CS-114 - Fundamental of Programing

Lab Manual # 02

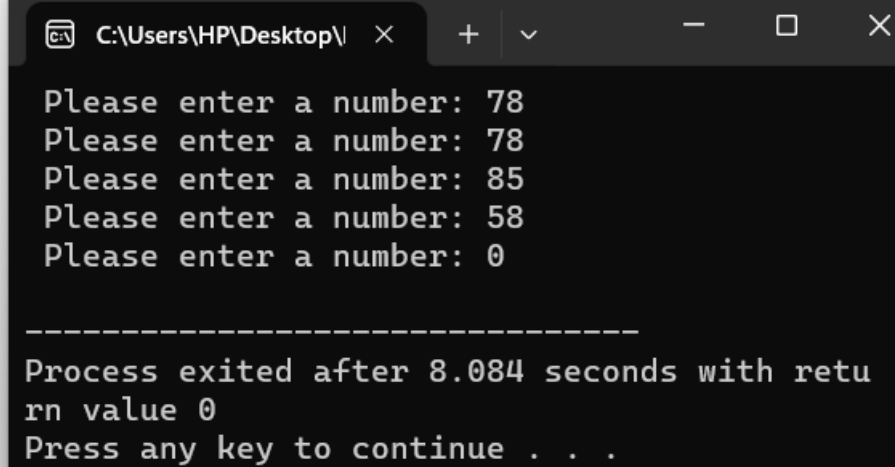**Course Instructor:** Dr Jawad Khan

Lab Instructor: Muhammad Affan

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

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

```
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Please enter a number: 78
Please enter a number: 78
Please enter a number: 85
Please enter a number: 58
Please enter a number: 0


----------------------------------
Process exited after 8.084 seconds with retu
rn value 0
Press any key to continue . . .
```

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

```cpp
#include<iostream>
#include<math.h>
using namespace std;
int main(){
    double num1, num2, result;
    char operation, again;
    do{ cout<<"Enter the first number:   ";
        cin>>num1;
        cout<<"please Enter the second number: ";
        cin>>num2;
        cout<<"please choose the operation you want to use\n";
        cout<<"+\n";
        cout<<"-\n";
        cout<<"*\n";
        cout<<"/\n";
        cout<<"^\n";
        cout<<"%\n";
        cout<<"write about your chosen operation:      \n";
        cin>> operation;
        switch(operation){
            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:
                cout<<"invalid operation";
                break;
            }
            cout<<"Here is your result:   "<< result<<endl;
```
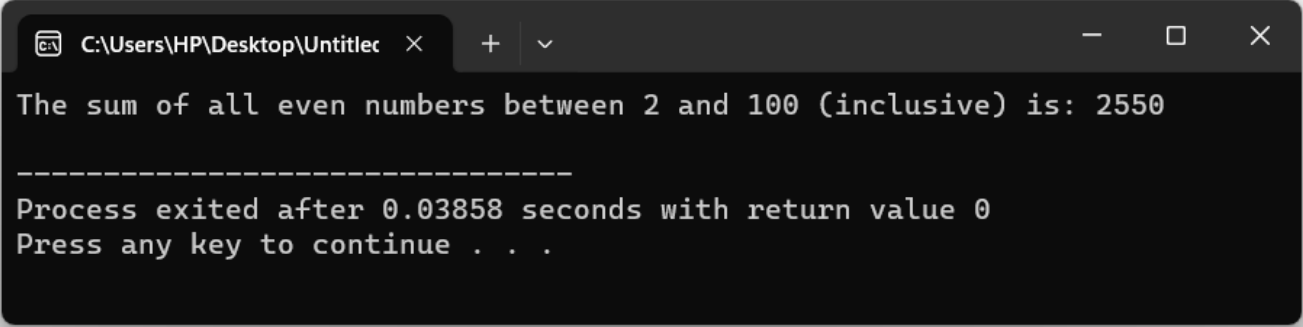
Compile Log   Debug   Find Results   Close

Compilation Time: 0.70s

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Enter the first number: 56
please Enter the second number: 54
please choose the operation you want to use
+
-
*
/
^
%
write about your chosen operation:
/
Here is your result: 1.03704
would you like to use the calculator again?
 write Y or yy
Enter the first number: 54
please Enter the second number: 478
please choose the operation you want to use
+
-
*
/
^
%
write about your chosen operation:
+
Here is your result: 532
would you like to use the calculator again?
 write Y or y

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

```cpp
#include <iostream>
using namespace std;
int main() {
    int sum = 0, i = 2;
    while (i <= 100) {
        if(i%2==0)
        sum = sum+i;
    i++;
}
    cout << "The sum of all even numbers between 2 and 100 (inclusive) is: " << sum << endl;
    return 0;
}
```

```
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The sum of all even numbers between 2 and 100 (inclusive) is: 2550

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Process exited after 0.03858 seconds with return value 0
Press any key to continue . . .
```

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

```cpp
#include<iostream>
using namespace std;
int main()
{
    int sum = 0, i = 1;
    while(i<=100){
        sum = sum + i*i;
        i++;
    }
    cout<< sum;
    return 0;
}
```

```
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------------------------------------
Process exited after 0.0312 seconds with return value 0
Press any key to continue . . . |
```

4. Write programs with while or do while loops that compute:
a. All powers of 2 from 20 up to 220

```cpp
#include<iostream>
#include<math.h>
using namespace std;
int main()
{
    int i=0;
while(i<=20){
    cout<<pow(2,i)<<endl;
    i++;
}
return 0;
}
```

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```
1
2
4
8
16
32
64
128
256
512
1024
2048
4096
8192
16384
32768
65536
131072
262144
524288
1.04858e+006

---------------------------------
Process exited after 0.03351 seconds with re
turn value 0
Press any key to continue . . .
```

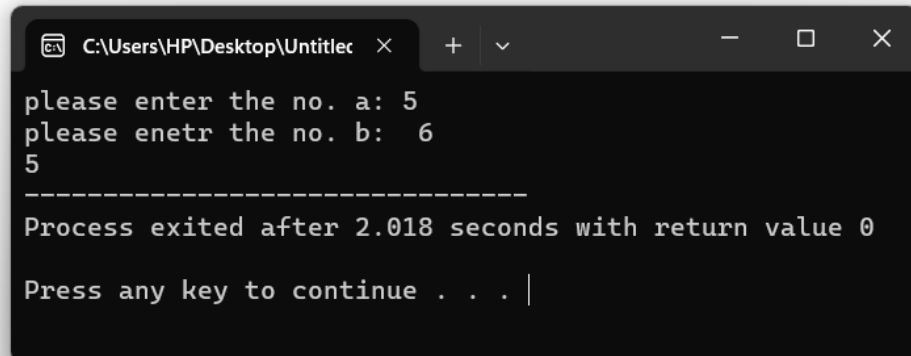ompile Log   Debug   Find Results

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

```cpp
#include<iostream>
using namespace std;
int main()
{int a,b, sum;
    cout<<"please enter the no. a: ";
    cin>>a;
    cout<<"please enetr the no. b:  ";
    cin>>b;
    while(a<=b){
        if(a%2==1){sum = sum + a;


        }
            a++;
        }

    cout<<sum;
    return 0;
}
```

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```
please enter the no. a: 5
please enetr the no. b:  6
5
----------------------------------
Process exited after 2.018 seconds with return value 0

Press any key to continue . . .
```