

## More Loops

10-3-2003

---

---

---

---

---

---

---

## Opening Discussion

- Do you have any questions about the quiz?
- What did we talk about last class?
- Do you have questions about the assignment?  
Assignment #4 is up on the web with descriptions. I don't have all the sample inputs and outputs.
- A loop to add numbers until 0 is input. Don't read twice in the loop. The %d type sequences only have meaning in printf and scanf.

---

---

---

---

---

---

---

## Other Loops

- You can actually do anything that you want with a while loop. It's not an issue of power, but of ease of programming that caused the addition of other types of loops.
- As with most people, you will probably find that you like one type of loop better than the others and use it more, but you should be aware of all of them.

---

---

---

---

---

---

---

## for Loops

- The for loop is the most commonly used loop in C. It takes the features of every loop and gives them a place.

```
for(initializer; condition; iterator) {  
    body-statements;  
}
```

- Most useful with clearly defined initialization and iterators.

---

---

---

---

---

---

---

---

## Increment and Decrement

- The most common iterators used in for loops are for adding or subtracting one from a given variable. Typing `i=i+1` can be a bit tedious so C has the increment and decrement operators: `++` and `--`.
- If they precede the variable the operation is done before the rest of the statement. If they follow the variable it is done after the statement.

---

---

---

---

---

---

---

---

## Assignment Operators

- There are also shortcuts for any operator in C when you want to store the result of an operation back in the first variable for the operation. These are written as the operator followed by `=`.
- So `i+=5` is the same as `i=i+5` and `a*=b` is the same as `a=a*b`.
- These operators exist for `+`, `-`, `*`, `/`, `%`, `&`, `|`, `^`, `<<`, and `>>`.

---

---

---

---

---

---

---

---

## do-while Loops

- The other loop in C is the do-while loop. This is like the while loop, but it is a post-check loop. As such, the condition isn't checked until after it has executed once.

```
do {  
    body-statements;  
} while(condition);
```

- Initialization for this type of loop can happen in the loop itself in some cases.

---

---

---

---

---

---

---

---

## Code

- Now let's write some code involving these new loops.
- You now know all the control structures in the C programming language (all the ones that people use regularly).

---

---

---

---

---

---

---

---

## Minute Essay

- Starting next class we will be moving past loops and on to functions in C. If you have any unresolved issues in how to write or use loops tell me here so that we can discuss those things next class before moving on.
- You should read chapter 11 for next class.

---

---

---

---

---

---

---

---