

In [2]: **import** random

*# Lista de itens com seu valor, peso e volume*

```
itens = [(0.5278250968728682, 3.8223250028071334, 9.793806157959663), (0.5345615124
(7.939795952467489, 4.092355196896432, 5.336237629812313), (4.879996961047
(7.421255842609408, 9.369036702685223, 3.0007567888713393), (9.84228515772
(9.730165519085599, 5.279563079544843, 0.38415938422414087), (3.2056962439
(2.8030379035108277, 5.793174203171815, 1.122741743597242), (8.27626452697
(6.886628345999231, 2.450080314040153, 5.920306779300825), (4.192916339280
(8.165140526387301, 5.402315594858978, 6.663476643896234), (1.780152737448
(0.5065955631174957, 6.195119115525767, 6.996862133184151), (5.23419784088
(0.9663844468158522, 5.354298648861051, 4.098620169275719), (2.34475177904
(7.017793322301092, 9.727052913944101, 3.5856140555023863), (6.51439816292
(7.471348857972483, 8.214152521047032, 4.982053382720071), (2.528444399325
(4.012589733203575, 5.246733095455984, 9.606796728554839), (1.214411237455
(9.392057910289642, 0.6906707678020607, 7.502557855176284), (8.50949038764
(4.338184227613736, 6.980179356481796, 2.928659342573247), (5.992405270085
(3.064188499576219, 6.475716440835933, 4.4705221641986785), (8.50803599613
(7.687415004908054, 5.243448901028285, 3.6707527854209276), (8.49258570359
(8.818357488360542, 3.3523831244269306, 4.5376438709200055), (9.1443586041
(0.7119771030371469, 3.9708479961873477, 0.6187012418533056), (0.966147710
(3.79656226509711, 6.387709467969497, 9.75949698626718), (0.58054726882144
(7.747046369023225, 8.513783572479005, 6.85159335144631), (3.4105805355351
(3.254640256553504, 2.768457231368097, 3.879939953700476), (1.594127487173
```

peso\_Limite = 25

volume\_Limite = 25

**def** objetivo(mochila):

    soma = 0

**for** i **in** range(len(mochila)):

**if**(mochila[i]):

            soma = soma+itens[i][0]

**return** soma

**def** valido(mochila):

    peso\_Total = 0

**for** i **in** range(len(mochila)):

**if**(mochila[i]):

            peso\_Total = peso\_Total+itens[i][1]

**if**(peso\_Total > peso\_Limite):

**return** False

    volume\_Total = 0

**for** i **in** range(len(mochila)):

**if**(mochila[i]):

            volume\_Total = volume\_Total + itens[i][2]

**if**(volume\_Total > volume\_Limite):

**return** False

**return** True

**def** modifica(mochila):

    aux = mochila.copv()

```
i = random.randint(0, len(mochila) - 1)
aux[i] = not aux[i]

if(not valido(aux)):
    return mochila

return aux

def estado_inicial():
    return len(itens)*[False]

def melhor_sucessor(mochila):
    atual = mochila
    for i in range(500):
        aux = modifica(atual)
        if(objetivo(aux) > objetivo(atual)):
            atual = aux
    return atual

melhor = estado_inicial()
for i in range(100):
    atual = estado_inicial()
    while(True):
        vizinho = melhor_sucessor(atual)
        if(objetivo(vizinho) <= objetivo(atual)):
            break
        atual = vizinho

    if(objetivo(atual) > objetivo(melhor)):
        melhor = atual
    print(objetivo(melhor))

print(atual)
```

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