January 24, 2000

C Exercises: Loops and Conditional Statements

3. (same as on Monday)
Write a program that reads $6 \times 200$ floating point numbers, namely 200 lines and 6 columns. To test your program copy the file:
\[ \sim kvollmay/classes.dir/capstone.s2001.dir/unix.C.intro.dir/vvinit.N200.eq \]
into your directory.
(a) Redirect the input.
(b) Read first the filename and then read from that file.
(c) Print into another file column 3 and column 1.
(d) How could you do (c) with awk?

4. Write a program that reads in a date and prints out if this date is during spring break (of this semester) or not.

5. Traffic Model
Copy the file
\[ \sim kvollmay/classes.dir/capstone.s2001.dir/unix.C.intro.dir/road.data \]
into your working directory. The file contains 100 integers describing a road of 100 lattice sites at a certain time. “-1” means an empty site and a number $\geq 0$ means a car with the corresponding speed in mi/h.
(a) How many cars are on this road?
(b) How many cars have a speed larger or equal 30 mi/h?
(c) For each car on the road determine its distance to the car in front of it. Use periodic boundary conditions (connect in your mind the last lattice site to the first, so that you have a circle), so that the last car has the first car in front of it.