**LAB EXERCISE 3**

**TOPIC: FUNCTIONS**

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**SECTION: 02**

**QUESTION 1**

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

-The difference between predefined functions and programmer-defined functions is predefined functions is the functions that can’t change or modify the name of the library function because the functionality of these functions is already defined in the compiler while the programmer-defined function is the function that create by the programmer that can change the name easily.

**QUESTION 2**

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

1. Square root of y. Answer :sqrt(y);
2. x to the power of y. Answer : pow(x,y);
3. cos x. Answer : cos(x);
4. Change character to uppercase. Answer : toupper(char);
5. Copy the string of x into string y. Answer : strcpy( x,y);

**QUESTION 3**

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

Answer :

-**Local variable** is a variable declared inside the function or block and only can be accessed and modified within the function or block.

-**Global variable** is a variable declared outside all functions, typically at the top of the file and can be accessed and modified by all functions within the file or across multiple files.

-**Global constant** is the globally declared constant that cannot be modified after initialization and can be accessed by all functions just like a global variable.

-**Static local** **variable** is a local variable declared with the static keyword and accessible only within the function or block where it is declared that can retain its value between function calls and persists throughout the program’s execution.

**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); **//calling an average function**

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

return 0;

}

int average(int a, int b, int c) **//returning-integer type value function**

{

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>

**#include <cmath> //ERROR 1 add cmath header file**

using namespace std;

int average(int, int ,**int**); **// ERROR 2 add another int in ()**

int power (**int** ); **//ERROR 3** **remove p in () and change float to int**

int main()

{

int x, y, z, avrg, powerOf;

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

cin >> x >> y >> z;

avrg = average (**x,y,z**); **//ERROR 4 add x,y,z in ()**

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

**powerOf =**power(**avrg**); **//ERROR 5 change the statement to powerOf = power(avrg);**

cout << "The average number to the power of two is: " << **powerOf** << endl; **// ERORR 6 change power() to powerOf**

return 0;

}

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

{

int sum, avrg2;

sum = a + b + c;

avrg2 = sum / 3;

**return avrg2; //ERROR 7 add return avrg2 in average function**

}

int power (int p)

{

int pOf;

pOf = pow(p,2);

return pOf;**//ERROR 8 change 0 to 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.