

CIS162 and CSC100 In-Class Lab Assignment – Structures Lab

10/04/2006

Background

This in-class lab assignment demonstrates the notion and use of C++ Structures. Your boss comes to you and says, “Dude, you need to start getting more organized with your data and variables. We want a structured programming environment.” You reply, “No problem, sir, I will start using structures?”

Objective for this Lab

You are going to create a small C++ program that uses C++ structures. The program will deal with a structure called Circle and contain the various attributes of a circle. It will use function to manipulate the Circle variables. Use no global variables. Your structure will look like this:

```
struct Circle
{
    double radius;
    double diameter;
    double area;
    double circumference;
};
```

Required Functions

Your C++ program needs the following four functions.

Get Circle Data Function: This function prompts for a radius. It returns a Circle structure variable.

Display Circle Data Function: This function takes the Circle argument and displays all structure attributes such as radius, diameter, etc.

Calculate CircleData Function: This function takes the Circle argument and calculates all attributes and returns another Circle structure variable.

Pause Function: This function simply calls the systems command for “pause”. It optionally has an integer input argument that controls how many end-lines to display before the “press any key ...” string.

Prototypes

```
void        displayCircleData (Circle);
Circle      getCircleData ();
Circle      calculateCircleData(Circle c);
void        pause (int count);
```

Development Environment

In the classroom we use MS .Net C++ compiler.

Deliverables

Turn in the source code from the programs plus the generated output.

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Hint

Here is the main body of the program. You need to supply all the functions that it calls.

```
//  
// main program logic  
//  
int main()  
{  
    Circle myBigCircle    = getCircleData();  
    Circle myLittleCircle = getCircleData();  
  
    myBigCircle = calculateCircleData(myBigCircle);  
    myLittleCircle = calculateCircleData(myLittleCircle);  
  
    displayCircleData(myBigCircle);  
    displayCircleData(myLittleCircle);  
  
    pause(3);  
    // end of main  
}
```