**LAB EXERCISE 3**

**TOPIC: FUNCTIONS**

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**SECTION: 05**

**QUESTION 1**

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

Answer:

Predefined function is a “built-in" functions that come with the compiler. The source code (definition) for predefined functions does not appear in your program. To use a predefined function, you need to include the proper header file and know the name of the function that

you wish to use.

Programmer-defined function is created the programmer. Commonly used to break a problem down into small manageable pieces. Every function must have function call and function definition. In definition, it needs return type, name, parameter list and body.

**QUESTION 2**

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

1. Square root of y.

sqrt(y); <cmath>

1. x to the power of y.

pow(x,y); <cmath>

1. cos x.

cos(x); <cmath>

1. Change character to uppercase.

toupper(‘a’);<cctype>

1. Copy the string of x into string y.

strcpy(y,x);<cstring>

**QUESTION 3**

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

A local variable is declared within a function or block, it can be accessed only within that scope and deleted when the function terminates. A global variable declares outside all functions and is accessible throughout the whole program and exists for the program's lifetime. A global constant is a read-only global variable whose value cannot be changed after initialization. It provides fixed data globally. A static local variable is which though declared within a function but still retains its value between functions call and last for the program's duration.

**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 prototype

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; //Returning value of avrg2

}

**QUESTION 5**

Find the errors in the following given code.

#include <iostream>

#include <cmath>//Error(1)

using namespace std;

int average(int, int, int); //Error(2)

int power (int\_ ); //Error

int main()

{

int x, y, z, avrg, powerOf;

cout << "Please enter three numbers:" << endl;

cin >> x >> y >> z;

avrg = average (x,y,z); //Error(3)

cout << "The average of the given three numbers is: " << avrg << endl;

power (avrg); //Error(4)

cout << "The average number to the power of two is: " << power (avrg) << endl;//Error (5)

return 0;

}

int average(int a, int b, int c)

{

int sum, avrg2;

sum = a + b + c;

avrg2 = sum / 3;

return avrg2;//Error(6)

}

int power (int p)

{

int pOf;

pOf = pow(p,2);

return pOf; //Error(7)

}

**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.