numba

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Part I

Test Numba

What is **numba** and how to install it? Check this link

Here a test code from this blog

In [4]:
```
import numpy as np
from numba.decorators import autojit
import time

X = np.random.random((1000, 3))

def pairwise_python(X):
    M = X.shape[0]
    N = X.shape[1]
    D = np.empty((M, M), dtype=np.float)
    for i in range(M):
        for j in range(M):
            d = 0.0
            for k in range(N):
                tmp = X[i, k] - X[j, k]
                d += tmp * tmp
            D[i, j] = np.sqrt(d)
    return D
```

0.1 The numba-version of the above code is

In [5]:
```
pairwise_numba = autojit(pairwise_python) # wait, what?
```

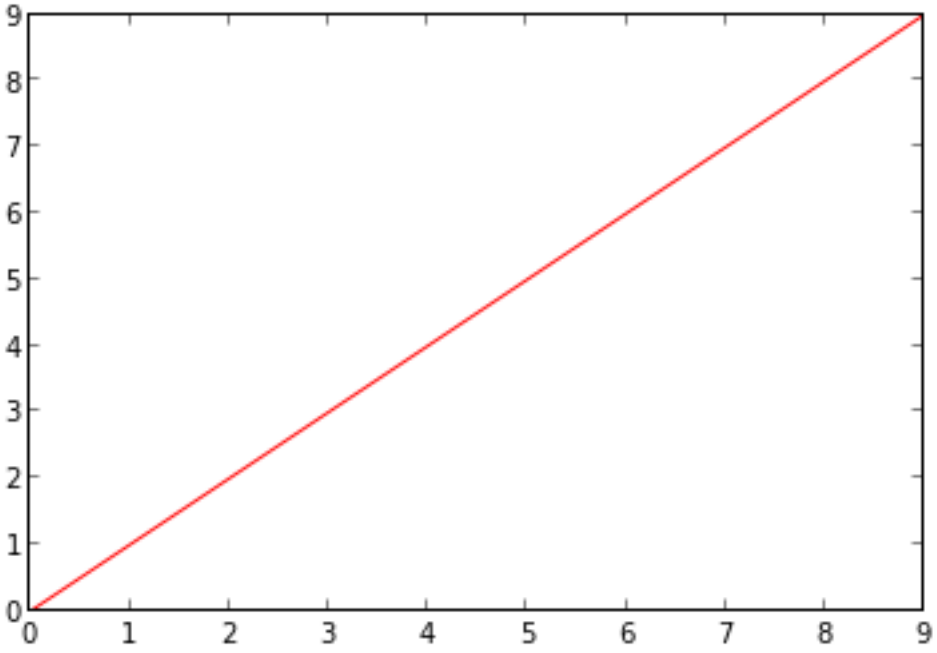
0.2 Let's check the timings...

In [7]:
```
start = time.time()
pairwise_python(X)
t_py = time.time()-start


start = time.time()
pairwise_numba(X)
```

```
t_na = time.time()-start
plot(np.arange(10), "r")
show()

print "time Python: %.3f /s"%t_py
print "time Numba: %.3f /s"%t_na
print "Speedup: %.3f"%(t_py/t_na)
```




```
time Python: 6.203 /s
time Numba: 0.017 /s
Speedup: 356.840
```

Not bad as a speedup, right?

Still, the speedup reported hier is **1400!**