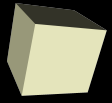




if Conditionals

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Opening Discussion

- Let's look at some solutions to the interclass problem.





- Last class we talked about boolean expressions and the if statement.
- The if statement can be used in one of the following forms.
 - ◆ if(expression) statement
 - ◆ if(expression) statement else statement
- The expression can be any expression but it will be interpreted as a Boolean where 0 is false and everything else is true.
- The statements can be compound statements using the {} syntax.



Using if Statements

- Today we want to run through how we use if statements in C.
- Let's start with a basic example then build our way up to more complex ones.
- We want to look both at complex Boolean expressions and nesting conditionals.





Conditional Expression

- The if statement is a statement, not an expression. It has no value, it simply changes the way things are executed.
- Sometimes it is helpful to have an expression that is conditional. This is provided in C with the operator `?:`.
- The syntax is as follows:
 - ◆ conditional-expression ? then-expression : else-expression
- If the conditional expression evaluates to true, the whole expression have the value of the then-expression. Otherwise, it gets the value of the else-expression.



Basic Recursion

- Combining function calls and conditionals also allows us to begin exploring recursion.
- Recursive functions are simply functions that call themselves. The call must be conditional otherwise you have infinite recursion.
- To really see how recursion works we need to understand the call stack. This is a bank of memory on the computer the program uses to store variables and information related to what is happening in the program. Each time a function is called, a new stack frame is “pushed” with the memory that function needs. When the function returns the stack frame is “popped”.



- Technically the combination of conditionals and function calls gives us all the power to need for full fledged computation. Why do you think C has more control structures for us to discuss?
- Interclass Problem – Do problems 35 and 36 on page 294.

