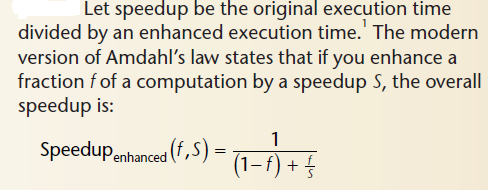
**Amdahls Law**

**Formula**

****

**Worked Example**

Let's say that most of your daytime processes spend 20% of their time

waiting for service from the disk. Some new disks promise 3 times

the throughput of your existing disks.

You can assume that the other 80% of the time the CPU is used.

Assume that you upgrade to the new disks but leave the old CPU

in place. Calculate the speed up you will gain by using the

new disks using Amdahl's Law.

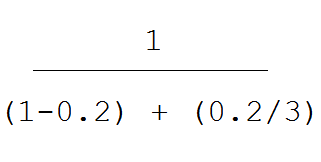
**Calculation**

For the above example,

f=0.2

s=3

Plugging the above values into the formula above we get:



Speedup = 1.153846

**Worked Example 2**

Let's say that most of your daytime processes spend 40% of their time

waiting for service from the disk. Some new disks promise 6 times

the throughput of your existing disks.

You can assume that the other 60% of the time the CPU is used.

Assume that you upgrade to the new disks but leave the old CPU

in place. Calculate the speed up you will gain by using the

new disks using Amdahl's Law.

For the above example,

f=0.4

s=6

Plugging the above values into the formula gives a speedup of 1.5

**Verification**

OLD NEW

60 CPU 60 CPU

40 DISK + 40/6 DISK + 40/6=6.666 (recurring)

100 66.666 (recurring)

100

66.6666 (recurring ) = Speedup of 1.5