Assignment 2: Option A - Sorter

Description

You will write a pair of programs which will sort a list of numbers. The sorting algorithm and file management routines should be in a seperate unit which will be used by both programs.

Part A

Write a console application which will read in a list of numbers and store them in a file. Input will be given by $n, 1 \leq n \leq 1000000$ followed by n integers.

Part B

Write a windows application which will sort the list of numbers stored by your console application. It should display the sorted results in a listbox.

Assignment 2: Option B - Connectivity

Description

Write a pair of programs which will read a network of cities and roads and determine the best way to add enough roads to connect all the cities.

Part A

Write a console application which will read in the network and store it in a text file. Input will be given by $n, 1 \leq n \leq 100$ followed by n lines which repesent a matrix of the distances between cities $1 \ldots n$, a value of -1 indicates that no road can be built between these cities. This will be followed by m followed by m lines containing a pair of integers a, b which indicates that a road exists between city a and city b.

Part B

Write a windows application which will determine this best way to add the necessary roads. It should output which roads need to be added in a listbox and should also calculate the total cost required.

Useful Information: Dynamic arrays and Listbox

Delphi allows you to specify the size of an array at runtime, also you are not limited to 64K per variable. Sample code – dynamic arrays:

```
Var A : Array of Integer; //NOTE no [i..j] is specified
Begin
  SetLength(A,i);
  For i := Low(A) to High(A) do ReadLn(A[i]); \\NOTE Low(A) is always 0 for dynamic arrays
  SetLength(A,j); //you can choose to reset the length later
End.
```

The Listbox has several useful methods but the only one you are likely to need is *Listbox.Items.add(<String>);*

Marking and Due date

Option A will be worth less than Option B, the assignment is due Thursday, December 19 at the beginning of class. The assignment will be collected by Mrs. Plachta if I am not present.