

C++ Sandhills Car Care

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Time required: 90 minutes

Online Tutorial

Watch the following video tutorials as a refresher.

- <https://www.youtube.com/watch?v=ZLk7qV9wEDw>
- <https://www.youtube.com/watch?v=tT6KJlPoORU>

Sandhills Car Care

We are going to repeat a Java assignment in C++, Sandhills Car Care.

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

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.

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()
int serviceChoice // Store use 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.

```
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.