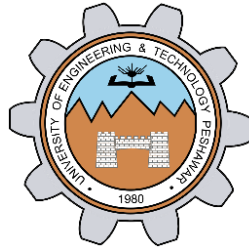


FUNCTIONS (PART 1 BASICS)

LAB # 6



Spring 2022

CSE102L Computer Programming Lab

Submitted by: **Ali Asghar**

Registration No. : **21PWCSE2059**

Class Section: **C**

“On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work.”

Student Signature: _____

Submitted to:

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July 4, 2022

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Lab Objective(s)

- To understand function programming, its types and function-call.

TASK # 1:**Title:**

Write a program that takes marks and registration number as.....registration number using function.

CODE SCREENSHOTS:

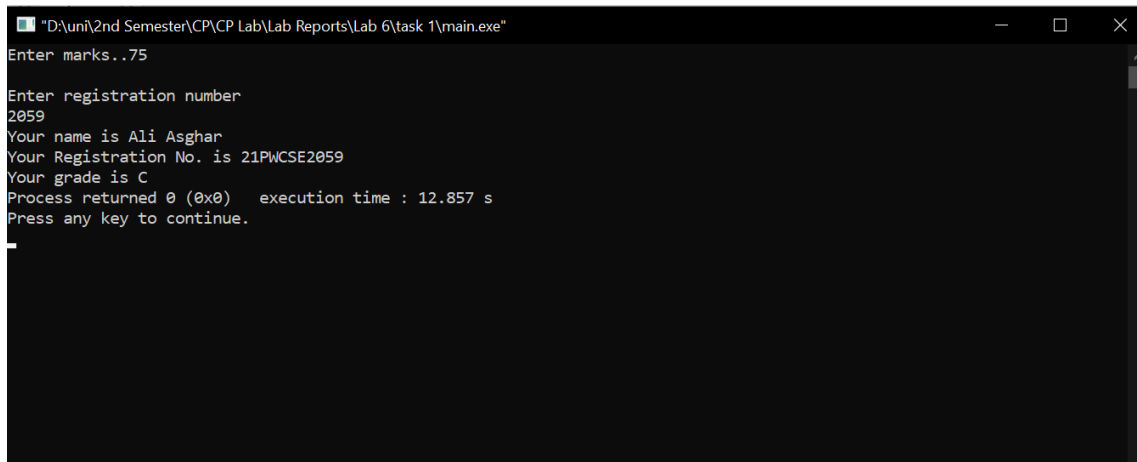
Here are the screenshots of the code.

```
1 | #include<iostream>
2 | using namespace std;
3 |
4 | char grade(int marks){
5 |
6 |     if(marks >= 90 && marks <=100)
7 |         return 'A';
8 |
9 |     else if(marks >= 80 && marks <=90)
10 |         return 'B';
11 |
12 |     else if(marks >= 70 && marks <=80)
13 |         return 'C';
14 |
15 |     else if(marks >= 60 && marks <=70)
16 |         return 'D';
17 |
18 |     else
19 |         return 'F';
20 | }
21 |
22 | void show(){
23 |     int marks = 0;
```

```
19 |         return 'F';
20 |     }
21 |
22 | void show(){
23 |     int marks = 0;
24 |     int reg_No = 0;
25 |
26 |     cout<<"Enter marks..";
27 |     cin>>marks;
28 |
29 |     cout<<"\nEnter registration number"<<endl;
30 |     cin>>reg_No;
31 |
32 |     cout<<"Your name is Ali Asghar"<<endl;
33 |     cout<<"Your Registration No. is 21PWCSE"<<reg_No<<endl;
34 |     cout<<"Your grade is "<<grade(marks);
35 |
36 | }
37 |
38 | main(){
39 |     show();
40 | }
41 |
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 6\task 1\main.exe"
Enter marks..75

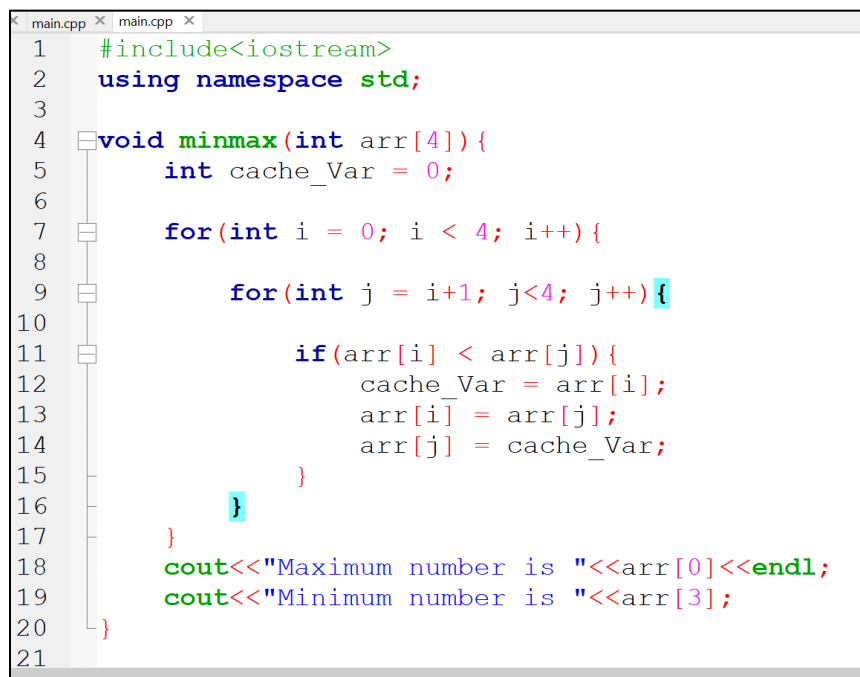
Enter registration number
2059
Your name is Ali Asghar
Your Registration No. is 21PWCSE2059
Your grade is C
Process returned 0 (0x0) execution time : 12.857 s
Press any key to continue.
```

TASK # 2:**Title:**

Write a function minmax () that takes four integers as input and displaynumber.

CODE SCREENSHOTS:

Here are the screenshots of the code.



```
1  #include<iostream>
2  using namespace std;
3
4  void minmax(int arr[4]){
5      int cache_Var = 0;
6
7      for(int i = 0; i < 4; i++){
8
9          for(int j = i+1; j<4; j++){
10
11              if(arr[i] < arr[j]){
12                  cache_Var = arr[i];
13                  arr[i] = arr[j];
14                  arr[j] = cache_Var;
15              }
16          }
17      }
18      cout<<"Maximum number is "<<arr[0]<<endl;
19      cout<<"Minimum number is "<<arr[3];
20  }
21
```

```
13         arr[i] = arr[j];
14         arr[j] = cache_Var;
15     }
16 }
17 }
18 cout<<"Maximum number is "<<arr[0]<<endl;
19 cout<<"Minimum number is "<<arr[3];
20 }
21
22 main(){
23     int numbers[4];
24
25     for(int i = 0; i<4; i++){
26         cout<<"Enter four numbers consecutively ";
27         cin>>numbers[i];
28     }
29
30     minmax(numbers);
31 }
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.

```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 6\task 2\main.exe"
Enter four numbers consecutively 4
Enter four numbers consecutively 2
Enter four numbers consecutively 5
Enter four numbers consecutively 1
Maximum number is 5
Minimum number is 1
Process returned 0 (0x0)   execution time : 12.116 s
Press any key to continue.
```

TASK # 3:**Title:**

Your program should have a function named 'prime' which accepts an.....Return type bool function

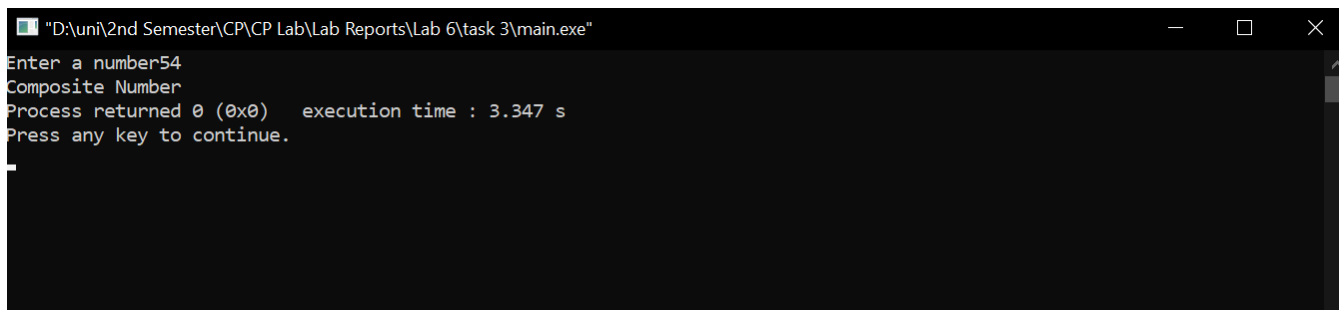
CODE SCREENSHOTS:

Here is the screenshot of the code.

```
1  #include<iostream>
2  using namespace std;
3
4  bool checkPrime(int a){
5
6
7      for(int i = 1; i <= a/2; ++i){
8
9          if(a%i == 0 && i != 1){
10             return false;
11         }
12     }
13     return true;
14 }
15
16 main(){
17     int x;
18     bool isPrime;
19     cout<<"Enter a number";
20
21     cin>>x;
22
23     isPrime = checkPrime(x);
24
25     if(isPrime)
26         cout<<"Prime Number";
27     else
28         cout<<"Composite Number";
29 }
30
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



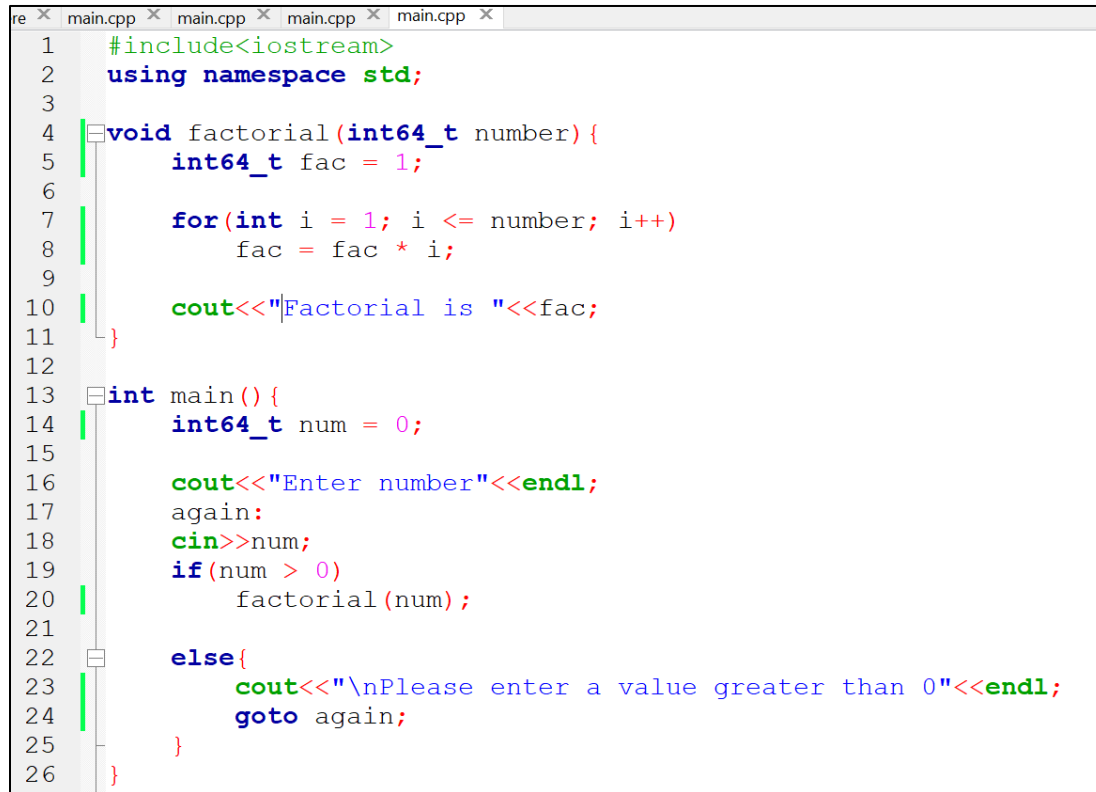
```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 6\task 3\main.exe"
Enter a number54
Composite Number
Process returned 0 (0x0) execution time : 3.347 s
Press any key to continue.
```

TASK # 4:**Title:**

Write a program to find a factorial of user input number. Use function to find factorial.

CODE SCREENSHOTS:

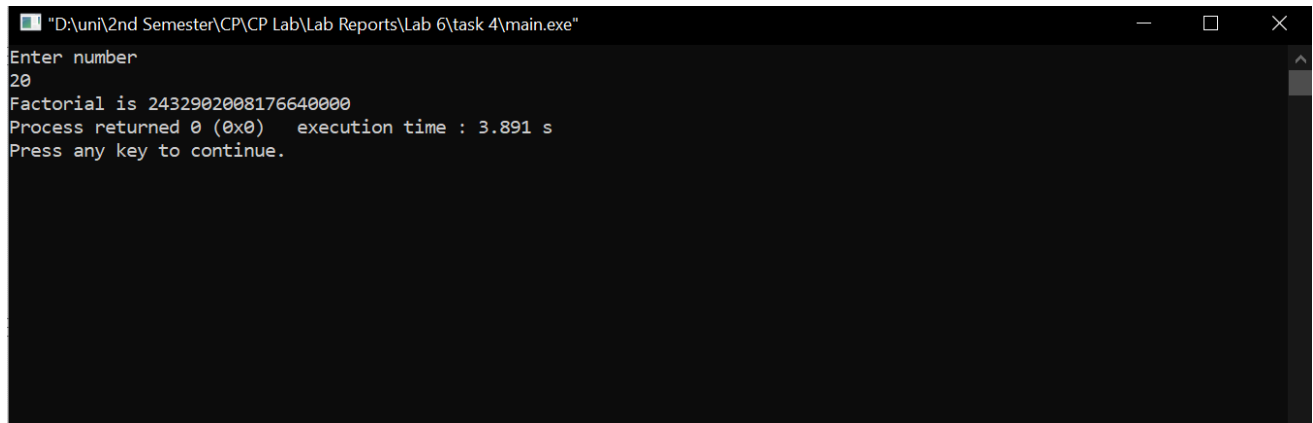
Here is the screenshot of the code.



```
1 #include<iostream>
2 using namespace std;
3
4 void factorial(int64_t number){
5     int64_t fac = 1;
6
7     for(int i = 1; i <= number; i++){
8         fac = fac * i;
9     }
10    cout<<"Factorial is "<<fac;
11 }
12
13 int main(){
14     int64_t num = 0;
15
16     cout<<"Enter number"<<endl;
17     again:
18     cin>>num;
19     if(num > 0)
20         factorial(num);
21
22     else{
23         cout<<"\nPlease enter a value greater than 0"<<endl;
24         goto again;
25     }
26 }
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 6\task 4\main.exe"
Enter number
20
Factorial is 2432902008176640000
Process returned 0 (0x0)   execution time : 3.891 s
Press any key to continue.
```

TASK # 5:**Title:**

Write a program to find the roots of a quadratic.....calculate d and then send the calculated d to roots() .

CODE SCREENSHOTS:

Here are the screenshots of the code.

```
1  #include <iostream>
2  #include <math.h>
3  using namespace std;
4
5  void roots(float a, float b, float c, float d){
6      float r1,r2;
7      cout<<"Roots:\n";
8      if (d>0){
9          r1=(-b+sqrt(d))/(2*a);
10         r2 = -(b + sqrt(d)) / (2*a);
11
12         cout<<"R1 = "<<r1;
13         cout<<"\nR2 = "<<r2;
14     }
15     else if(d==0){
16         r1 = -(b) / (2*a);
17         r2=r1;
18         cout<<"R1 = R2 = "<<r1;
19     }
20     else{
21         r1= -b / (2 * a);
22         r2=sqrt(-d) / (2*a);
23     }
```

```
main.cpp x main.cpp x main.cpp x main.cpp x
22     r2=sqrt(-d) / (2*a);
23
24     cout<<"Roots are imaginary\n";
25     cout<<"Real root, R1 = "<<r1;
26     cout<<"\nImaaginary root, R2 = "<<r2;
27 }
28 }
29
30 float deter(float a, float b, float c){
31     float d=(b*b)-(4*a*c);
32     return d;
33 }
34
35 main(){
36     float a,b,c,d;
37     int values[3];
38
39     for(int i=0;i<3;i++){
40         cout<<"Enter the values of a, b and c respectively ";
41         cin>>values[i];
42     }
43
44     a = values[0];
```

```
30 float deter(float a, float b, float c) {  
31     float d=(b*b)-(4*a*c);  
32     return d;  
33 }  
34  
35 main() {  
36     float a,b,c,d;  
37     int values[3];  
38  
39     for(int i=0;i<3;i++){  
40         cout<<"Enter the values of a, b and c respectively ";  
41         cin>>values[i];  
42     }  
43  
44     a = values[0];  
45     b = values[1];  
46     c = values[2];  
47  
48     d = deter(a,b,c);  
49     cout<<"\nDeterminant ="<<d<<endl;  
50     roots(a,b,c,d);  
51 }  
52
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.

```
"D:\uni\2nd Semester\CP\CP Lab\Lab Reports\Lab 6\task 5\main.exe"  
Enter the values of a, b and c respectively 3  
Enter the values of a, b and c respectively 4  
Enter the values of a, b and c respectively 5  
  
Determinant =-44  
Roots:  
Roots are imaginary  
Real root, R1 = -0.666667  
Imaginary root, R2 = 1.10554  
Process returned 0 (0x0)   execution time : 7.689 s  
Press any key to continue.  
-
```