

Name:GWEE ZI NI

MATRIC NO:A24CS0078

Question1

| Predefined function | Programmer-defined function |
|---|---|
| Also known as built-in function and library function which is already defined in system libraries | Also known as user-defined function which is created by programmer or the user. |
| Definition of predefined function is unnecessary to be written by the programmer | Definition of programmer-defined function is needed to be written by the programmer which including the return type, name, parameter list and body. |
| Users have to include the proper header file if they are using the predefined function | Users have to write the header for that function before writing the function body if using the programmer-defined function |

Question2

- a) `sqrt(y);` // header file used is `#include<cmath>`
- b) `pow(x,y);`//header file used is `#include<cmath>`
- c) `cos(x);`//header file used is `#include<cmath>`
- d) `toupper(character);`//header file used is
`#include<cctype>`
- e) `strcpy(y,x);`//header file used is `<cstring>`

Question3

| | Difference |
|------------------------|---|
| Local variable | <p>Variable that defined inside a function. Statement of local variable is hidden from the statements in other function and the other function cannot access them.</p> <p>Lifetime of local variable is it exists only while the function is executing and local variables and parameter variable area destroyed when the function ends</p> |
| Global variable | <p>Variable that is defined outside of all functions in a program.</p> <p>The global variable can be accessed by all functions that are defined after the global variable is defined.</p> <p>The scope of global variable is the portion of the program from the variable definition to the end.</p> |
| Global constant | <p>Defined for values that do not change throughout the program's execution and this constant area then used for those values for throughout the program</p> |
| Static local variables | <p>Defined and initialized only the first time the function is executed and the value can be retained between subsequent calls to the function.</p> |

Question 4

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

Question 6

Execution1:

```
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL PORTS
PS D:\code> cd "d:\code\" ; if ($?) { g++ LAB_EXERCISE_QUESTION6.cpp -o LAB_EXERCISE_QUESTION6 } ; if ($?) { .\LAB_EXERCISE_QUESTION6 }
Enter the length of rectangle: 5
Enter the width of rectangle: 6
The length of the rectangle is 5
The width of the rectangle is 6
The area of the rectangle is 30
PS D:\code> |
```

Execution2:

```
PS D:\code> cd "d:\code\" ; if ($?) { g++ LAB_EXERCISE_QUESTION6.cpp -o LAB_EXERCISE_QUESTION6 } ; if ($?) { .\LAB_EXERCISE_QUESTION6 }
Enter the length of rectangle: -2
Please enter a valid length.
Enter the length of rectangle: -1
Please enter a valid length.
Enter the length of rectangle: 5
Enter the width of rectangle: -1
Please enter a valid width.
Enter the width of rectangle: 6
The length of the rectangle is 5
The width of the rectangle is 6
The area of the rectangle is 30
PS D:\code> |
```

##The .cpp file will be uploaded in e-learning too.