LAB EXERCISE 3

TOPIC: FUNCTIONS

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QUESTION 1

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

Answer:

Predefined function is a Built-in function of the programming language (cout, cin).

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.

a) Square root of y.

   sqrt(y); <cmath>

b) x to the power of y.

   pow(x,y); <cmath>

c) cos x.

   cos(x); <cmath>

d) Change character to uppercase.

   toupper('a');<cctype>

e) 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?

Local variable : Accessible only within func()

Global variable : Accessible and modifiable throughout the whole program

Global constant : Accessible but cannot modify the value throughout the wholeprogram(Keyword: const)

Static local variable : Accessible only within the function where it is defined, but itsvalueis retained between multiple function calls throughout the whole program(Keyword: static)

QUESTION 4

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

```cpp
#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.

```cpp
#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;
```

```cpp
    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.