

CHAPTER 16

EXTRA RESOURCES

Additional Resources

1. “Small Basic Reference Documentation: Array Object” (<http://tiny.cc/arrayobject/>): Check out the Small Basic Array reference documentation.
2. “Array Basics” (<http://tiny.cc/arraybasics/>): Head to this site for more examples of what you can do with arrays.
3. Array Review and Examples (<http://tiny.cc/arrayreview/>): Review arrays and dig into more examples of arrays.
4. “Small Basic Poet” (<http://tiny.cc/sbpoet/>): Share the Poet program you created in this chapter with the community and see what they came up with!
5. “Sprite Arrays” (<http://tiny.cc/spritearrays/>): Find out how to store sprites in arrays and when you should do that.
6. “Convert Multi-Line Text into an Array of Lines” (<http://tiny.cc/arrayoflines/>): Follow this tutorial to learn how to get text into an array!
7. “Creation Methods of the Array Object” (<http://tiny.cc/creationmethods/>): Dig deeper into an alternate way to create arrays.

8. “Array Mix” (<http://tiny.cc/arraymix/>): Learn more about why you don’t mix arrays.
9. “European Capitals” (<http://tiny.cc/eurocapitals/>): See more details about the European capitals program in the Practice Exercises.

Review Questions

Answer whether the following statements are true or false:

1. Arrays indexed by strings are called associative arrays.
2. Associative arrays are also called maps, or dictionaries.
3. Associative arrays are usually used to create associations between data pairs (named keys and values).
4. You can view an associative array as a lookup table that maps keys to values.
5. The values you store in an associative array must be integers.
6. The key (or index) in an associative array is case insensitive.
7. You can use the `IsArray()` method of the `Array` object to find out if an identifier in your program is an array or not.
8. The `GetItemCount()` method of the `Array` object returns the number of elements in an array.
9. When you use `ContainsIndex()` to search an associative array for a key, the search is case sensitive.
10. When you use `ContainsValue()` to search an associative array for a value, the search is case insensitive.

Answer the following review questions:

11. The following array shows the ages of Marvel heroes:

```
age["Sub-Mariner"] = 76
age["Captain America"] = 74
age["Groot"] = 55
age["Hulk"] = 53
```

What’s the output of the following statements?

```
TextWindow.WriteLine(age["Sub-Mariner"])
TextWindow.WriteLine(age["Captain America"] + age["Hulk"])
TextWindow.WriteLine(age["Invisible Woman"])
```

12. What does the `GetAllIndices()` method return?

Practice Exercises

1. Open the file *Contractions.sb* in this chapter's folder and run it. The program presents the user with a series of phrases (such as *he is*) and asks them to enter its contraction (such as *he's*). The program checks the user's answer and provides feedback. Here's a sample output of this program:

```
The contraction of [He is]: he's
Very good!

The contraction of [It is]: It's
Very good!

The contraction of [We are]: Wer'e
Sorry, the correct answer is: We're
```

After running the program, study the code and explain how it works.

2. Create a program that helps a user review the scientific names of bones in the human skeleton. Have the program describe a bone or a group of bones, and then ask the user to enter the bone's scientific name. A sample run of the program is shown here:

```
Heel bones; two of them: Calcaneus
Very good!

Wrist bones; seven of them: Carpals
Very good!

Top 7 vertebrae in the vertebral column; neck: Lumbar Vertebrae
Sorry, the correct answer is Cervical Vertebrae
```

3. Write a program that quizzes the user on the phases of the moon. Have the program describe one phase of the moon, and then ask the user to enter the corresponding name.
4. Create a program that helps a user review some terms related to earth science. Have the program describe a term, and then ask the user to enter its scientific name. A sample run of the program is shown here:

```
The middle layer of the sun's atmosphere: Chromosphere
Very good!

A ball of ice and dust whose orbit is a long, narrow ellipse: Comet
Very good!

The central part of the sun, where nuclear fusion occurs: Corona
Sorry, the correct answer is Core
```

5. Create a flashcard program that lets the user review their knowledge of planets. Make the program display a fact about one of the planets, wait for the user to press any key, and then reveal the planet's name. A sample run of the program is shown here:

```
** Press any key to see the back of the card **
```

```
After Earth, the planet most likely to support life  
Mars
```

```
Brightest planet (when viewed from Earth)  
Venus
```

```
closest planet to the sun
```

6. Write a program that keeps track of the major European capitals. The program prompts the user to enter the name of a European country and displays its capital. The program should use the following data:

```
Belgium (Brussels); France (Paris); Germany (Berlin); Greece (Athens);  
Ireland (Dublin); Italy (Rome); Poland (Warsaw); Portugal (Lisbon); Spain  
(Madrid); United Kingdom (London)
```

7. Write a flashcard program that lets the user review their knowledge of space. Have the program display a fact or definition of something related to space, wait for the user to press any key, and then reveal the answer. A sample run of the program is shown here:

```
** Press any key to see the back of the card **
```

```
Made up of the sun and everything that surrounds it  
solar system
```

```
When an object travels around another object in its orbit  
revolution
```

```
When an object spins around on its axis
```

8. Create an associative array that holds the coldest temperatures on record (in degrees Fahrenheit) for all of the states in the United States. Write a program that prompts the user to enter the name of a state and then displays the coldest temperature on record for that state. (Hint: see https://en.wikipedia.org/wiki/U.S._state_temperature_extremes.)