

Computer Systems & Programming

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Lab Tasks of Lab Manual 5

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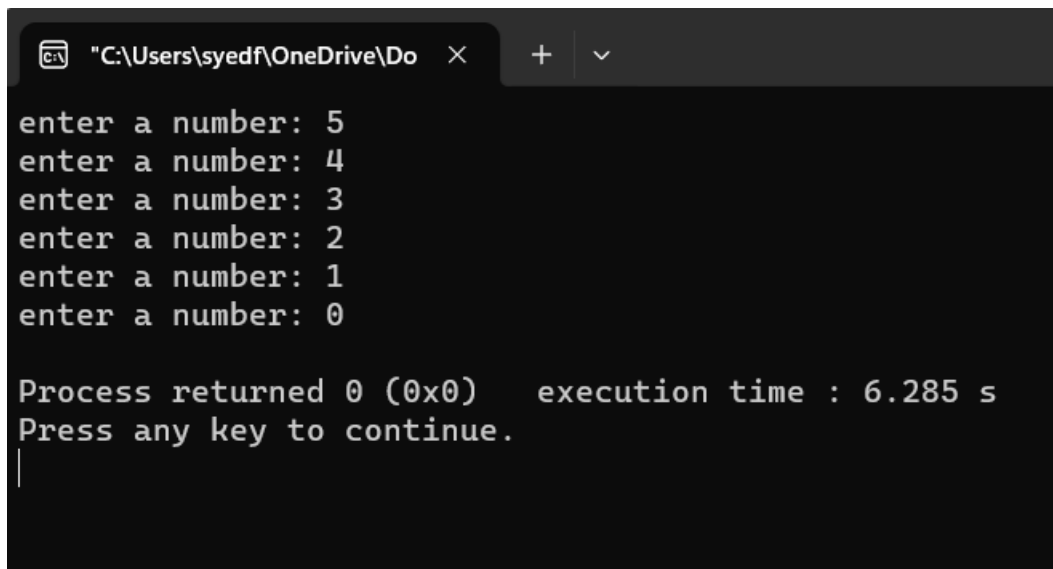
Lab Task# 1: Convert the following while loop to a do-while loop:

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

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\syedf\OneDrive\Do"
enter a number: 5
enter a number: 4
enter a number: 3
enter a number: 2
enter a number: 1
enter a number: 0

Process returned 0 (0x0)   execution time : 6.285 s
Press any key to continue.
|
```

Lab 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>

#include <cmath>

using namespace std;

int main() {

double x, y, res;

char op, repeat;

do {

do {

cout << "Enter two numbers: ";

cin >> x >> y;

cout << "Enter your operation:\n"

    << "1. + = sum\n"

    << "2. - = difference\n"

    << "3. / = division\n"

    << "4. x = multiplication\n"

    << "5. r = remainder\n"

    << "6. p = power\n";

    cin >> op;
```

```
    cout << "Are you sure these are your values? Y or N ";  
    cin >> repeat;  
} while (repeat == 'n');
```

```
switch (op) {  
    case '+':  
        res = x + y;  
        break;  
    case '-':  
        res = x - y;  
        break;  
    case 'x':  
        res = x * y;  
        break;  
    case '/':  
        if (y == 0) {  
            cout << "Error: Division by zero" << endl;  
            break;  
        }  
        res = x / y;  
        break;  
    case 'p':  
        res = pow(x, y);  
        break;
```

```
    case 'r':  
        res = fmod(x, y);  
        break;  
    default:  
        cout << "Invalid input" << endl;  
    }  
  
    cout << "Your result is: " << res << endl;  
    cout << "Do you want to repeat? (y/n): ";  
    cin >> repeat;  
  
    } while (repeat == 'y');  
  
    return 0;  
}
```

Result:

```

Enter two numbers:
2
4
Enter your operation:
1.+ = sum
2.- = difference
3./ = division
4.x = multiplication
5.r = remainder
6.p = power
x
Are you sure these are your values(y/n)?n
Enter two numbers:
4
3
Enter your operation:
1.+ = sum
2.- = difference
3./ = division
4.x = multiplication
5.r = remainder
6.p = power
/
Are you sure these are your values(y/n)?y
Your result is:12
Do you want to repeat(y/n)?
y
Enter two numbers:
5
9
Enter your operation:
1.+ = sum
2.- = difference
3./ = division
4.x = multiplication
5.r = remainder
6.p = power
p
Are you sure these are your values(y/n)?y
Your result is:1.00777e+007
Do you want to repeat(y/n)?
n
-----

```

Lab Task# 3:

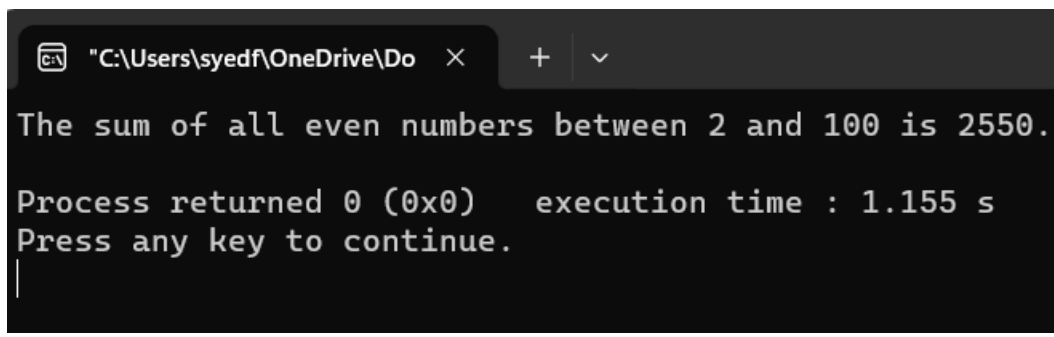
Write programs with while or do while loops that compute:

- The sum of all even numbers between 2 and 100 (inclusive).
- The sum of all squares between 1 and 100 (inclusive).

Code: (a)

```
#include <iostream>
using namespace std;
int main() {
    int sum = 0;
    for (int i = 2; i <= 100; i += 2) {
        sum += i;
    }
    cout << "The sum of all even numbers between 2 and 100 is " << sum << "." <<
endl;
    return 0;
}
```

Result:



```
"C:\Users\syedf\OneDrive\Do  ×  +  v
The sum of all even numbers between 2 and 100 is 2550.
Process returned 0 (0x0)  execution time : 1.155 s
Press any key to continue.
|
```

Code: (b)

```
#include <iostream>
using namespace std;
int main() {
    int sum = 0;
    for (int i = 1; i <= 100; i++) {
        sum += i * i;
    }
    cout << "The sum of all squares between 1 and 100 is " << sum << "." << endl;
```

```
return 0;
}
```

Result:

Lab Task# 4:

Write programs with while or do while loops that compute:

- All powers of 2 from 20 up to 220.
- The sum of all odd numbers between a and b (inclusive), where a and b are inputs.

Code:(a)

```
#include <iostream>
#include <math.h>
using namespace std;
int main() {
    int power = 1;
    for (int i = 0; i <= 20; i++) {
        cout << "2^" << i << " = " << power << endl;
        power *= 2;
    }
    return 0;
}
```

Answer ;

Code:(B)

```
#include <iostream>
using namespace std;
int main() {
    int smallerOddNumber, greaterOddNumber;
    cout << "Enter the smaller odd number: ";
    cin >> smallerOddNumber;
    cout << "Enter the greater odd number: ";
    cin >> greaterOddNumber;
    int sum = 0;
    for (int i = smallerOddNumber; i <= greaterOddNumber; i += 2) {
        sum += i;
    }
    cout << "The sum of all odd numbers between " << smallerOddNumber
    << " and " << greaterOddNumber << " is " << sum << "." << endl;
    return 0;
}
```



"C:\Users\syedf\OneDrive\Do



Enter the smaller odd number: 4

Enter the greater odd number: 5

The sum of all odd numbers between 4 and 5 is 4.

Process returned 0 (0x0) execution time : 2.476 s

Press any key to continue.

|