

**# Problema 3: MIX DE PRODUÇÃO**

Importação Bibliotecas

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In [ ]: from pulp import *
```

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In [ ]: problem = LpProblem("ProblemaMixProducao", LpMaximize)

combustivel_octanagem = [ 92, 95, 100]
combustivel_preco_venda = [ 800, 850, 900] #R$/m3
combustivel_demanda = [ 120, 80, 40] #m3

mistura_octanagem = [ 90, 100, 110]
mistura_custo = [ 380, 420, 450] #R$/m3
mistura_disp = [ 120, 100, 70] #m3

combustiveis = list(range(len(combustivel_octanagem)))
misturas = list(range(len(mistura_octanagem)))

combustivel_custo = LpVariable.dicts("combustivel_custo", combustiveis)
combustivel_producao = LpVariable.dicts("combustivel_producao", combustiveis)
mistura_producao = LpVariable.dicts("mistura_producao", [(c,m) for c in combustiveis for m in misturas])

#Objective function
problem += lpSum([combustivel_producao[c]*combustivel_preco_venda[c]-combustivel_custo[c] for c in combustiveis])

#Constraints
for c in combustiveis:
    problem += combustivel_producao[c] <= combustivel_demanda[c]
    problem += combustivel_custo[c] == lpSum([mistura_producao[c,m]*mistura_custo[m] for m in misturas])
    problem += combustivel_octanagem[c]*lpSum([mistura_producao[c,m] for m in misturas]) == combustivel_octanagem[c]*mistura_disp[c]

for m in misturas:
    problem += lpSum([mistura_producao[(c,m)] for c in combustiveis]) <= mistura_disp[m]
```

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In [ ]: #Solve
result = problem.solve(PULP_CBC_CMD(msg=0))
```

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In [ ]: #Resultados
for v in problem.variables():
    print(v.name, "=", v.varValue)

print("F0 =", value(problem.objective))

print("Current Status =", LpStatus[problem.status])
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combustivel_custo_0 = 38800.0
combustivel_custo_1 = 32000.0
combustivel_custo_2 = 16800.0
combustivel_producao_0 = 100.0
combustivel_producao_1 = 80.0
combustivel_producao_2 = 40.0
mistura_producao_(0,_0) = 80.0
mistura_producao_(0,_1) = 20.0
mistura_producao_(0,_2) = 0.0
mistura_producao_(1,_0) = 40.0
mistura_producao_(1,_1) = 40.0
mistura_producao_(1,_2) = 0.0
mistura_producao_(2,_0) = 0.0
mistura_producao_(2,_1) = 40.0
mistura_producao_(2,_2) = 0.0
F0 = 96400.0
Current Status = Optimal
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