**CS 131 Exercises**

**C#—A Beginner’s Guide**

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**CS 131 Exercises - Chapter 10 : Generics**

**Exercise 1.** Create a new C# Console project called Swap.

* Define a static generic method called swap with return type void. Give the method definition two reference parameters called ‘a’ and ‘b’.
* *Note the reference to the generic <T> type between the function name and the parameter list.*

static void swap<T>(ref T a, ref T b)

* In the body of the function, output the value of the two arguments passed in.
* Create a variable defined as a generic type called ‘temp’. Assign the value of ‘a’ to temp.

T temp = a;

* Assign the value of ‘b’ to ‘a’, then assign the value stored in ‘temp’ to ‘b’. *This should have swapped the values between ‘a’ and ‘b’, using ‘temp’ as a temporary placeholder.*
* Output the value of the two variables again.
* Inside Main(), declare four variables, two integers, and two strings.
* Pass the two integers to the swap() function, including the int type declaration:

swap<int>(ref a, ref b);

* Repeat the call to swap(), this time pass the two string variables as arguments.

In both cases, the initial string displaying the values of the two parameter arguments should show the values in reverse order that you pass them.

**Exercise 2.** Create a new C# Console project called ColorList.

* Create a utility method called Print to use with the List’s built in ForEach function:

private static void Print(string s)

{

Console.WriteLine(s);

}

* In the Main method of the application, define a List of strings called Colors:

List<string> Colors = new List<string>();

* Call the Add( ) method of the Colors list to add the following string items in this order:

*White, Red, Orange, Yellow, Green, Blue, Indigo, Violet, Black*

* Print the list by passing the Print method to the list’s ForEach method.
* Use the Count( ) method of your list and save the return.
* Write the value to the console in a string that says “The Colors list has {0} items”.
* Sort the list by calling its Sort() method
* Use a foreach loop to write all the items to the console:

foreach (string color in Colors)

{

Console.WriteLine(color);

}

* Use indexOf() to find the index number for the string “Violet”

int index = colors.IndexOf("Violet");

* Use Remove( ) to remove the item Violet using the index number.
* Use Insert( ) to put the string Purple in the second last location.
* Repeat the foreach loop to see the modified list.
* Use the Contains( ) method to determine if Magenta is part of the list (it should not be):

if (Colors.Contains("Magenta")

{

Console.WriteLine("Magenta is in the list");

}

* Use Add( ) to add Magenta to the list. Repeat the Contains() code and it should output the message.
* Repeat the foreach loop.

Where did Add( ) place Magenta in the list? Why do we need an Insert( ) method?