National University of Sciences and Technology (NUST)

Department of Mechanical Engineering (SMME)

Fundamentals of Programming (FOP)

Lab Tasks

Lab Manual 5

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Lab Task-1

```cpp
#include <iostream>

using namespace std;

int main() {

        int x=1;

        do

        {

                cout<<"Enter number: ";

                cin>>x;

        }while(x>0);

}
```
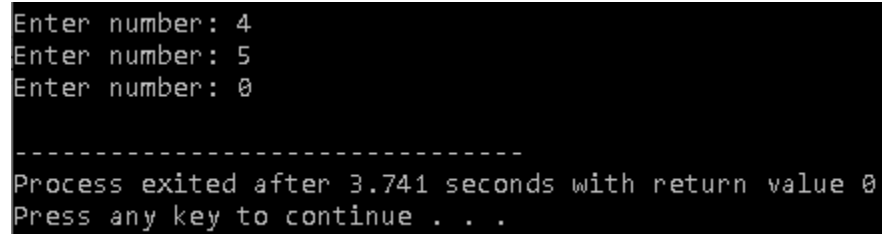
```
Enter number: 4
Enter number: 5
Enter number: 0

-------------------------------
Process exited after 3.741 seconds with return value 0
Press any key to continue . . .
```

Lab Task-2

```cpp
#include <iostream>

#include <math.h>

using namespace std;

int main() {

        int num1,num2,result;

    int repeat;

        char operation;
```

```cpp
cout<<"Basic calculator operation"<<endl;

cout<<endl;

do

{

        cout<<"Enter first integer: "<<endl;

        cin>>num1;

        cout<<"Enter second integer: "<<endl;

        cin>>num2;

        cout<<"Enter the operation you want to perform"<<endl;

        cout<<"+ for adiition; - for subtraction; * for multiplication; / for division; ^ for power;
% for modulus: "<<endl;

        cout<<endl;

        cin>>operation;

        switch(operation){

                case '+':

                        result=num1+num2;

                        break;

                case '-':

                        result=num1-num2;

                        break;

                case '*':

                        result=num1*num2;

                        break;

                case '/':

                        if(num2==0){

                                cout<<"INVALID";

                        }
```

```cpp
                                    result=num1/num2;

                                    break;

                    case '^':

                                    result=pow(num1,num2);

                                    break;

                    case '%':

                                    if(num2==0){

                                    cout<<"INVALID";

                                    }

                                    result=num1%num2;

                    default:

                                    cout<<"Wrong Input"<<endl;

            }

            cout<<result<<endl;

            cout<<"Do you want to continue: 1 for YES & 0 for NO"<<endl;

            cin>>repeat;

        }while(repeat==1);

        return 0;

}
```

Lab Task-3a

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

```
The sum of all even numbers between 2 and 100 inclusive is: 2550
--------------------------------
Process exited after 0.08626 seconds with return value 0
Press any key to continue . . .
```

Lab Task-3b

```cpp
#include <iostream>
#include <math.h>
using namespace std;
int main() {
```

```cpp
        int num,sum;

        num=1;

        sum=0;

        while(num<=100){

                    sum=sum+num*num;

                num++;

        }

        cout<<"The sum of all squares between 1 and 100 inclusive is: "<<sum;

        return 0;

}
```

```
The sum of all squares between 1 and 100 inclusive is: 338350
------------------------------
Process exited after 0.09015 seconds with return value 0
Press any key to continue . . .
```

Lab Task-4a

```cpp
#include <iostream>

#include <math.h>

using namespace std;

int main() {

        double num;

        num=0;

        while(num<=20){

                cout<<pow(2,num)<<endl;

                num++;

        }
```

```
        return 0;

}
```

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

Lab Task-4b

```cpp
#include <iostream>

#include <math.h>

using namespace std;

int main() {

        int num1,num2,sum;

        sum=0;

    cout<<"Enter first integer: "<<endl;

    cin>>num1;

    cout<<"Enter second integer: "<<endl;

    cin>>num2;

    while(num1<=num2){
```

```cpp
    if(num1%2==1){

            sum=sum+num1;

            }

            num1++;

    }

    Cout<<The sum of  all odd number between the 2 integers inclusive: <<sum;

    return 0;

}
```

```
Enter first integer:
10
Enter second integer:
19
The sum of all odd number between the 2 integers inclusive: 75
--------------------------------
Process exited after 3.275 seconds with return value 0
Press any key to continue . . .
```