

In [1]:

```
from scipy import stats
from scipy.stats import norm
```

**Pob mean = 270days, Sample mean = 260 days, Sample standard deviation = 90 days, Sample(n) = 18 , df = 18-1 = 17**

Assume, Null hypothesis is :  $H_0 = \text{avg. life of bulb} \geq 260$  and Alternate hypothesis is :  $H_a = \text{avg. life of bulb} < 260$ .

In [2]:

```
#find t-score at x=260 ; t=(s_mean-P_mean)/(s_SD/sqrt(n))
t=(260-270)/(90/18**0.5)
t
```

Out[2]:

-0.4714045207910317

In [3]:

```
#p_value = 1-stats.t.cdf(abs(t_scores),df=n-1).....using cdf function
p_value = 1-stats.t.cdf(abs(-0.4714),df=17)
p_value
```

Out[3]:

0.32167411684460556

In [ ]:

Probability that 18 randomly selected bulbs would have an avg life of no more than 260 days is 32.17%.