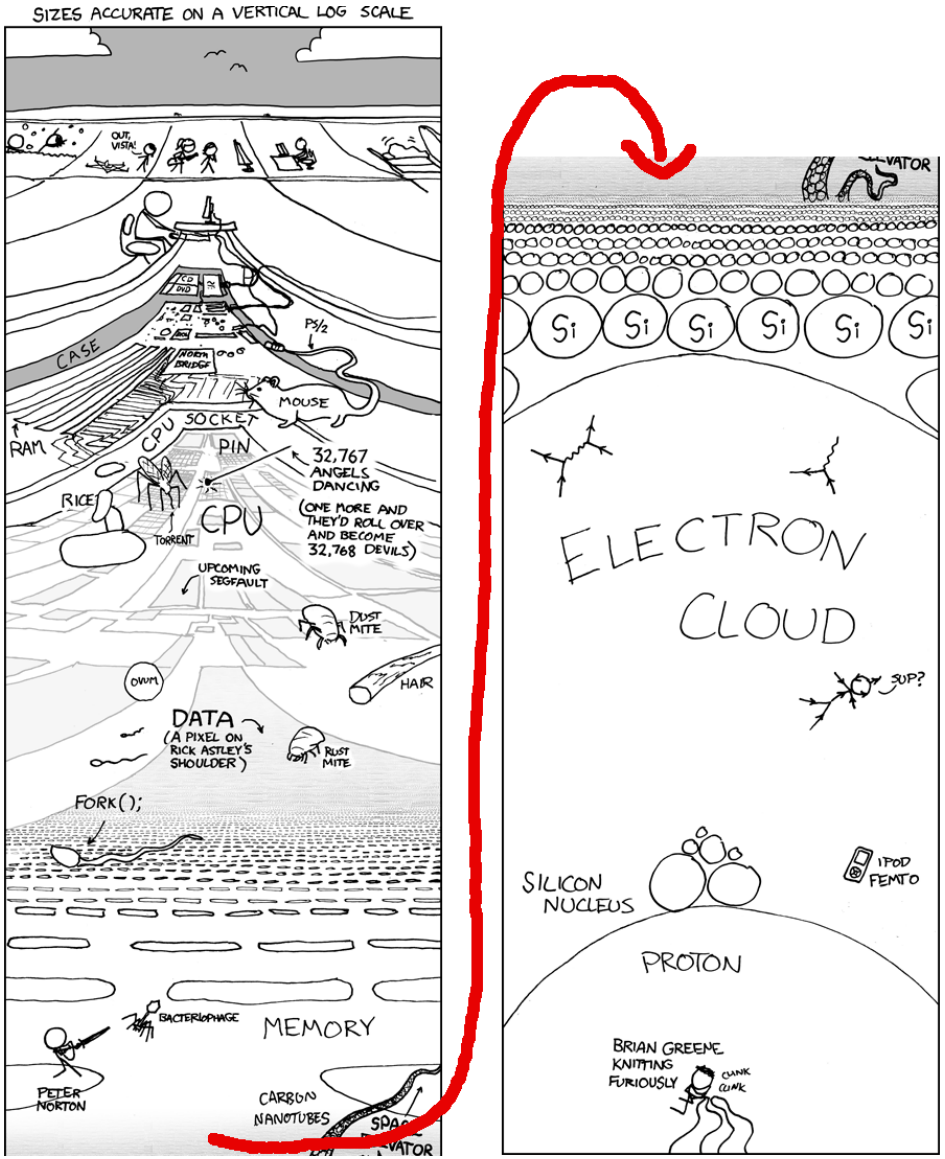
Advanced Variables: Vectors and Matrices (1)

Array variables

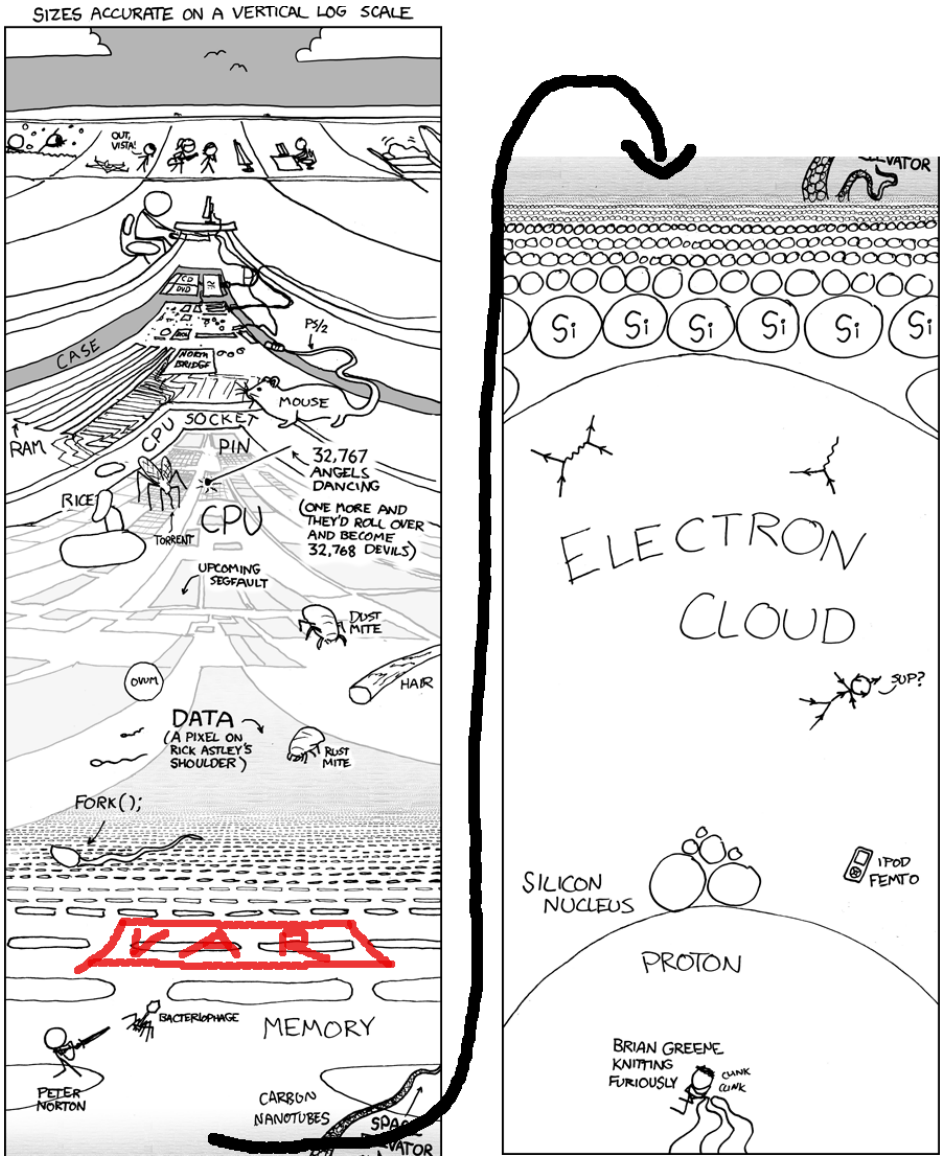
- are lists, vectors, matrices of data (1 to n dimensional – book keeping can become a hassle)
- therefore instead of one value they hold a **list of values**
- linked to a chunk of memory (a sequence of boxes)
- access by index number
- Difference between Python List and Numpy array!
- Shells allow only vectors.

Memory interlude (2)



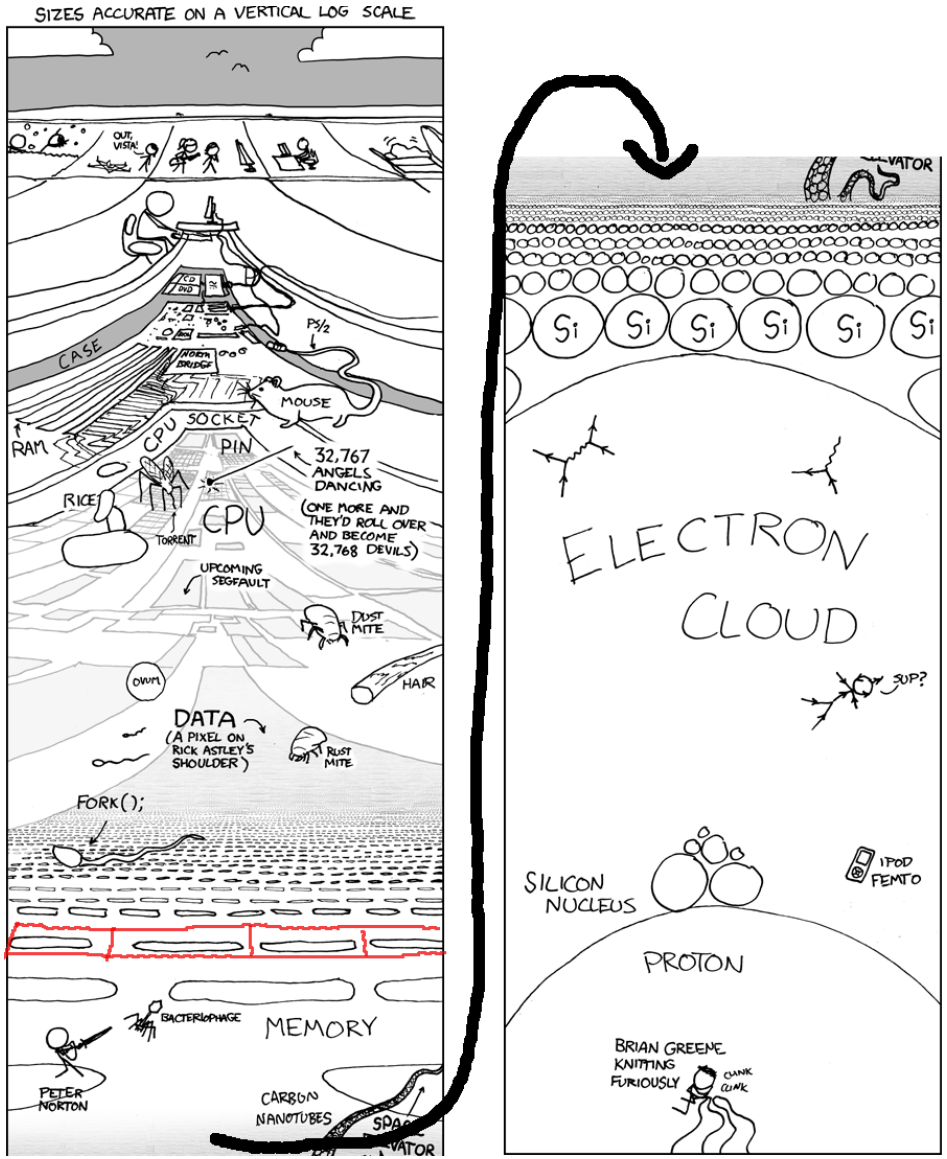
"Depth",
http://xkcd.com/485 (September 16, 2009)

Memory interlude (2)



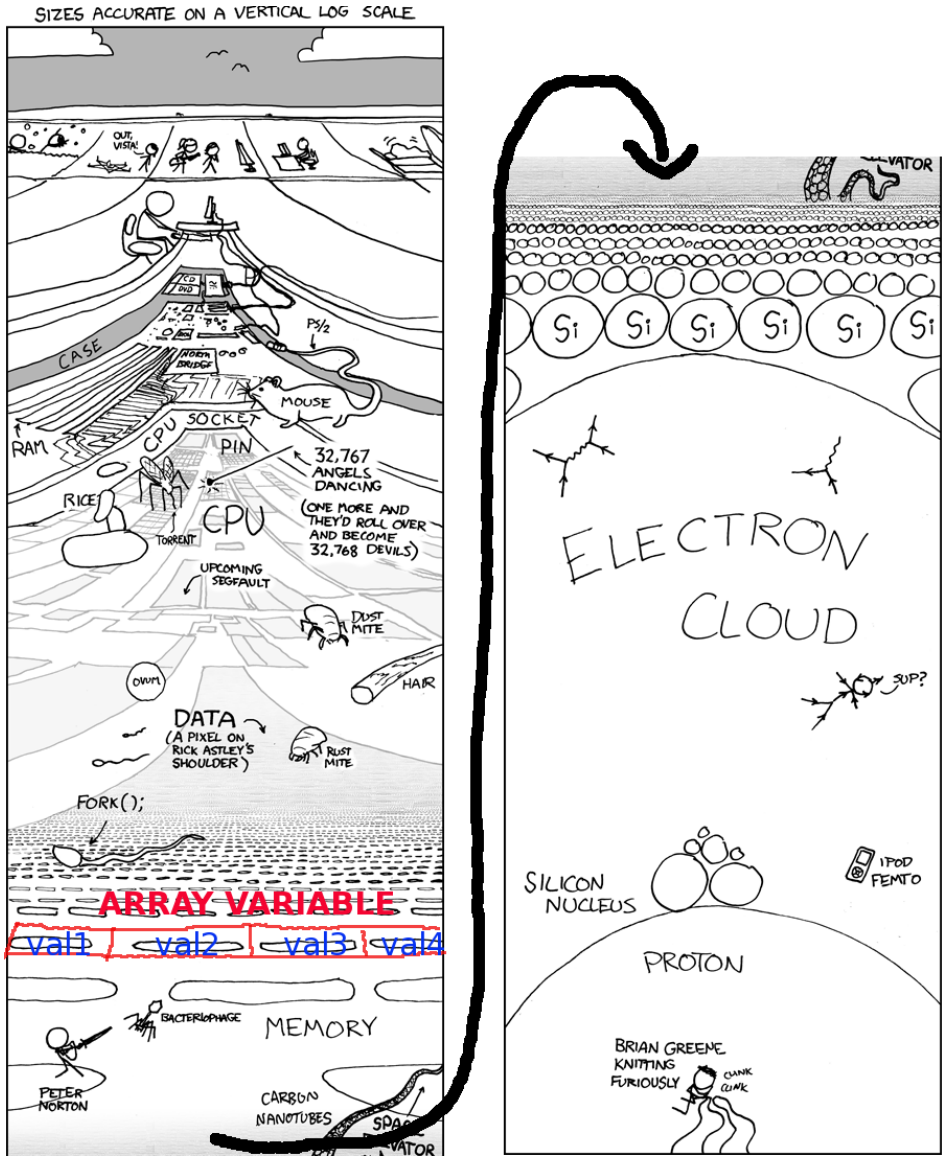
"Depth",
http://xkcd.com/485 (September 16, 2009)

Memory interlude (2)



"Depth",
http://xkcd.com/485 (September 16, 2009)

Memory interlude (2)



"Depth",
http://xkcd.com/485 (September 16, 2009)

Advanced Variables: Vectors and Matrices (2)

Example: Numeric Vector

index:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
vector:	12	23.3	23.3	nan	nan	1	42	42.1	23	5	nan	nan	0	0	0

Advanced Variables: Vectors and Matrices (2)

Example: Numeric List

index:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
vector:	12	23.3	23.3	nan	nan	1	42	42.1	23	5	nan	nan	0	0	0

Example: String

index:	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
sting:	h	e	l	l	o		w	o	r	l	d	!	!	!	!

```
>>> x="hello world!!!!"
>>> x(1)
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: 'str' object is not callable
>>> x[1]
'e'
```