CSC180: Lecture 10

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```
/* Program to count the no of positive and negative numbers*/
#include< stdio.h >
void main( )
{
    int a[50],n,count_neg=0,count_pos=0,I;
    printf(“Enter the size of the array\n”);
    scanf(“%d”,&n);
    printf(“Enter the elements of the array\n”);

    for( I=0;I < n;I++)
      scanf(“%d”,&a[I]);

   for(I=0;I < n;I++)
   {
     if(a[I] < 0)
        count_neg = count_neg + 1;
     else
      count_pos = count_pos +1;
   }

   printf(“There are %d negative numbers in the array\n”,count_neg);
   printf(“There are %d positive numbers in the array\n”,count_pos);

}
```

Initializing Arrays

- To initialize an array when it is declared
  - The values for the indexed variables are enclosed in braces and separated by commas
- Example: `int children[3] = { 2, 12, 1 };`
  Is equivalent to:

```
int children[3];
children[0] = 2;
children[1] = 12;
children[2] = 1;
```

Default Values

- If too few values are listed in an initialization statement
  - The listed values are used to initialize the first of the indexed variables
  - The remaining indexed variables are initialized to a zero of the base type
  - Example: `int a[10] = {5, 5};`
    initializes a[0] and a[1] to 5 and a[2] through a[9] to 0

Pitfall: Un-initialized Arrays

- If no values are listed in the array declaration, some compilers will initialize each variable to a zero of the base type
  - DO NOT DEPEND ON THIS!

Array Pitfall: Index Out of Range

- A common error is using a nonexistent index
  - Index values for int a[6] are the values 0 through 5
  - An index value not allowed by the array declaration is out of range
  - Using an out of range index value doe not produce an error message!

Out of Range Problems

- If an array is declared as: int a[6];
  and an integer is declared as: int i = 7;
- Executing the statement a[i] = 238; causes…
  - The computer to calculate the address of the illegal a[7]
  - (This address could be where some other variable is stored)
  - The value 238 is stored at the address calculated for a[7]
  - No warning is given!

An Array in Memory