Extra Practice - Homework 5

1) You have a text file with arbitrary contents. Read the entire file into a list of strings. Each string contains one line of text. Remove any lines beginning with # and strip off any leading or trailing whitespace (/r /n as well) from each line.

2) You have a list of strings like this:

lst=[“1 2 3 4 5”,”1 3 5 7 9”,”1 4 8 12 16”,”1 5 10 15 20”]

write a program to turn this into a numpy array like this:

array([[1,1,1,1],[2,3,4,5],[3,5,8,10],[4,7,12,15],[5,9,16,20]])

Answers on next page

Practice answers:

1)

```
lines=[i.strip() for i in file("input.txt","r").readlines() if i[0]!="#"]
```

or (more readable)

```
infile=file("input.txt","r")          # open the file
lines=[]                              # results go in here
for line in infile:                   # iterate over lines in file
        if line[0]=="#" : continue    # skip comment lines
        lines.append(line.strip())    # strip() removes leading and trailing whtspc
```

2)

```
from numpy import *
lst=["1 2 3 4 5","1 3 5 7 9","1 4 8 12 16","1 5 10 15 20"]

ary=array([[int(i) for i in line.split()] for line in lst]).transpose()
```

or, long form:

```
lst2=[ ]
for line in lst:                          # loop over lines
        line=[int(i) for i in line.split()]   # convert string into list of ints
        lst2.append(line)                 # build up the new list

ary=array(lst2)                           # convert into a 2D array
ary=ary.transpose()                       # linear algebra. Matrix transposition
                                          # Swaps rows for columns
```