Array Lab

Lab 1: Single Dimension

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
int[] ids = new int[3];

// Assign values to elements
ids[0] = 1;
ids[1] = 2;
ids[2] = 3;

Console.WriteLine("Length = " + ids.Length);

Console.WriteLine();
foreach (int item in ids) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Alternate Syntax

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
int[] ids = new int[] { 1, 2, 3 };
int[] ids = { 1, 2, 3 };

foreach (int item in ids) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

String Array

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[] names = { "Helmet", "10 Speed Bicycle", "Biking Gloves" };

foreach (string item in names) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Product Array

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
using CSharpSamples;

Product[] products = new Product[2];

products[0] = new Product {
  ProductId = 1,
  Name = "Helmet"
};

products[1] = new Product {
  ProductId = 2,
  Name = "10 Speed Bicycle"
};

foreach (Product item in products) {
  Console.WriteLine(item.ProductId + " - " + item.Name);
}
```

Try It Out

Run the application and view the output.

Lab 2: Manipulating Array Data

Change an Array Value

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[] names = { "Helmet", "10 Speed Bicycle", "Biking Gloves" };

names[1] = "Brake Pad";

// Display new array
foreach (string item in names) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Add a New Value

There is no way to add a new value, you must create a new array. Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[] names = { "Helmet", "10 Speed Bicycle", "Biking Gloves" };

// Create new array of the old size + 1
string[] names2 = new string[names.Length + 1];

// Copy old values to new array
for (int index = 0; index < names.Length; index++) {
  names2[index] = names[index];
}

// Add item into last position
names2[names2.Length - 1] = "Brake Pad";

// Display new array
foreach (string item in names2) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Add a New Value using CopyTo()

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[] names = { "Helmet", "10 Speed Bicycle", "Biking Gloves" };

// Create new array of the old size + 1
string[] names2 = new string[names.Length + 1];

// Copy old values to new array
names.CopyTo(names2, 0);

// Add item into last position
names2[names2.Length - 1] = "Brake Pad";

// Display new array
foreach (string item in names2) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Removing an Element

There is no way to remove an element from an array, you must create a new array and eliminate the element to remove. Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[] names = { "Helmet", "10 Speed Bicycle", "Biking Gloves" };

// Create new array of the old size - 1
string[] names2 = new string[names.Length - 1];

// Copy old values to new array
// Remove the 2nd element
int originalIndex = 0;
int newIndex = 0;
while (originalIndex < names.Length) {
  if (originalIndex != 1) {
    names2[newIndex] = names[originalIndex];
    newIndex++;
  }
  originalIndex++;
}

// Display new array
foreach (string item in names2) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.

Lab 3: Multiple Dimensions

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[,] products = {
  { "PROD1", "PROD2", "PROD3" },
  { "Helmet", "10 Speed Bicycle", "Biking Gloves" }
};

Console.WriteLine(products.Length);
Console.WriteLine(products.Rank);

Console.WriteLine();
Console.WriteLine(products[0, 0]);
Console.WriteLine(products[0, 1]);
Console.WriteLine(products[0, 2]);

Console.WriteLine();
Console.WriteLine(products[1, 0]);
Console.WriteLine(products[1, 1]);
Console.WriteLine(products[1, 2]);
```

Try It Out

Run the application and view the output.

Use For Loop

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[,] products = {
  { "PROD1", "PROD2", "PROD3" },
  { "Helmet", "10 Speed Bicycle", "Biking Gloves" }
};

Console.WriteLine(products.Length);
Console.WriteLine(products.Rank);

Console.WriteLine();
for (int index = 0; index < 3; index++) {
  Console.WriteLine(products[0, index] + " - " + products[1,
index]);
}
```

Try It Out

Run the application and view the output.

Use ForEach

Open the **Program.cs** file and replace the entire contents of the file with the following code.

```
string[,] products = {
  { "PROD1", "PROD2", "PROD3" },
  { "Helmet", "10 Speed Bicycle", "Biking Gloves" }
};

Console.WriteLine(products.Length);
Console.WriteLine(products.Rank);

Console.WriteLine();
foreach (string item in products) {
  Console.WriteLine(item);
}
```

Try It Out

Run the application and view the output.