

Lab 4: Array and Object Use

Objectives

- To introduce the concept of array in Java.
- To understand how to declare an array, initialize an array and refer to individual elements in the array.
- To understand how to pass an array or array elements to function.
- To understand the concept of array of *Objects*.

Syntax

To use an array in a program, you must declare a variable to reference the array, and you must specify the type of array the variable can reference.

```
dataType[] arrayRefVar;
```

or

```
dataType arrayRefVar[]; // Not preferred
```

An array can be declared (created) as follows:

```
dataType []arrayName = new dataType[sizeOfAnArray];
```

Passing an array to a method

Arrays are objects therefore they are passed to the method by reference.

To pass an array to a method as a parameter you have to write the following:

```
modifiers data-type method-name (dataType []arrayName) {...}
```

Exercises

1. A building with 16 apartments is to be represented as an array. Write an application that reads an apartment number and the number of occupants in the apartment. The apartment number serves as an index into an array of apartments. The components in the array represent the number of people who live in the apartment. Print the number of people in the building, the average number of people per apartment, the number of apartments with above-average occupancy, and the number with below-average occupancy.
2. Write an application that keeps track of stock prices for five stocks for one week. Choose any five stocks on the New York Stock Exchange. Use actual stock prices for one week as your data.
Your application should be interactive. Prompt the user to enter the names of the five stocks. Then prompt the user to enter a week's worth of prices for each stock. The application should print the table showing the stock values for a week, the average daily value of the stocks, and the average price for each stock for the week.

3. Write an application that creates a one dimensional array of Students. Then write a test program to print the student details in a list.

Tips for solution:

Use the following *Student* class to solve the question.

```
public class Student {
    private int stId;
    private String stName;
    public Student(int stId, String stName) {
        super();
        this.stId = stId;
        this.stName = stName;
    }
    public String toString() {
        String st1 = "Student ID :" + this.stId + "\t";
        String st2 = "Student name :" + this.stName + ".\n\n";
        return st1+st2;
    }
}
```

To create an array of 10 Students do the following:

```
Student array = new Student[10];
```

To create a new student, do the following:

```
array[index] = new Student(120, "Ali Jumah");
```

To print the student details, do the following:

```
array[index].toString();
```