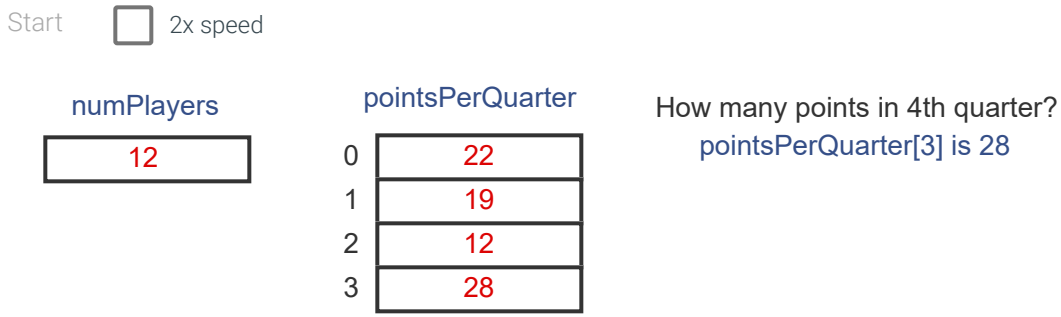
2.2 Arrays

Note_language_neutral

Array concept

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

PARTICIPATION ACTIVITY 2.2.1: Sometimes a variable should store a list, or array, of data items.



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", many cars each of which can carry data.

Figure 2.2.1: A normal variable is like a truck, whereas an array variable is like a train.

(Source for above images: Truck, Train)

Array indexing

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 ind access to any element, as in myArray[2]; different languages may use different syntax, like myArray(3) or myVector.at(3). In languages, indices start with 0 rather than 1, so an array with 4 elements has indices 0, 1, 2, and 3.

CHALLENGE ACTIVITY 2.2.1: Update the array's data values.

Start

Update myItems with the given code.

myItems

0	**91**

1	**1**
2	**55**
3	**97**
4	**46**
5	**73**
6	**99**

1	2	3	4	5	6

Check Next

PARTICIPATION ACTIVITY 2.2.2: 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) Given the following statements:

```
peoplePerDay[9] = 5;
```

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

What is the value of peoplePerDay[8]?

- 8
- 5
- 2

4) Assume N is initially 1. Given the following:

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

What is the value of peoplePerDay[2]?

- 15
- 2
- 45

PARTICIPATION ACTIVITY 2.2.3: 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

(*Note_language_neutral) This section is mostly language neutral

Provide feedback on this section