

# Technical Assignment

## Table of Contents

<b>Overview.....</b>	<b>1</b>
<b>Binary Data Files .....</b>	<b>1</b>
<b>INI Format .....</b>	<b>4</b>
<b>User Interface.....</b>	<b>4</b>
<b>Main Form.....</b>	<b>4</b>
Main Form Functionality .....	5
<b>Non-Visual Code Tips.....</b>	<b>5</b>
<b>Estimated Time to Complete.....</b>	<b>6</b>
<b>What to Pass Back to Us.....</b>	<b>6</b>
<b>Thank You!.....</b>	<b>6</b>

## Overview

This assignment will ask you to write code that allows the user to load binary and XML data from files into the UI, alter the data, and “Save As” the edited data back to files. This assignment involves both a simple user interface and non-visual data processing. It does not use traditional database components.

In case you don’t have a current Delphi license, we believe this assignment can be completed using the Community version of Delphi which can be accessed here:

<https://www.embarcadero.com/products/delphi/starter/free-download/>

## Binary Data Files

TSI will supply two binary data files:

- Lenovo.bin
- Dell.bin

These binary data files are a mixture of binary numbers (lengths of items) and ANSI character arrays (e.g. arrays of one-byte characters). **Note: the arrays of characters are *not* null-terminated.**

The format of the data in these files is as follows:

#	Field Name	Data Type	Description
1	HeaderLength	Word	Length in bytes of Overall header
2	FileTitleLength	Word	Count of ANSI characters that follow
3	FileTitle	AnsiChar	Array of ANSI characters forming text of file title
4	ItemCount	Word	Count of items that follow
<b><i>The following fields repeat "ItemCount" number of times (once for each item)</i></b>			
5	ItemLength	Word	Total length in bytes of item that follows. Length includes this 2-byte item length.
6	ItemNameLength	Word	Count of ANSI characters that follow
7	ItemName	AnsiChar	Array of ANSI characters forming text of item name
8	ItemPriceLength	Word	Count of ANSI characters that follow
9	ItemPrice	AnsiChar	Array of ANSI characters forming text of item price (e.g. "\$799.99")
10	ItemDescLength	Word	Count of ANSI characters that follow
11	ItemDesc	AnsiChar	Array of ANSI characters forming text of item description

Here are two screenshots of the binary data provided, for your reference. The actual binary files will be included.

# Lenovo.bin

```

0000: 10000E00 4C656E6F 766F204C 6170746F .... Leno vo L apto
0010: 70730300 66001300 49646561 50616420 ps.. f... Idea Pad
0020: 466C6578 20332831 31222907 00243335 Flex 3(1 1").. $35
0030: 342E3939 4600506F 72746162 6C652032 4.99 F.Po rtab le 2
0040: 2E366C62 73203220 696E2031 20776974 .6lb s 2 in 1 wit
0050: 68207765 6263616D 20707269 76616379 h we bcam pri vacy
0060: 20736875 74746572 20666F72 20616464 shu tter for add
0070: 65642073 65637572 6974792E 5A000C00 ed s ecur ity. Z...
0080: 4C656769 6F6E2037 69313522 08002431 Legi on 7 ils" ..$1
0090: 3734392E 39394000 5072656D 69756D20 749. 99$. Prem ium
00A0: 4E455720 466C6167 73686970 2032306D NEW Flag ship 20m
00B0: 6D204D65 74616C20 43686173 7369732E m Me tal Chas sis.
00C0: 20496D70 72657373 69766520 6F6E6C79 Imp ress ive only
00D0: 20342E36 6C62732E 4C001400 596F6761 4.6 lbs. L... Yoga
00E0: 20433734 30203134 22202D20 4D696361 C74 0 14 " - Mica
00F0: 07002437 37392E39 392B0045 78747261 ..$7 79.9 9+.E xtra
0100: 20707269 76616379 20776974 68205472 pri vacy wit h Tr
0110: 7565426C 6F636B20 77656263 616D2073 ueBl ock webc am s
0120: 68757474 6572          hutt er

```

# Dell.bin:

```

0000: 00000C00 44656C6C 204C6170 746F7073 .... Dell Lap tops
0010: 0300C200 03005850 53070024 3739392E .... ..XP S...$ 799.
0020: 3939B200 58505320 6C617074 6F707320 99.. XPS lapt ops
0030: 616E6420 322D696E 2D317320 61726520 and 2-in -ls are
0040: 70726563 6973696F 6E206372 61667465 prec isio n cr afte
0050: 64207769 74682070 72656D69 756D206D d wi th p remi um m
0060: 61746572 69616C73 2C206665 61747572 ater ials , fe atur
0070: 696E6720 7374756E 6E696E67 20646973 ing stun ning dis
0080: 706C6179 7320616E 64207468 65207065 play s and the pe
0090: 72666F72 6D616E63 6520796F 75206465 rfor manc e yo u de
00A0: 6D616E64 20746F20 65787072 65737320 mand to expr ess
00B0: 796F7572 20637265 61746976 65207365 your cre ativ e se
00C0: 6C662061 6E642079 6F757220 62696720 lf a nd y our big
00D0: 69646561 732E8C00 0900416C 69656E77 idea s... ..Al ienw
00E0: 61726508 00243135 34392E39 39750057 are. ..$15 49.9 9u.W
00F0: 69746820 69636F6E 69632064 65736967 ith icon ic d esig
0100: 6E732C20 68696768 2D706572 666F726D ns, high -per form
0110: 616E6365 2067616D 696E6720 616E6420 ance gam ing and
0120: 7072656D 69756D20 66656174 75726573 prem ium feat ures
0130: 2C20416C 69656E77 61726520 64656C69 , Al ienw are deli
0140: 76657273 20746865 206D6F73 7420696D vers the mos t im
0150: 6D657273 69766520 65787065 7269656E mers ive expe rien
0160: 6365732E 8B000800 47205365 72696573 ces. .... G Se ries
0170: 07002437 32392E39 39760047 20536572 ..$7 29.9 9v.G Ser
0180: 69657320 65717569 70732079 6F752077 ies equi ps y ou w
0190: 69746820 616C6C20 74686520 65737365 ith all the esse
01A0: 6E746961 6C732079 6F75206E 65656420 ntia ls y ou n eed
01B0: 746F2065 78706572 69656E63 65207370 to e xper ienc e sp
01C0: 6C69742D 7365636F 6E642072 6573706F lit- seco nd r espo
01D0: 6E736976 656E6573 7320616E 6420696D nsiv enes s and im
01E0: 6D657273 69766520 67616D65 706C6179 mers ive game play
01F0: 2E

```

## INI Format

You should devise your own convention for storing the same data detailed above in an INI file. You should write code that can read in data from and write out data to your INI format. TSI is not providing the INI format. If you would prefer, you could substitute XML or JSON formats for the INI format, but using INI should be faster for most people.

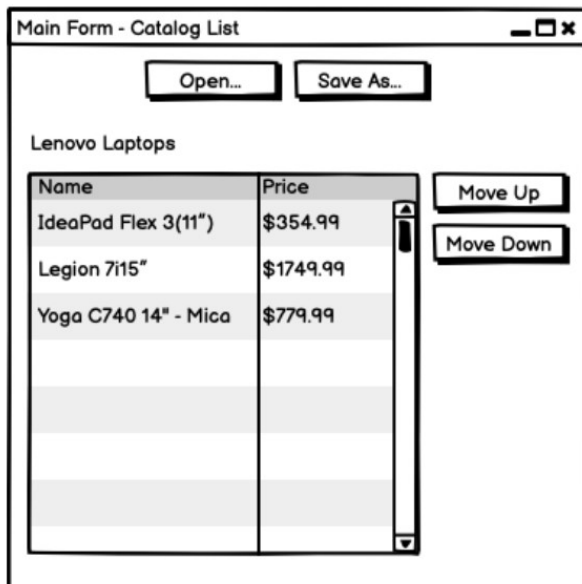
## User Interface

We have tried to simplify the UI requirements as much as possible. The user interface should consist of only one form:

- A **main form** that
  - allows the user to open one file at a time,
  - loads the data from the file into memory,
  - lists the items in a TListView,
  - allows the user to reorder the items in memory (by moving them up and down in the TListView, and
  - allows the user to “save-as” the reordered items to a file.

## Main Form

The main form should be auto created and look something like the following:



Name	Price
IdeaPad Flex 3(11")	\$354.99
Legion 7i15"	\$1749.99
Yoga C740 14" - Mica	\$779.99

Move Up

Move Down

The main form should be resizable, and the controls should keep good proportions and relationships to each other when resized. The main form should have a minimum size to keep it from getting too small.

## Main Form Functionality

### *Open button*

This button should display a file open dialog box. The file open dialog box should offer two file extensions: \*.bin and \*.ini. If the user successfully selects a file, the data should be read into memory based on the selected format and the TListView below should be populated with the data from the file.

### *Save As button*

This button should display a save as dialog box. The save as dialog box should offer two file extensions: \*.bin and \*.ini. If the user successfully provides a valid file name and location, the data should be written out to the file in the format specified by the user (INI or binary). **Note: the user should be able to read the data in from a file of one type (e.g. INI) and write it out to the other type (e.g. binary).** This button should be disabled if no file is loaded.

### *Title Label*

This label should contain the *FileTitle* data from the loaded file.

### *TListView control*

This control should display the data items loaded from the file in the order that they appear in the file. The headers do not need to sort the columns. You do not need to show the *ItemDesc* field in this *TListView*, just the *ItemName* and *ItemPrice* (as shown).

### *Move Up button*

This button should move the selected data item up one place in the TListView. This button should be disabled if no file is loaded or if no item is selected in the TListView.

### *Move Down button*

This button should move the selected data item down one place in the TListView. This button should be disabled if no file is loaded or if no item is selected in the TListView.

## Non-Visual Code Tips

We would like to see you define your own classes and create objects to hold the data.

Some separation between data model and view will be appreciated. We are interested in how you will associate the data for each item with each TListView item in the TListView.

The Delphi project should contain more than one unit.

Neat code, with well-named classes, fields, variables, and methods will be appreciated. It doesn't matter if you use different naming conventions than TSI as long as you are consistent.

### Estimated Time to Complete

We estimate this task can be completed 8 hours or less, depending on how long it takes you to comprehend the binary data portion. It may take longer if you don't have a lot of recent Delphi experience.

### What to Pass Back to Us

We would appreciate getting back from you both the source code to the Delphi project and a compiled EXE that we can run.

### Thank You!

We appreciate your being willing to perform this technical evaluation task! If you have any questions, please let us know.