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# Arrays

IST 256

Application Programming for Information Systems



# Arrays

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- Give one name to a group of values.
  - In this example, the name of the array is “data” and the values are integers.

data	7
	4
	0
	23
	-5
	14

The elements are numbered starting from 0:

data [ 0 ] (is 7)

data [ 1 ] (is 4)

data [ 2 ] (is 0)

...

# Array Declarations

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*Declaration with allocation*  
`String [ ] students = new String [ 25 ];`

Annotations for the declaration:

- type
- array name (same rules as other variable names)
- number of elements

*Declaration (without allocation)*

`int [ ] age;`

*Another declaration*

`double [ ] price = new double [10 ];`

*Declaration with initialization*

`int [ ] codes = { 4011, 4080, 4549, 4788 }`

*(an array with 4 elements )*

# Using elements

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- Given an array declaration

```
double [ ] amounts = new double [ 25];
```

the valid subscripts to use elements of this array are from 0 to 24 (i.e. from 0 to one less than the number of elements)

- Array elements can be used in expressions

```
tax = amounts[5] * .0825; ← Gets the value  
of amounts[5]
```

```
amounts[5] = oldprice;  
← Assigns a new value  
to amounts[5]
```

# Loop over all array elements

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- It is quite common to write a for loop to access every element of an array.
- This can use the length property of the array

*// assigns the numbers from 1 to the array length to the elements*

```
for (int index = 0; index < amounts.length; index++)  
{  
    amounts[index] = index + 1;  
}
```