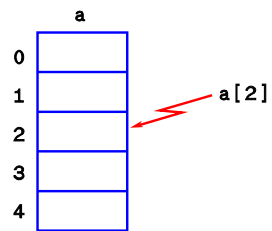


# Arrays in C

*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], sum;
int i;

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

ARRAY040

## A New Organization for Programs

```
int quiz[8], sum;
int i;

for(i = 0; i < 8; i++)
    cin >> quiz[i];

for(i = 0; i < 8; i++)
    sum += quiz[i];

for(i = 0; i < 8; i++)
    cout << quiz[i];

cout >> sum;
```

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

ARRAY050

## Strings in C

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

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

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

ARRAY060

## 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

## Example – Counting the Characters in a String

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

*OR:*

```
#include <string.h> // or <cstring>
```

```
m = strlen(line);
```

ARRAY080

## Arrays as Function Arguments

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

```
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

## What Will Happen here?

```
float x[100];
```

```
func(x[4]);
```

*What does the prototype for func look like?*

ARRAY100