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Class: CSC 150 S01

Chapter 3 problems 1-5

**Q 1**

Define top-down design and structure charts.

Top-down design

Top-down design is a design approach in which a system or program is decomposed into multiple specified smaller parts or sub-systems

Structure charts

It is a chart that shows the breakdown of a program or system into lowest function modules.

**Q 2**

What is a function prototype?

A function prototype is a declaration that specifies information about the name of a function, its return type and the number, types and order of the arguments it should receive

**Q 3**

When is a function executed, and where should a function prototype and function definition appear in a source program?

After main calls the function and transfers control to it, it starts to execute at the first statement until the return statement, then transfers back the executive control to main.

The function prototype should appear in the main function at the beginning of the program

While the function definition should come after the main function

**Q 4**

What are three advantages of using functions?

* Helps us avoid rewriting same logic/code over again in a program.
* Can call functions multiple times in a program and from any place in a program.
* We can track a large C program easily when it is divided into multiple functions.

**Q 5**

Is the use of functions a more efficient use of the programmer’s time or the computer’s time? Explain your answer.

It is a more efficient use of the programmer’s time as it reduces repeated rewriting of code. The code becomes more readable, easier to go through to solve errors and can be reused.

These effects are seen greater in larger programs consisting of several lines of code and functions.

As for the computer, functions can speed things by reducing overall code size, but can also slow things by copying many parameters.

So it is a more efficient use of the programmer’s time