

# Department of Mechanical Engineering

# CS-114 - Fundamental of Programing

Lab Tasks – 5

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# Department of Mechanical Engineering

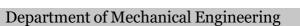
### LAB TASK 1:

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

### **Code:**

```
1
     #include <iostream>
     using namespace std;
     int main()
5 - {
         // LAB TASK 1
         int x = 1;
8
         do{
9
         cout<<"enter a number: "<<endl;</pre>
10
         cin>>x;}
11
         while(x>0);
12
         return 0;
13
```

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



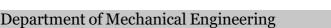


### LAB TASK 2:

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

### **Code:**

```
Winclude #include <math.h)</pre>
4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 12 22 24 25 26 27 8 29 30 1 32 3 34 5 6 37 8 8 9 40 14 2 43 44 5 46 7 48
                using namespace std;
int main()
                                LAB TASK 2
                         double a;
double b;
                                                           //the first number 
//the second number
                         int ans;
char choice;
char offon;
                                                           //the choice of operation //the choice of turning the calculator off or on
                                cout<<"Please enter the two numbers: "<<end1;
cin>>a >>b;
cout<<"Please choose the operation you want to conduct and enter the respective letter: "<<end1;
cout<<"add (a+b) = a"<<end1;
cout<<"sub (a-b) = s"<<end1;
cout<<"div (a/b) = d"<<end1;
cout<<"div (a/b) = d"<<end1;
cout<<"graph(a/b) = b"<<end1;
cout<<"graph(a/b) = b"<<end1;
cout<<"moutry [power (a/b)) = p"<<end1;
cout<<"moutry [power (a/b)] = p"<<end1;
cout<<"moutry [power (a/b)] = p"<<end1;
cout<<"moutry [power (a/b)] = p"<<end1;
cout<<moutry [power (a/b)]</pre>
                                  switch(choice){
  case 'a':
   cout<<"The sum of the two numbers is: "<<a+tc<endl;</pre>
                                          break;
case 's':
cout<<"The subtraction result is: "<<a-b<<endl;
                                          cout<<"The product of the two numbers is: "<<a*b<<endl; break;
                                          case d':
cout<<"The quotient of the two numbers is: "<<a/b<<endl;
break;</pre>
                                          case
                                          cout<<"The exponential is: "<<pow(a,t)<<end1;
break;
                                          case 'r':
cout<<"The remainder is: "<<fmod(a,b)<<end1;
break;</pre>
                          cout<<"do you want to turn off the calculator, or carry out another operation? (o for off, n for on)"<<endl;
cin>>offon;
}while(offon == 'N'|| offon =='n');
```





### LAB TASK 3:

Write programs with while or do while loops that compute:

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

### **Code:**

```
#include <iostream>
      #include <math.h>
     using namespace std;
      int main()
 6 -
          // LAB TASK 3 a
          int esum;
                     //even number sum
          int e = 0;
10 -
          do{
11
12
             e = e+2;
              esum = esum + e;
13
          }while(e <=98);
          cout<<"The sum of all the even numbers from 2-100 (inclusive) is : "<<esum<<endl;</pre>
14
15
16
          // LAB TASK 3 b
                         //squares' sum
17
          int sqsum;
18
19 —
20
          int sq = 0;
          do{
             sq = sq+1;
21
             sqsum = sqsum + pow(sq,2);
22
23
          }while(sq <=99);
          cout<<"The sum of all the squares of the numbers from 1-100 (inclusive) is : "<<sqsum<<endl;</pre>
24
          return 0;
26
```

```
The sum of all the even numbers from 2-100 (inclusive) is : 2550
The sum of all the squares of the numbers from 1-100 (inclusive) is : 338350
------
Process exited after 0.0206 seconds with return value 0
Press any key to continue . . .
```



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### LAB TASK 4:

Write programs with while or do while loops that compute:

- a. All powers of 2 from 2<sup>0</sup> up to 2<sup>2</sup>0.
- b. The sum of all odd numbers between a and b (inclusive), where a and b are inputs.

### **Code:**

```
#include <iostream
       #include <math.h>
       using namespace std;
       int main()
 6 -
            int pt;
                                         //power of two
           int po = -1;
                                         //power
10 -
           do{
                po = po + 1;
           pt = pow(2,po);
cout<<"2 ^ "<<po<<" = "<<pt<<endl;
}while(po <=19);</pre>
            // LAB TASK 4 b
           int q;
                                         //first number
           int r;
                                         //second number
                                         //odd number sum
            int osum;
           cout<<"Please enter the two numbers (please make sure the second number is the greatest): "<<endl;</pre>
            cin>>q>>r;
           int d = (q-1);
if(r>q){
25 <del>-</del>
26
                do{
                     d=d+1;
27
           if(d % 2 != 0){osum = osum + d;}
}while (d <= (r-1));
cout<<"the sum of the odd numbers between the two numbers(inclusive) is: "<<osum<<endl;}</pre>
29
            else{cout<<"Please follow the respective guideline >:("<<endl;}</pre>
30
            return 0;
```

```
0 = 1
    1 = 2
 ^ 2 = 4
2
 ^ 3 = 8
   4 = 16
2
   5 = 32
  ^ 6 = 64
2
 ^ 7 = 128
  ^ 8 = 256
2
 ^ 9 = 512
2
 ^ 10 = 1024
2
 ^ 11 = 2048
  ^ 12 = 4096
2
  ^ 13 = 8192
 ^ 14 = 16384
 ^ 15 = 32768
  ^ 16 = 65536
2
  ^ 17 = 131072
2
 ^ 18 = 262144
 ^ 19 = 524288
2
 ^ 20 = 1048576
Please enter the two numbers (please make sure the second number is the greatest):
100
the sum of the odd numbers between the two numbers(inclusive) is: 2501
Process exited after 2.55 seconds with return value 0
Press any key to continue . . .
```