LAB EXERCISE 3

TOPIC: FUNCTIONS

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QUESTION 1

Describe the difference between predefined function and programmer-defined function?

Predefined function is the function that is already defined in the system library while programmer-defined function is created by the programmer which able to break down into small manageable pieces.

QUESTION 2

Write a statement to calculate the equation or to convert the statement below using function from library.

a) Square root of y. => sqrt(x);
b) x to the power of y. => pow(x,y);
c) cos x. => cos(x);
d) Change character to uppercase. => char c = toupper('c');
e) Copy the string of x into string y. => strcpy(y,x);

QUESTION 3

What is the difference between local variable, global variable, global constant and static local variable?

Local variable is variable defined inside a function Global variable is any variable defined outside all the functions in a program Global constant is defined for values that do not change throughout the program execution. Static local variable is defined and initialized only the first time the function is executed.

QUESTION 4

Given the following coding, fill in the blank with the "terms" of function as a comment.

```
#include <iostream>
using namespace std;
int average(int, int, int); //function prototypr
int main()
{
      int x, y, z, avrg;
      cout << "Please enter three numbers:" << endl;
      cin >> x >> y >> z;
      avrg = average (x, y, z); //function call
       cout << "The average of the given three numbers is: " <<
     avrg << endl;
      return 0;
}
int average(int a, int b, int c) //function definition
{
      int sum, avrg2;
      sum = a + b + c;
      avrg2 = sum / 3;
      return avrg2; //return statement
}
```

QUESTION 5

Find the errors in the following given code.

```
#include <iostream>
using namespace std;
int average(int, int);
int power (float p);
int main()
{
 int x, y, z, avrg, powerOf;
 cout << "Please enter three numbers:" << endl;
 cin >> x >> y >> z;
 avrg = average ();
 cout << "The average of the given three numbers is: " << avrg
<<  endl;
 power ();
 cout << "The average number to the power of two is: " << power
() << endl;
return 0;
}
int average(int a, int b, int c)
{
 int sum, avrg2;
 sum = a + b + c;
 avrg2 = sum / 3;
}
int power (int p)
{
 int pOf;
 pOf = pow(p,2);
 return 0;
}
```

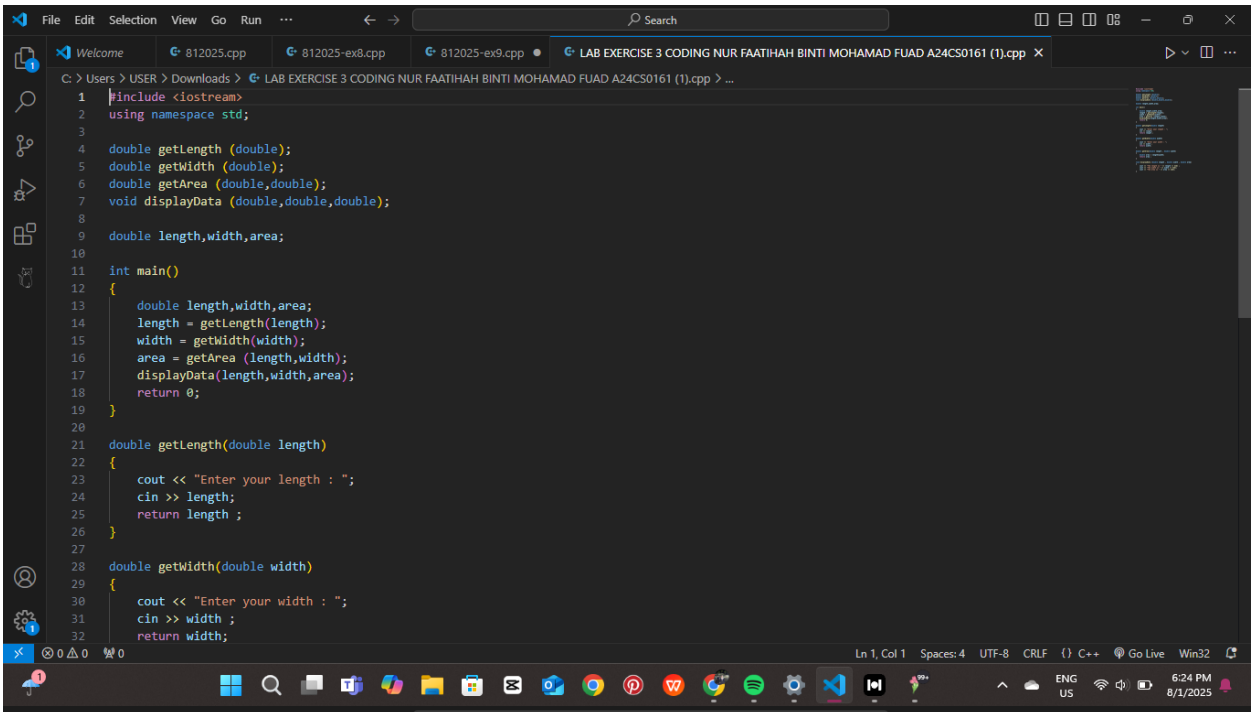
ERROR	CORRECTION
No appropiate header to run math function	#include <cmath>
int average(int, int);	int average(int, int,int);
int power (float p);	int power (int);
avrg = average ();	avrg = average (x,y,z);
power ();	powerOf = power (avrg);
cout << "The average number to the power of two is: " << power () << endl;	cout<<"The average number to the power of two is: "<< power (avrg) << endl;
Adding return statement	return avrg2;
Adding return statement	return pOf;

QUESTION 6

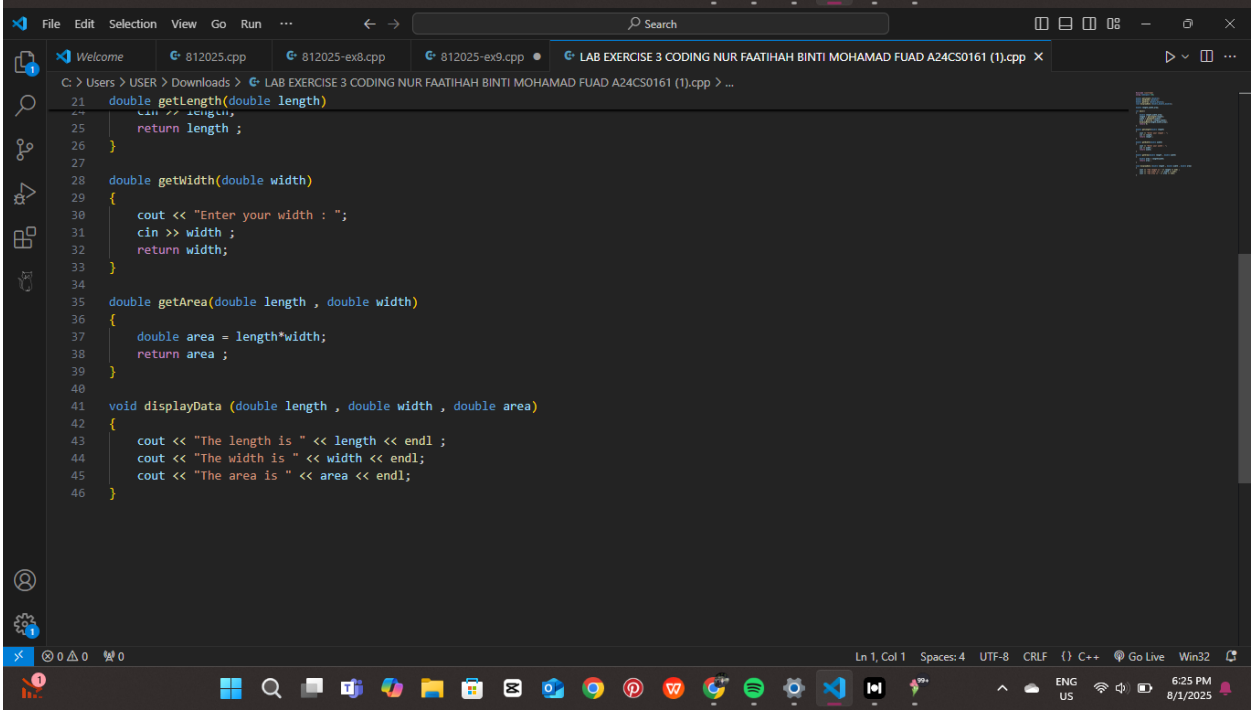
Write a C++ program to calculate a rectangle's area. The program consists of the following function:

- `getLength` – This function should ask the user to enter the rectangle's length, and then returns that value as a double
- `getWidth` – This function should ask the user to enter the rectangle's width, and then returns that value as a double.
- `getArea` – This function should accept the rectangle's length and width as arguments and return the rectangle's area.
- `displayData` – This function should accept the rectangle's length, width and area as arguments, and display them in an appropriate message on the screen.
- `main` – This function consists of calls to the above functions.

For Question 6, provide the answer in .cpp file.



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

double getLength (double);
double getWidth (double);
double getArea (double,double);
void displayData (double,double,double);

double length,width,area;

int main()
{
    double length,width,area;
    length = getLength(length);
    width = getWidth(width);
    area = getArea (length,width);
    displayData(length,width,area);
    return 0;
}

double getLength(double length)
{
    cout << "Enter your length : ";
    cin >> length;
    return length ;
}

double getWidth(double width)
{
    cout << "Enter your width : ";
    cin >> width ;
    return width;
}
```



```cpp
double getLength(double length)
    return length ;
}

double getWidth(double width)
{
    cout << "Enter your width : ";
    cin >> width ;
    return width;
}

double getArea(double length , double width)
{
    double area = length*width;
    return area ;
}

void displayData (double length , double width , double area)
{
    cout << "The length is " << length << endl ;
    cout << "The width is " << width << endl;
    cout << "The area is " << area << endl;
}
```