

Homework 4

Due: 9 Apr 2009

Problem 4.1

You're familiar with using `ls`, but do you know its options? By running it and by reading the man page, determine what the command

```
ls -ailtu
```

does and how to interpret its output. As part of the explanation, show one or more lines of its output so that you can indicate what each piece means.

Problem 4.2

Write a program that reads in lines of the form

```
r=2.0 Th=30
```

and converts from polar coordinates to rectangular cartesian coordinates, printing the values to three decimal places in the form

```
(1.732, 1.000)
```

Note that the angle is given in degrees (for convenience in manually constructing examples), but the library trig functions assume radians.

Functions you'll want to read up on: `gets`, `strtod`, `sin`, `cos`.

Problem 4.3

Write a program that mimics the base functionality of the system utility `tail`: it should print the last n lines of a given file. The two main ways it is called are

```
tail file.txt
```

and

```
tail -23 file.txt
```

Your output should precisely match that of `tail` for any arguments of either of these forms, no matter the number, and no matter the size or contents of the file or whether the file even exists at all. (You don't have to handle other command-line options or multiple files.)

System call you'll probably want to read up on: `lseek`.