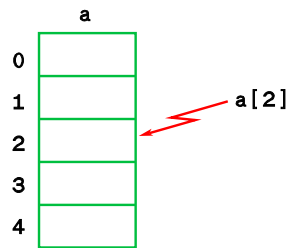


Arrays in C

An array is a consecutive group of storage locations all known by the same name. Individual elements are identified by a subscript.

```
int a[5];
```



ARRAY010

Some Array Examples

```
int a[5];
```

```
int b[6] = {45,23,87,11,73,55};
```

```
int c[] = {34,76,44,27,90};
```

```
char ch[] = "This is a string";
```

```
const MAXSIZE = 100;
```

```
int x[MAXSIZE];
```

```
a[0] = 5;
```

```
a[1+3] = 6;
```

```
i = 2;
```

```
a[i] = 14;
```

```
a[i+1] = 24;
```

Note use of constant!

ARRAY020

Arrays and the for Loop

The perfect marriage!

```
int a[5], i;  
  
for(i=0; i < 5; i++)  
    a[i] = 0;  
  
for(i=0; i < 5; i++)  
    a[i] = i*10;
```

ARRAY030

Array Input and Output

```
int quizzes[8];  
int i, sum = 0;  
  
for(i = 0; i < 8; i++)  
{  
    cin >> quizzes[i];  
    sum += quizzes[i];  
    cout << quizzes[i];  
} // END for i  
cout << sum;
```

ARRAY040

A New Organization for Programs

```
int quizzes[8];
int i, sum = 0;

// input
for(i = 0; i < 8; i++)
    cin >> quizzes[i];

// compute
for(i = 0; i < 8; i++)
    sum += quizzes[i];

// output
for(i = 0; i < 8; i++)
    cout << quizzes[i];

cout << sum;
```

Instead of one large loop, we can now have several small loops, each doing just one thing.

ARRAY050

"C-Style" Strings

Strings are arrays of char. They are terminated with the "null" character ('\0')

```
char str[] = "string";
```

0	's'
1	't'
2	'r'
3	'i'
4	'n'
5	'g'
6	'\0'

ARRAY060

C-Style String Input Example

```
char line[81];
int k;

cin.get(line[0]);
k = 0;
while(line[k] != '\n')
{
    k++;
    cin.get(line[k]);
} // END while
line[k] = '\0';
```

ARRAY070

String Output Example

```
k = 0;
while(line[k] != '\0')
{
    cout.put(line[k]);
    k++;
} // END while
cout.put('\n');
```

The same thing can be accomplished with:

```
cout << line << endl;
```

ARRAY070



Example - Counting the Characters in a String

```
m = 0;
while(line[m] != '\0')
    m++;
```

OR:

```
#include <cstring>
m = strlen(line);
```

ARRAY080



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Arrays as Function Arguments

```
// prototype
void initarray( int [], int);

// function definition
void initarray( int a[], int n)
{
    int m = 0;
    for (m = 0; m < n; m++)
        a[m] = 0;
} // end initarray
```

NOTE: arrays are ALWAYS passed by reference!

ARRAY090



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What Will Ha

```
float x[
```

```
func(x[4
```

What does the prototy

ARRAY100



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