

Computer Engineering 176: Lab Assignment 6

Using AWK

1. Create the following file, data, for use with awk.

BOUVIER, SELMA	F	50	C+
BURNS, MONTGOMERY	M	80	A
FLANDERS, MAUDE	F	40	B
FLANDERS, NED	M	45	B+
FLANDERS, ROD	M	8	A+
FLANDERS, TODD	M	6	A+
GRUMBLE, BARNEY	M	40	D
KRABAPPEL, EDNA	F	40	B
NAHASAPEEMAPETILON, APU	M	35	C
SIMPSON, BART	M	8	F
SIMPSON, HOMER	M	42	D-
SIMPSON, LISA	F	7	A+
SIMPSON, MAGGIE	F	1	B
SIMPSON, MARGE	F	41	B+
SKINNER, SEYMOUR	M	43	A

2. Write awk scripts to perform the following tasks:

- (a) Print data for all female students.
- (b) Print data for all female students with the last name of Simpson.
- (c) Print data for all students who received an A- or higher.
- (d) Print the average age of all students.
- (e) Print the first name and grade for each male over 40 years of age.
- (f) Print the average age for all students with the last name of Simpson.
- (g) Print the average age for all students in each family.
- (h) Print data for all students who last name starts with the letter "S".

3. Use the following action to write a shell script, kwic, that uses awk and sort to implement the KWIC program:

```
for (i = 1; i <= NF; i++) {
  for (j = 1; j <= NF; j++) {
    if (j > 1) printf " "
    printf "%s", $((i + j) % NF + 1)
  }
  printf "\n"
}
```

4. Modify the kwic script so that a comma separates the two parts of a shifted line in the output (e.g., fox, the quick brown).

Using RCS

1. Create the following script, `kwic`, and save it under RCS. Make sure your script works correctly.

```
#!/bin/sh

while read LINE; do
    set -- $LINE
    REST=""

    while [ $# -gt 0 ]; do
        echo "$*$REST"
        REST="$REST $1"
        shift
    done
done | sort
```

2. Modify `kwic` so that it can take input from either the standard input or from files on the command line. Save your new revision under RCS. (*Hint*: This is a one line change using `cat`.)
3. Modify `kwic` again so that a comma separates the two parts of a shifted line in the output (e.g., `fox, the quick brown`). Save your new revision under RCS.
4. Remove any working copy of `kwic` so you have only the RCS file.

Grading

Your scripts will be graded based on the following criteria:

- simplicity
- correctness
- comments
- robustness

When you are finished, demonstrate their use to the Teaching Assistant and provide hardcopies of each script. Note that you will need to check out each version of `kwic` one at a time in order to demonstrate its use.