Java Sandhills Car Care

Contents

Time required: 90 minutes

Please read the directions carefully before beginning the assignment.

- Comment your code as shown in the tutorials and other code examples.

- Follow all directions carefully and accurately.

- Think of the directions as minimum requirements.

Parallel Arrays

Parallel arrays are two or more arrays in which attributes related to the same entity are stored in the same position.

Example

Tom, Dick and Harry have the vital statistics shown at right. You can store this information in three parallel arrays as:

Name	Height	Weight
Tom	67"	120 lbs.
Dick	71	175
Harry	74	205

```
String [] name   = { "Tom", "Dick", "Harry" };
double [] height = { 67, 71, 74 };
double [] weight = { 120, 175, 205 };
```

Position 0 has all the information on Tom, position 1 on Dick and position 3 on Harry.

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Tom and Harry's HealthCare Tutorial

Type in the following code. **TomAndHarry.java**

```java
1  /**
2   * Name: TomAndHarry.java
3   * Written by:
4   * Written on:
5   * Purpose: Demo of Parallel Arrays
6   */
7
8  import java.util.*;
9
10 public class TomAndHarry {
11     public static void main(String[] args) {
12         Scanner input = new Scanner(System.in);
13
14         // Create 2 parallel arrays
15         String[] name = { "1. Tom", "2. Harry" };
16         int[] height = { 67, 71 };
17
18         // Welcome user to the program
19         System.out.println("*********************************************");
20         System.out.println("*  Welcome to Tom and Harry's Health Care  *");
21         System.out.println("*********************************************");
22
23         while (true) {
24             // Loop through both arrays one index at a time
25             for (int x = 0; x < name.length; ++x) {
26                 // Print the current parallel array elements
27                 System.out.println(name[x] + ": " + height[x] + " inches");
28             }
```

```java
30          // Prompt the user for input
31          System.out.println("************************************************");
32          System.out.print("Enter a number (0 to quit): ");
33
34          // Get input from user
35          int selection = input.nextInt();
36          // If selection is 0, exit the loop
37          if (selection == 0) {
38              break;
39          }
40
41          // Subtract 1 to align the selection number
42          // with the index of the array
43          selection = selection - 1;
44          // Use selection as the index to access the array elements
45          System.out.println("\nYou chose: " + name[selection] +
46                  " is " + height[selection] + " inches tall.");
47          System.out.println("\n************************************************");
48      }
49
50      input.close();
51  }
52 }
```

Example run:

```
**********************************************
*   Welcome to Tom and Harry's Health Care   *
**********************************************
1. Tom: 67 inches
2. Harry: 71 inches
**********************************************
Enter a number (0 to quit): 1

You chose: 1. Tom is 67 inches tall.


**********************************************
1. Tom: 67 inches
2. Harry: 71 inches
**********************************************
Enter a number (0 to quit): 2

You chose: 2. Harry is 71 inches tall.


**********************************************
1. Tom: 67 inches
2. Harry: 71 inches
**********************************************
Enter a number (0 to quit): 0
```

Assignment 1: Add Weight Array to Tom and Harry

Take the previous tutorial. Add a weight array.

Example run:

```
*  Welcome to Tom and Harry's Health Care  *
********************************************
1. Tom: 67 inches 120 pounds
2. Harry: 71 inches 175 pounds
*****************************************
Enter a number (0 to quit): 1

You chose: 1. Tom is 67 inches tall. and weighs 120 pounds.

*****************************************
1. Tom: 67 inches 120 pounds
2. Harry: 71 inches 175 pounds
*****************************************
Enter a number (0 to quit): 2

You chose: 2. Harry is 71 inches tall. and weighs 175 pounds.

*****************************************
1. Tom: 67 inches 120 pounds
2. Harry: 71 inches 175 pounds
*****************************************
Enter a number (0 to quit): 0
```

Assignment 2: Sandhills Car Care

Here's What I Want You to Do

Write an application that shows a user a list of available services and allows them to be purchased.

Here's Why I Want You to Do It

Demonstrate understanding of:

Variables, Input, Decisions, Strings, Loops, Arrays

Requirements

Write an application that shows the user a list of available services held in an array. These services should be printed out like a menu and allow the user to choose a number to purchase the service.

1. Oil Change

2. Tire Rotation

3. Battery Check

4. Brake Inspection

Another parallel array holds the price for each service.

serviceArray	priceArray
Oil Change	$25
Tire Rotation	$22
Battery Check	$15
Brake Inspection	$5

Pseudocode

High-level pseudocode shows the major processes of the program from the user's perspective.

```
Display menu
After the user makes a choice from the menu, print the selection that they
chose
Allow the user to choose whether to add another item or finish the sale.
Display a total of the sale
```

The next step is to break down the high-level pseudocode into smaller steps that can be turned into code.

```
create arrays serviceArray and priceArray
int serviceChoice // Store user choice
while
    print menu with for loop
    get choice from user
    serviceChoice = serviceChoice - 1
    Display "You chose serviceArray[serviceChoice] at priceArray[serviceChoice]$"
    sale = priceArray[i]
    totalSale = sale + totalSale
    choose another service or finish the sale
display total
```

An example of how to display information from two parallel arrays named service and price. This code prints out the menu.

```java
for (int x = 0; x < service.length; ++x) {
    System.out.println(service[x] + " : $" + price[x]);
}
```

Example run:

```
********************************************
Welcome to Sandhills Car Care
********************************************
1. Oil change : $25
2. Tire rotation : $22
3. Battery check : $15
4. Brake inspection : $5
********************************************
Enter a service (0 to quit): 1

You chose: 1. Oil change price is $25

********************************************
1. Oil change : $25
2. Tire rotation : $22
3. Battery check : $15
4. Brake inspection : $5
********************************************
Enter a service (0 to quit): 3

You chose: 3. Battery check price is $15

********************************************
1. Oil change : $25
2. Tire rotation : $22
3. Battery check : $15
4. Brake inspection : $5
********************************************
Enter a service (0 to quit): 0
********************************************
Your total bill is: $40
```

Assignment Submission

1. Attach the pseudocode.

2. Attach the program files.

3. Attach screenshots showing the successful operation of the program.

4. Submit in Blackboard.