



University of Arizona, Department of Computer Science

CSc 520 — Assignment 7 — Due 10:30, Mon March 3 — 1%

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February 24, 2003

1 A Telephone Database

To get a feel for Modula-2, implement the following:

- A generic linked list module `List`. Just implement the minimum set of operations to support the `Map` module below. `List` should be implemented as a separately compiled module. `List.T` should be an opaque type.
- A generic module `Map` that can map strings to a variety of data types. `Map` should support the operations `Create`, `Insert` and `Lookup`. Here is one possible use of `Map`:

```
VAR s : Map.T;
VAR x : ARRAY [1..10] OF CHAR;
s := Map.Create();
Map.Insert(s, "Lisa", "555-1212");
Map.Insert(s, "Bart", "555-1212");
Map.Insert(s, "Beast", 666);
Map.Lookup(s, "Lisa", x);
InOut.WriteLine(x);
```

In this case `Insert` and `Lookup` take an `ARRAY OF WORD` as their generic argument. You could also use `SYSTEM.ADDRESS`. `Map` should be implemented as a separately compiled module. `Map.T` should be an opaque type. Use the `List` module as the basis for your implementation. You can deal with errors (such as missing data) any way you wish (including ignoring them).

- A simple telephone database program `Phone` that reads instructions from standard input for inserting data or querying the database:

```
$ phone
> I Lisa 555-1212
> I Bart 555-BART
> L Lisa
555-1212
```

Here, I means insert and L lookup. `Phone` should be implemented as a separately compiled main module.

- A `makefile` that encodes the order of compilation between the modules. `make` should correctly build the program using the minimum number of compilations, regardless of which module part is touched.

2 Submission and Assessment

The deadline for this assignment is 10:30AM, Monday, March 3. You should submit the assignment electronically using the Unix command `turnin cs520.7 <files>`. This assignment is worth 1% of your final grade.

Don't show your code to anyone, don't read anyone else's code, don't discuss the details of your code with anyone. If you need help with the assignment see the instructor.