# Lab 6: Chapter 7, “Arrays” SOLUTION

The following exercises are intended to help you apply and practise the concepts introduced in this module. This work is **not** submitted for marks. The questions are from the end of the chapter in your text under the “Exercises” or “Programming Projects” headings.

Try to answer the questions on paper first. Insert the code in a Java program to see the actual result.

1. Which of the following are valid declarations? Which instantiate an array object? Explain your answers.

int primes = {2, 3, 5, 7, 11};  
float elapsedTimes[ ] = {11.47, 12.04, 11.72, 13.88};   
int[ ] scores = int[30];  
int[ ] primes = new {2, 3, 5, 7, 11};  
int[ ] scores = new int[30];  
char grades[ ] = { 'a', 'b', 'c', 'd', 'f'};  
char[ ] grades = new char[ ];

**SOLUTION**

int primes = {2, 3, 5, 7, 11};  
**// not valid, no array [ ] reference indicated**

float elapsedTimes[ ] = {11.47, 12.04, 11.72, 13.88};  
**// valid and instantiates but warning about loss of precision**   
int[ ] scores = int[30];  
**// not valid, missing new operator**   
int[ ] primes = new {2, 3, 5, 7, 11};

**// not valid, new is not used with initializer list**  
int[ ] scores = new int[30];  
**// valid and instantiates**  
char grades[ ] = { 'a', 'b', 'c', 'd', 'f'};  
**// valid and instantiates**  
char[ ] grades = new char[ ];  
**// not valid, dimension value missing**

1. Describe what problem occurs in the following code. What modifications should be made to it to eliminate the problems?

int[ ] numbers = {3, 2, 3, 6, 9, 10, 12, 32, 3, 12, 6};  
for (int count = 1; count <= numbers.length; count++)  
 System.out.println (numbers[count]);

**SOLUTION**

This is an ‘off by one’ problem: the loop counter will go from 1 to 11, while the actual array indices are 0 to 10. There are two possible modifications to solve the problem:

for (int count = 0; count < numbers.length; count++)

or

System.out.println (numbers[count-1]);

1. Write code that sets each element of an array called nums to the value of the constant INITIAL.

**SOLUTION**

for (int k = 0; k < nums.length; k++)  
 nums[k] = INITIAL;

1. Write code that prints the values stored in an array called names backwards.

**SOLUTION**

// note loop from names.length-1 to 0 by decrementing  
for (int k = names.length-1; k >= 0; k--)  
 System.out.println (names[k]);

1. Write code that sets each element of a boolean array called flags to alternating values (true at index 0, false at index 1, etc.).

**SOLUTION**

for (int k = 0; k < flags.length; k++)  
 if (k%2 == 0)  
 flags[k] = true;  
 else  
 flags[k] = false;

1. Write a method called sumArray that accepts an array of floating point values and returns the sum of the values stored in the array.

**SOLUTION**

double sumArray (double arr[ ])  
{  
 double sum = 0.0;  
 for (int k = 0; k < arr.length; k++)  
 sum += arr[k];  
 return sum;  
}