Elements of Programming: Definition, Scope and Flow of Control

CMSC 122

1 Introduction
   - Definition & Scope

Defining & Scoping

- Declaring variables, constants as well as defining functions are examples of things that can be "defined."
- Where we define something is important because it determines the "scope" of the thing being defined. Think of "scope" as "reach" or lifespan.

Review some examples from recent classroom programming activities.

Examples from JavaScript

Below are some typical JavaScript variable (and constant) declarations.

```
/* top-level declaration */
var total=0;

/* Define a function that redefines total. */
function sum( n ) {
    /*
     * example of a declaration within a function:
     * Ask: what is the scope of this variable?
     */
    var total=0;
    while( n > 0 ) {
       // change total ... (but which one?)
    }
    return total;
}
```

Some fine points here . . .

Any language constituent that requires a "body," i.e., uses braces, is capable of defining a local "scope."

- Knowing the scope of a particular identifier is essential in understanding its use and meaning.
- Relying extensively on "scope" makes code difficult to read/understand.

Boolean Expressions

Recall that Boolean expressions are any statements in the language whose value is either `true` or `false`.