1 Pascal (1%)

To get a feel for Pascal, implement the following:

- A “generic” sorting routine that allows you to sort arrays of 10 integers as well as arrays of 10 booleans.
- Use arrays of variant records as your main data type.
- Use the bubble sort algorithm.
- Write a main program that sorts an array of integers as well as an array of booleans. Print the arrays before and after sorting them.

2 Modula-2 (1%)

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

- A “generic” sorting routine that allows you to sort arrays of arbitrary type.
- Your interface should look something like this:

```modula2
DEFINITION MODULE Sort;
  TYPE swap = PROCEDURE(VAR ARRAY OF SYSTEM.ADDRESS, INTEGER, INTEGER);
  TYPE compare = PROCEDURE(SYSTEM.ADDRESS, SYSTEM.ADDRESS):INTEGER;
  PROCEDURE sort(VAR ARRAY OF SYSTEM.ADDRESS; C:compare; S:swap);
END Sort.
```

In other words, `sort` should take an array of generic pointers (C’s `void*`) as argument, as well as two procedures which compare and swap elements of the array, respectively. The exact interface is up to you — use the above as a guideline.

- The `Sort` module must be separately compiled.
- Use the bubble sort algorithm.
- Write a separately compiled main program that sorts an array of integers as well as an array of booleans. Print the arrays before and after sorting them.
3 Ada (1%)

To get a feel for Ada, implement the following:

- A generic sorting routine that allows you to sort arrays of arbitrary type.
- Your sorting package should be generic both in the element type of the array and the length of the array. In other words, it should be possible to sort an array of 100 integers, 2000 booleans, 3 records, etc.
- The Sort package must be separately compiled.
- Use the bubble sort algorithm.
- Write a separately compiled main program that sorts an array of integers as well as an array of booleans. Print the arrays before and after sorting them.

4 Submission and Assessment

The deadline for this assignment is 10:30AM, Monday, March 29. You should submit the assignment electronically using the Unix command `turnin cs520.6 <files>`. This assignment is worth 3% 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.