 2\n";
        cin >> num2;
        cout << "Enter the operator\n";
        cin >> ope;

        switch (ope)
        {
            case '+':
                result = num1 + num2;
                break;
            case '-':
                result = num1 - num2;
                break;
            case '*':
                result = num1 * num2;
                break;
            case '/':
                result = num1 / num2;
                break;
            case '^':
                result = pow(num1,num2);
                break;
            case '%':
                result = fmod(num1,num2);
                break;
            default:
                break;
        }
        cout << "The result is " << result << endl;
        cout << "Do you want to continue? Enter y for yes. Otherwise press
any key" << endl;
        cin >> ope;
    } while (ope=='y');
    return 0;
}

```

```
Microsoft Visual Studio Debug Console
Enter number 1
78
Enter number 2
12
Enter the operator
+
The result is 90
Do you want to continue? Enter y for yes. Otherwise press any key
y
Enter number 1
45
Enter number 2
44
Enter the operator
%
The result is 1
Do you want to continue? Enter y for yes. Otherwise press any key
y
Enter number 1
15
Enter number 2
16
Enter the operator
*
The result is 240
Do you want to continue? Enter y for yes. Otherwise press any key
n
```

Task 3:

a) Write programs with while or do while loops that compute: a. The sum of all even numbers between 2 and 100 (inclusive).

```
#include <iostream>
using namespace std;
int main()
{
    int i = 2;
    int sum = 0;
    while (i < 101) {
        sum += i;
        i += 2;
    }
    cout << "The Sum is " << sum << endl;
    return 0;
}
```

```
Microsoft Visual Studio Debug Console
The Sum is 2550

C:\Users\HP\source\repos\LabTask_5\x64\Debug\LabTask_5.exe (process 10756) exited with code 0.
Press any key to close this window . . .
```

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

```
#include <iostream>
using namespace std;
int main()
{
    int result = 0;
    int ans = 0;
    int i = 1;
    do {
        ans = i * i;
        result += ans;
        i += 1;
    } while (i < 101);
    cout << result << endl;
    return 0;
}
```

```
Microsoft Visual Studio Debug Console
338350

C:\Users\HP\source\repos\LabTask_5\x64\Debug\LabTask_5.exe (process 6792) exited with code 0.
Press any key to close this window . . .
```

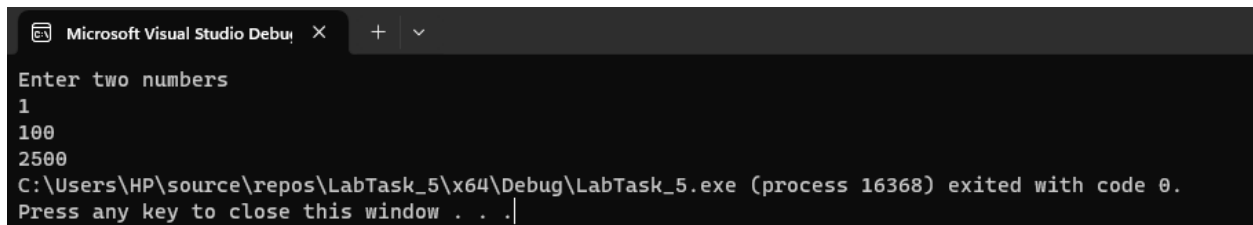
Task 4:

a) All powers of 2 from 2^0 up to 2^{20} .

```
#include <iostream>
using namespace std;
int main()
{
    int result = 0;
    int i = 0;
    while (i < 21) {
        result += pow(2, i);
        i++;
    }
    cout << "The result is " << result << endl;
}
```

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

```
#include <iostream>
using namespace std;
int main()
{
    int a = 0;
    int b = 0;
    int result = 0;
    cout << "Enter two numbers\n";
    cin >> a >> b;
    int i = a;
    while (i <= b) {
        if (i % 2 == 1) {
            result += i;
        }
        i++;
    }
    cout << result;
    return 0;
}
```



```
Microsoft Visual Studio Debug Console
Enter two numbers
1
100
2500
C:\Users\HP\source\repos\LabTask_5\x64\Debug\LabTask_5.exe (process 16368) exited with code 0.
Press any key to close this window . . .
```