

CSC 250

Math and Computer Science



Loops

- Do repetitive code
- All loops have three things in common
 - Initialization
 - Test condition to exit looping
 - Update statement
- You should always drop out of you loops
 - No infinite loops needed in CSC250
 - If you need a break statement to exit the loop, rethink your logic

For Loop

- Used when you know how many times you should loop

- Syntax:

```
for( <init>; <expr>; <update> )  
    statement;
```

- Use {} for multiple statements

```
for( <init>; <expr>; <update> )  
{  
    statement;  
    statement;  
}
```

- Update happens at the end of the loop

Example

- Read in 10 numbers from a file into an array.

```
for( i=0; i<10; i++)  
    fin >> num[i];
```

- Sum the 10 numbers up

```
for( i=0; i<10; i++)  
    sum += num[i];
```

Multiple Variables

- List of initializers and updates

```
float array[500][1000];
```

```
for( row=0, col=0; row < 500 && col < 1000;  
      row++,col+=2)  
    array[row][col] = 1.0;
```

While Loop

- Used when you do not know how many times it must execute.
- Initialization happens before the loop starts or in the test condition.
- Update happens someplace within the loop.
- Syntax:

```
while( <lexpr> )  
{  
    statement;  
}
```

Examples

- Read n numbers from a file

```
cin >> n;  
i = 0;  
while( i < n )  
{  
    fin >> a[i];  
    i++;  
}
```

Examples

- Read all the numbers from a file or until the array is full

```
int array[10000];  
int i = 0;  
while( i < 10000 && fin >> array[i] )  
    i++;
```


Do ... while loop

- Post test loop – means the loop will execute at least once
- Must be guaranteed that the code needs to execute at least once
- Syntax

do

{

 statements;

}while(<lexpr>);

← note the ;

Example

- Output a menu and repeat until user types a zero.

do

{

 printMenu();

 choice = getMenuChoice();

 ...

}while(choice != 0);