

# Lab Manual #05

“Lab Tasks”



Course: **Fundamentals of Programming (CS 114)**

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# Task 1

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

# Task 3

(Part a)

Input:

```
vscode > Lab Task 3a.cpp  
1  #include <iostream>  
2  using namespace std;  
3  
4  int main() {  
5      int sum = 0;  
6      int n=1;  
7  
8      while (n<= 100) {  
9          sum +=n*n;  
10         n++;  
11     }  
12     cout << "The sum of all thesquares between 1 and 100 is: " << sum << endl;  
13  
14     return 0;  
15 }  
16
```

Output:

```
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah> & 'c:\Users\muham\.vscode\extensions\ms-vscode.cpptools\bin\WindowsDebugLauncher.exe' '--stdin=Microsoft-MIEngine-In-cctob121.x2k' '--stdout=Microsoft-MIEngine-Error-yq2f1c3q.wfv' '--pid=Microsoft-MIEngine-Pid-j2ymx1w1.lg1' '--dbgExe=C:\msys64\usr\bin\gdb.exe'  
  
The sum of all thesquares between 1 and 100 is: 338350  
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah>
```

## Task 2

### Input:

```
.vscode > C Lab task 2.cpp
1  #include <iostream>
2  using namespace std;
3
4  int main() {
5      char choice;
6      float x,y,result;
7      char operation;
8
9      do {
10         cout <<"enter first number: ";
11         cin >> x;
12
13         cout <<"enter second number: ";
14         cin >> y;
15
16         cout <<"enter operation (+, -, *, /): ";
17         cin >> operation;
18
19         switch(operation)
20         {
21             result = x + y;
22             break;
23             case '-':
24                 result = x - y;
25                 break;
26             case '*':
27                 result = x * y;
28                 break;
29             case '/':
30                 if (y!= 0) {
31                     result =x/y;}
32                 else{
33                     cout << "division by zero not possible" << endl;
34                     continue;
35                     break;
36             default:
37                 cout << "invalid operation" << endl;
38                 continue; }
39
40         cout <<"result: "<<result<<endl;
41
42         cout <<"perform another operation?(Y/N): ";
43         cin >>choice;
44     } while (choice == 'Y' || choice == 'y');
45     return 0;
46
47 }
```

## Output:

```
err=Microsoft-MIEngine-Error-4034dyog.cdz' '--pid=Microsoft-MIEngine-Pid-naii2qwc.pi

Enter first number: 9
Enter an operation (+, -, *, /): -
Enter second number: 6
Result: 3
Do you want to perform another calculation? (Y/N): y
Enter first number: 6
Enter an operation (+, -, *, /): *
Enter second number: 8
Result: 48
Do you want to perform another calculation? (Y/N):
```

## Task 3 (Part b)

### Input:

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int sum = 0;
7      int n = 1;
8
9      while (n <= 100) {
10         sum += n*n;
11         n++;
12     }
13
14     cout << "the sum of squares between 1 and 100 is: "<<sum<<endl;
15
16     return 0;
17 }
18
```

## Output:

```
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah> cd "c:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah" ; g++ LabTask3b.cpp -o LabTask3b ; if ($?) { .\LabTask3b }
the sum of squares between 1 and 100 is: 338350
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah\.vscode>
```

## Task 4

(part a)

### Input:

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int power = 0;
7      int result = 1;
8
9      while (power <= 20)
10     {
11         cout<<"2^"<<power<<"="<<result<<endl;
12         result *= 2;
13         power++;
14     }
15     return 0;
16 }
17
18
```

## Output:

```
2^0=1
2^1=2
2^2=4
2^3=8
2^4=16
2^5=32
2^6=64
2^7=128
2^8=256
2^9=512
2^10=1024
2^11=2048
2^12=4096
2^13=8192
2^14=16384
2^15=32768
2^16=65536
2^17=131072
2^18=262144
2^19=524288
2^20=1048576
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah>
```

## Task 4 (Part b) Input:

```
1  #include <iostream>
2  using namespace std;
3
4  int main()
5  {
6      int a,b;
7
8      cout<<"enter the first number a: ";
9      cin>>a;
10     cout<<"enter the last number b: ";
11     cin>>b;
12
13     if (a > b)
14     { cout << "invalid input.'a' should be less than or equal to 'b'." << endl;
15       return 1; }
16     int sum = 0;
17     int number = a;
18
19     while (number <= b)
20     {
21         if (number % 2 != 0) {
22             sum += number;
23         }
24         number++;
25     }
26     cout << " sum of odd numbers between" <<a<<"and"<<b<<"is: "<<sum<< endl;
27
28     return 0;
29 }
30
```

## Output:

```
2^0=1
2^1=2
2^2=4
2^3=8
2^4=16
2^5=32
2^6=64
2^7=128
2^8=256
2^9=512
2^10=1024
2^11=2048
2^12=4096
2^13=8192
2^14=16384
2^15=32768
2^16=65536
2^17=131072
2^18=262144
2^19=524288
2^20=1048576
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah\.vscode> cd "c:\Users\muham\Do
b-Abdullah\.vscode\" ; if ($?) { g++ LabTask4b.cpp -o LabTask4b } ; if ($?) { .\LabTask4b }
C:/msys64/ucrt64/bin/../lib/gcc/x86_64-w64-mingw32/13.1.0/../../../../x86_64-w64-mingw32/bin/ld.exe: C:
ingw32/13.1.0/../../../../lib/libmingw32.a(lib64_libmingw32_a-crtexewin.o): in function `main':
C:/M/B/src/mingw-w64/mingw-w64-crt/crt/crtexewin.c:67: undefined reference to `WinMain'
collect2.exe: error: ld returned 1 exit status
PS C:\Users\muham\Documents\Fundamentals of Programming\FOP-Lab-Abdullah\.vscode>
```