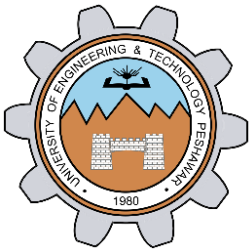
FUNCTIONS (PART 1 BASICS)

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:

Engr. Abdullah Hamid

July 4, 2022

Department of Computer Systems Engineering

University of Engineering and Technology, Peshawar

Name: Ali Asghar Section: C Registration # :21PWCSE2059

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.

```cpp
#include<iostream>
using namespace std;

char grade(int marks){

    if(marks >= 90 && marks <=100)
        return 'A';

    else if(marks >= 80 && marks <=90)
        return 'B';

    else if(marks >= 70 && marks <=80)
        return 'C';

    else if(marks >= 60 && marks <=70)
        return 'D';

    else
        return 'F';
}

void show(){
    int marks = 0;
```

```cpp
        return 'F';
}

void show(){
    int marks = 0;
    int reg_No = 0;

    cout<<"Enter marks..";
    cin>>marks;

    cout<<"\nEnter registration number"<<endl;
    cin>>reg_No;

    cout<<"Your name is Ali Asghar"<<endl;
    cout<<"Your Registration No. is 21PWCSE"<<reg_No<<endl;
    cout<<"Your grade is "<<grade(marks);

}

main(){
    show();
}
```

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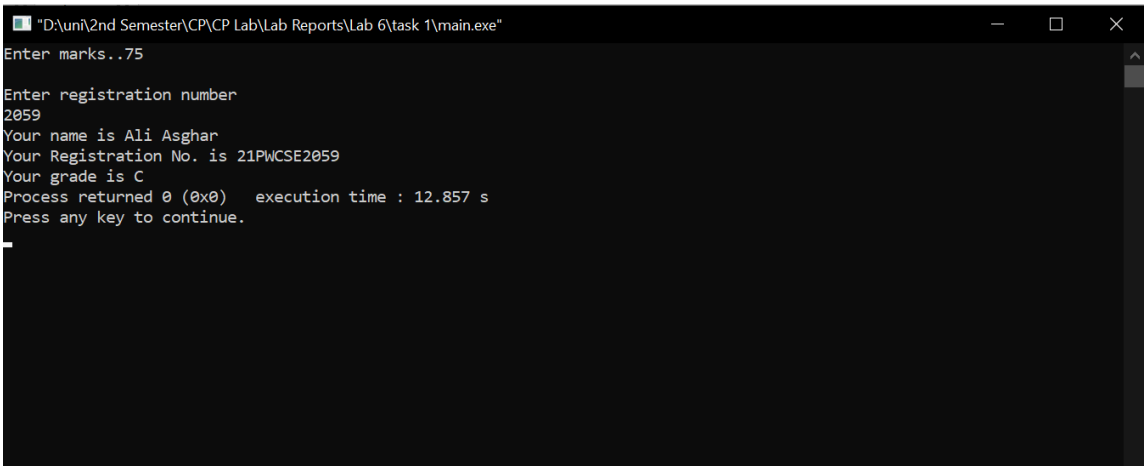
OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



TASK # 2:

Title:

Write a function minmax () that takes four integers as input and display ……number.

CODE SCREENSHOTS:

Here are the screenshots of the code.

main.cpp main.cpp

```cpp
#include<iostream>
using namespace std;

void minmax(int arr[4]){
    int cache_Var = 0;

    for(int i = 0; i < 4; i++){

        for(int j = i+1; j<4; j++){

            if(arr[i] < arr[j]){
                cache_Var = arr[i];
                arr[i] = arr[j];
                arr[j] = cache_Var;
            }
        }
    }
    cout<<"Maximum number is "<<arr[0]<<endl;
    cout<<"Minimum number is "<<arr[3];
}

```

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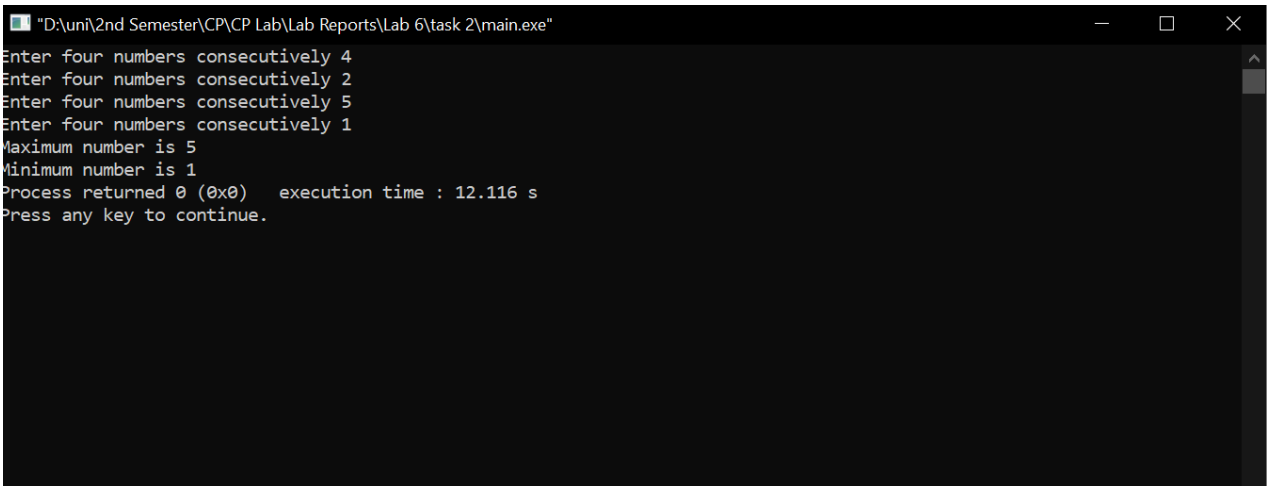
```
main.cpp  main.cpp
13                  arr[i] = arr[j];
14                  arr[j] = cache_Var;
15              }
16          }
17      }
18      cout<<"Maximum number is "<<arr[0]<<endl;
19      cout<<"Minimum number is "<<arr[3];
20  }
21
22  main(){
23      int numbers[4];
24
25      for(int i = 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.



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TASK # 3:

Title:

Your program should have a function named ‘prime’ which accepts an…….Return type bool function

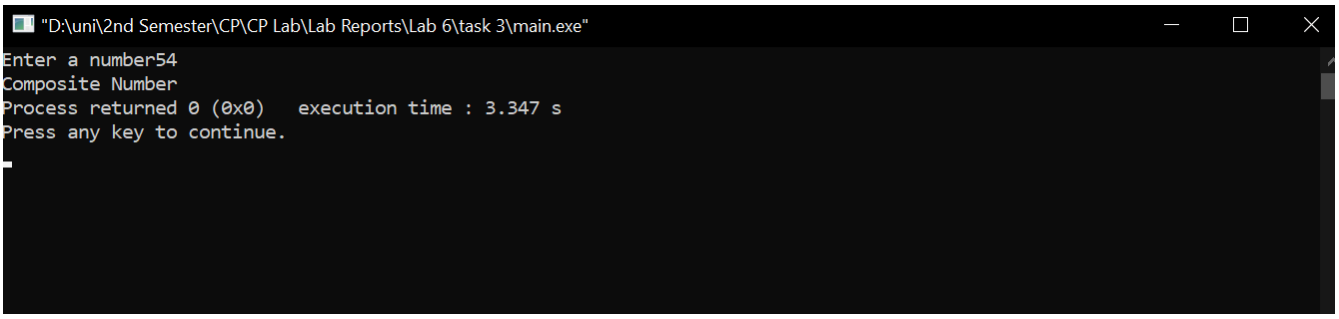
CODE SCREENSHOTS:

Here is the screenshot of the code.

```cpp
#include<iostream>
using namespace std;

bool checkPrime(int a){


    for(int i = 1; i <= a/2; ++i){

        if(a%i == 0 && i != 1){
            return false;
        }
    }
    return true;
}

main(){
    int x;
    bool isPrime;
    cout<<"Enter a number";

    cin>>x;

    isPrime = checkPrime(x);

    if(isPrime)
        cout<<"Prime Number";
    else
        cout<<"Composite Number";
}
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.



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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.

```cpp
#include<iostream>
using namespace std;

void factorial(int64_t number){
    int64_t fac = 1;

    for(int i = 1; i <= number; i++)
        fac = fac * i;

    cout<<"Factorial is "<<fac;
}

int main(){
    int64_t num = 0;

    cout<<"Enter number"<<endl;
    again:
    cin>>num;
    if(num > 0)
        factorial(num);

    else{
        cout<<"\nPlease enter a value greater than 0"<<endl;
        goto again;
    }
}
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.

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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.

```cpp
#include <iostream>
#include <math.h>
using namespace std;

void roots(float a, float b, float c, float d){
    float r1,r2;
    cout<<"Roots:\n";
    if (d>0){
        r1=(-b+sqrt(d))/(2*a);
        r2 = -(b + sqrt(d)) / (2*a);

        cout<<"R1 = "<<r1;
        cout<<"\nR2 = "<<r2;
    }
    else if(d==0){
        r1 = -(b) / (2*a);
        r2=r1;
        cout<<"R1 = R2 = "<<r1;
    }
    else{
        r1= -b /(2 * a);
        r2=sqrt(-d) / (2*a);
```

```cpp
        r2=sqrt(-d) / (2*a);

        cout<<"Roots are imaginary\n";
        cout<<"Real root, R1 = "<<r1;
        cout<<"\nImaaginary root, R2 = "<<r2;
    }
}

float deter(float a, float b, float c){
    float d=(b*b)-(4*a*c);
    return d;
}

main(){
    float a,b,c,d;
    int values[3];

    for(int i=0;i<3;i++){
        cout<<"Enter the values of a, b and c respectively ";
        cin>>values[i];
    }

    a = values[0];
```

Name: Ali Asghar Section: C Registration # :21PWCSE2059

```cpp
float deter(float a, float b, float c){
    float d=(b*b)-(4*a*c);
    return d;
}

main(){
    float a,b,c,d;
    int values[3];

    for(int i=0;i<3;i++){
        cout<<"Enter the values of a, b and c respectively ";
        cin>>values[i];
    }

    a = values[0];
    b = values[1];
    c = values[2];

    d = deter(a,b,c);
    cout<<"\nDeterminant ="<<d<<endl;
    roots(a,b,c,d);
}
```

OUTPUT (COMPILATION, DEBUGGING & TESTING):

Here is the screenshot of the output of above code.