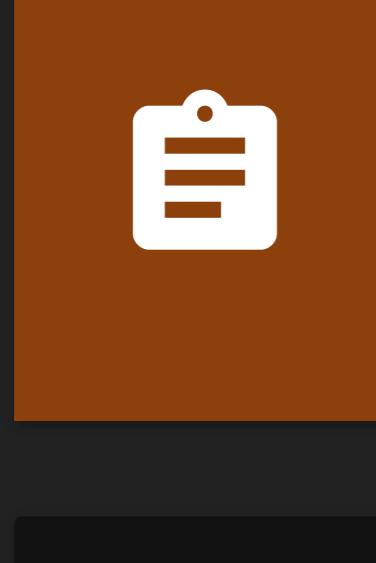


## ↑ 6.1 Arrays vs. vectors



Students:  
Section 6.2 is a part of 1 assignment: **CSC108 CH06.1-6.9 P6A**

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Includes: PA

Due: 04/29/2025, 11:59 PM EDT

## 6.2 Array/vector concept (general)

A typical variable stores one data item, like the number 59 or the character 'a'. Instead, sometimes a *list* of data items should be stored. Ex: A program recording points scored in each quarter of a basketball game needs a list of 4 numbers. Requiring a programmer to declare 4 variables is annoying; 200 variables would be ridiculous. An **array** is a special variable having one name, but storing a list of data items, with each item being directly accessible. Some languages use a construct similar to an array called a **vector**. Each item in an array is known as an **element**.

PARTICIPATION ACTIVITY | 6.2.1: Sometimes a variable should store a list, or array, of data items.

**Start**  2x speed

numPlayers      pointsPerQuarter

12	0    22
	1    19
	2    12
	3    28

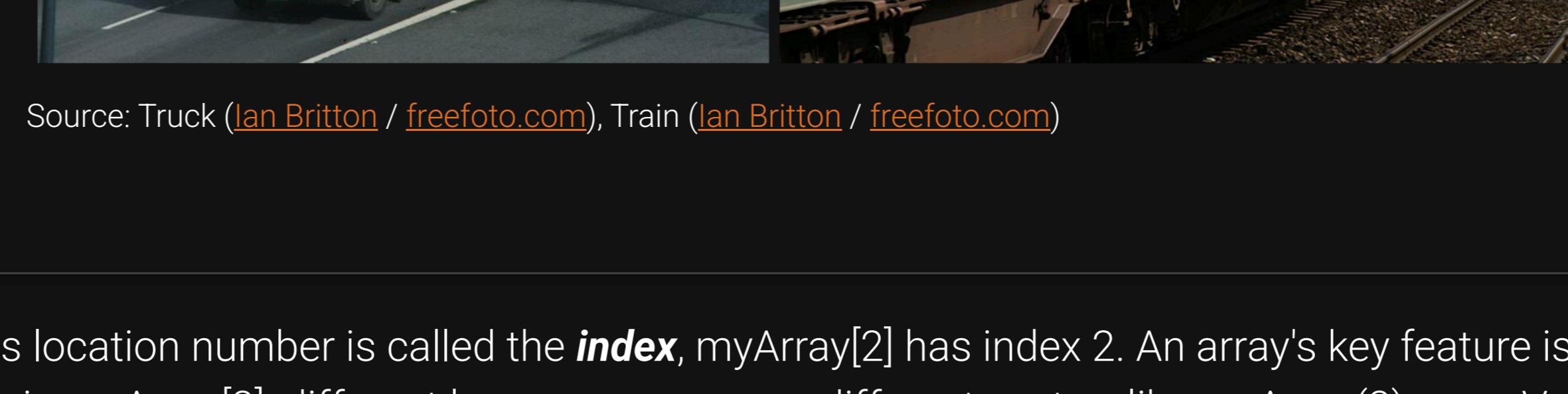
How many points in 4th quarter?  
pointsPerQuarter[3] is 28

Captions

Feedback?

You might think of a normal variable as a truck, and an array variable as a train. A truck has just one car for carrying "data", but a train has many cars, each of which can carry data.

Figure 6.2.1: A normal variable is like a truck, whereas an array variable is like a train.



Source: Truck ([Ian Britton / freefoto.com](#)), Train ([Ian Britton / freefoto.com](#))

Feedback?

In an array, each element's location number is called the **index**, myArray[2] has index 2. An array's key feature is that the index enables direct access to any element, as in myArray[2]; different languages may use different syntax, like myArray(3) or myVector.at(3). In many languages, indices start with 0 rather than 1, so an array with 4 elements has indices 0, 1, 2, and 3.

PARTICIPATION ACTIVITY | 6.2.2: Update the array's data values.

**Start**

Update myItems with the given code.

myItems
0    13
1    5
2    77
3    54
4    28
5    26
6    42

1    2    3    4    5    6

**Check** **Next**

Feedback?

PARTICIPATION ACTIVITY | 6.2.3: Array basics.

Array peoplePerDay has 365 elements, one for each day of the year. Valid accesses are peoplePerDay[0], [1], ..., [364].

1) Which assigns element 0 with the value 250?

- peoplePerDay[250] = 0
- peoplePerDay[0] = 250
- peoplePerDay = 250

2) Which assigns element 1 with the value 99?

- peoplePerDay[1] = 99
- peoplePerDay[99] = 1

3) What is the value of peoplePerDay[8]?

peoplePerDay[9] = 5;  
peoplePerDay[8] = peoplePerDay[9] - 3;

- 8
- 5
- 2

4) Assume N is initially 1. What is the value of peoplePerDay[2]?

peoplePerDay[N] = 15;  
N = N + 1;  
peoplePerDay[N] = peoplePerDay[N - 1] \* 3;

- 15
- 2
- 45

Feedback?

PARTICIPATION ACTIVITY | 6.2.4: Arrays with element numbering starting with 0.

Array scoresList has 10 elements with indices 0 to 9, accessed as scoresList[0] to scoresList[9].

1) Assign the first element in scoresList with 77.

**Check** **Show answer**

2) Assign the second element in scoresList with 77.

**Check** **Show answer**

3) Assign the last element with 77.

**Check** **Show answer**

4) If that array instead has 100 elements, what is the last element's index?

**Check** **Show answer**

5) If the array's last index was 499, how many elements does the array have?

**Check** **Show answer**

Feedback?

How was this section? Provide section feedback

### Activity summary for assignment: CSC108 CH06.1-6.9 P6A

Due: 04/29/2025, 11:59 PM EDT

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Completion details

↓ 6.3 Vectors