File IO: Research

using System;

using System.Collections.Generic;

using System.IO;

namespace FileIO

{

    class Program

    {

        private static int STUDENT\_NAME\_OFFSET = 1;

        private static int STUDENT\_ADDRESS\_OFFSET = 3;

        private static int STUDENT\_AGE\_OFFSET = 5;

        static void Main(string[] args)

        {

            /\*

             \* JSON - Java Script Object Notation

             \* - lightweight data interchange format

             \* - not a lot of syntax rules for JSON

             \* - key/value pairs (like a database or dictionary)

             \* - language independent

             \* - easy for machines to parse and human readable

             \* -

             \* - JSONLint.com - free resource online to verify that the info is valid JSON

             \* - {} = object [] = array

             \*

             \*

             \*/

            /\*

             \* File I/O

             \* - you must close any files that you open.

             \* - you should always be very careful about what fiules you

             \*      touch, modify, or delete.

             \* - Using : used to ensure that files are closed

             \*

             \*/

            Program instance = new Program();

            instance.CreateFile();

            List<Student> students = new List<Student>();

            students.Add(new Student("bob", "123 Gru way", 100));

            students.Add(new Student("kevin", "123 Gru way", 120));

            students.Add(new Student("stew", "123 Gru way", 109));

            instance.SaveStudentsToTxt(students, "students.txt");

            instance.SaveStudentsToJson(students, "students.json");

            students.Clear();

            students = instance.LoadStudentsFromTxt("students.txt");

            Console.WriteLine("Press any key to continue.");

            Console.ReadKey();

        }

        public void CreateFile()

        {

            //IDisposable interface - calls Dispose()

            // ..\ <-- go up a file directory: @"..\..\HelloWorld.txt"

            using (StreamWriter sw = new StreamWriter("HelloWorld.txt"))

            {

                sw.WriteLine("Hello World!");

            }

        }

        private void SaveStudentsToTxt(List<Student> students, string fileName)

        {

            using (StreamWriter sw = new StreamWriter(fileName))

            {

                for (int i = 0; i < students.Count; i++)

                {

                    Student tmp = students[i];

                    sw.WriteLine($"NAME - {tmp.Name}");

                    sw.WriteLine($"ADDRESS - {tmp.Address}");

                    sw.WriteLine($"AGE - {tmp.Age}");

                }

            }

        }

        private void SaveStudentsToJson(List<Student> students, string fileName)

        {

            using (StreamWriter sw = new StreamWriter(fileName))

            {

                sw.WriteLine("[");

                for (int i = 0; i < students.Count; i++)

                {

                    Student tmp = students[i];

                    sw.WriteLine("{");

                    sw.WriteLine($"\t\"Name\" : \"{tmp.Name}\",");

                    sw.WriteLine($"\t\"Address\" : \"{tmp.Address}\",");

                    sw.WriteLine($"\t\"Age\" : {tmp.Age}");

                    if (i == (students.Count - 1))

                    {

                        sw.WriteLine("}");

                    }

                    else

                    {

                        sw.WriteLine("},");

                    }

                }

                sw.WriteLine("]");

            }

        }

        private List<Student> LoadStudentsFromTxt(string fileName)

        {

            List<Student> students = new List<Student>();

            using (StreamReader sr = new StreamReader(fileName))

            {

               string contents = sr.ReadToEnd();

                char[] splitChars = { '-', '\n'};

                string[] splitResults = contents.Split(splitChars);

                for (int i = 0; i < splitResults.Length; i++)

                {

                    splitResults[i] = splitResults[i].Trim('\r');

                    splitResults[i] = splitResults[i].Trim();

                }

                for (int i = 0; i < splitResults.Length - 6; i += 6)

                {

                    string name = splitResults[i + STUDENT\_NAME\_OFFSET];

                    string address = splitResults[i + STUDENT\_ADDRESS\_OFFSET];

                    int age = Convert.ToInt32(splitResults[i + STUDENT\_AGE\_OFFSET]);

                    students.Add(new Student(name, address, age));

                }

            }

                return students;

        }

    }

}

QUESTIONS

1. What is JSON?
2. Why is JSON used in C# and other programming languages?
3. What is a streamwriter?
4. What is a streamreader?
5. How do you call upon a streamwriter or streamreader to read and write data for later.
6. Why is File.IO so difficult?
7. Why use JSON instead of sending to a .txt document?
8. How do you create a list from an imported string?
9. Why is there so much logic in programming?
10. Can this be the last time I have to use file.io =( no? okay =(