

Introduction to C Programming

Section 7

Introduction

- Suppose, you need to store years of 100 cars. Will you define 100 variables?

```
int y1, y2, ..., y100;
```

Introduction

- Algorithms usually work on large data sets
 - Sort a set of numbers
 - Search a specific number in a set of numbers
- How to read and store a set of data?
- To read
 - Repeat the scanf statement
 - Use the loop statements
- To store the data
 - Save each data in a single variable??
 - 3000 int variables! ! ! !

Array

- An **ordered** collection of **same type** variables
- A vector of
 - Integers, chars, floats, ...
- Example
 - An array of 8 integer
- An array of 5 chars

0	1	2	3	4
'a'	'z'	'F'	'z'	'k'

Array

- Arrays and structures are “static” entities in that they remain the same size throughout program execution.

Arrays in C

- Array declaration in C
- `<Elements' Type> <identifier>[<size>]`
- `<Elements' Type>`: int, char, float, ...
- `<size>`
 - Old compilers (standard): **it should be constant**
 - New compilers (standard): **it can be variable**
- Elements in array
 - From 0 to (size – 1)

Array

- An array is a group of memory locations related by the fact that they all have the same name and the same type.
- To refer to a particular location or element in the array, we specify the name of the array and the **position number** of the particular element in the array.

Example

```
int num[20];
```

`num` is array of 20 integers

`num[0]` is the first integer variable

`num[19]` is the last integer

```
float farr[100];
```

`farr` is array of 100 floats

`farr[0]` is the first float

`farr[49]` is the 50th float

`farr[99]` is the last float