```
# Import packages
using JuMP
using HiGHS

# Creating the model
coffeemodel = Model(HiGHS.Optimizer)

# Declaring the vectors over types and blends
types = [:Columbian, :Brazilian, :Sumatran]
blends = [:Robust, :Light]

# Declare x indexed over types and blends
@variable(coffeemodel, x[types, blends] >= 0)

# Dict the available amount of beans
available_beans = Dict(:Columbian => 550, :Brazilian => 450, :Sumatran
=> 650)

# Dict the cost per pound of beans
bean_cost = Dict(:Columbian => 1.00, :Brazilian => 0.85, :Sumatran =>
1.55)

# Dict the selling prices per pound for each blend
blend_prices = Dict(:Robust => 4.25, :Light => 3.95)

# Define constraints for each blend
# Robust Joe constraints
@constraint(coffeemodel, RSLowerBound, x[:Sumatran, :Robust] >= 0.60 *
sum(x[i, :Robust] for i in types))
@constraint(coffeemodel, RSUpperBound, x[:Sumatran, :Robust] <= 0.75 *
sum(x[i, :Robust] for i in types))
@constraint(coffeemodel, RSLowerColumbian, x[:Columbian, :Robust] >=
0.10 * sum(x[i, :Robust] for i in types))

# Light Joe constraints
@constraint(coffeemodel, LBLowerBrazilian, x[:Brazilian, :Light] >=
0.50 * sum(x[i, :Light] for i in types))
@constraint(coffeemodel, LBUpperBrazilian, x[:Brazilian, :Light] <=
0.60 * sum(x[i, :Light] for i in types))
@constraint(coffeemodel, LBUpperSumatran, x[:Sumatran, :Light] <= 0.20
* sum(x[i, :Light] for i in types))

# bean availability constraints
@constraint(coffeemodel, ColAvailable, sum(x[:Columbian, blend] for
blend in blends) <= available_beans[:Columbian])
@constraint(coffeemodel, BraAvailable, sum(x[:Brazilian, blend] for
blend in blends) <= available_beans[:Brazilian])
@constraint(coffeemodel, SumAvailable, sum(x[:Sumatran, blend] for
blend in blends) <= available_beans[:Sumatran])
```

```julia
# finding the objective function
# Cost
cost = sum(bean_cost[i] * x[i, blend] for i in types for blend in
blends)
# Revenue
revenue = sum(blend_prices[blend] * sum(x[i, blend] for i in types)
for blend in blends)
# objective function (profit)
@objective(coffeemodel, Max, revenue - cost)

# Solve
optimize!(coffeemodel)

#Print values of all variables
for blend in blends
    println("$blend Blend:")
    for bean in types
        @show x[bean, blend]
    end
end
print(coffeemodel)
```

```
Running HiGHS 1.7.2 (git hash: 5ce7a2753): Copyright (c) 2024 HiGHS
under MIT licence terms
Coefficient ranges:
  Matrix [1e-01, 1e+00]
  Cost   [2e+00, 3e+00]
  Bound  [0e+00, 0e+00]
  RHS    [4e+02, 6e+02]
Presolving model
9 rows, 6 cols, 24 nonzeros  0s
9 rows, 6 cols, 24 nonzeros  0s
Presolve : Reductions: rows 9(-0); columns 6(-0); elements 24(-0) -
Not reduced
Problem not reduced by presolve: solving the LP
Using EKK dual simplex solver - serial
  Iteration        Objective     Infeasibilities num(sum)
          0    -4.4549962997e+01 Ph1: 8(10.175); Du: 6(44.55) 0s
          8     4.9025000000e+03 Pr: 0(0) 0s
Model   status      : Optimal
Simplex   iterations: 8
Objective value     :  4.9025000000e+03
HiGHS run time      :          0.00
Robust Blend:
x[bean, blend] = x[Columbian,Robust]
x[bean, blend] = x[Brazilian,Robust]
x[bean, blend] = x[Sumatran,Robust]
Light Blend:
```

```
x[bean, blend] = x[Columbian,Light]
x[bean, blend] = x[Brazilian,Light]
x[bean, blend] = x[Sumatran,Light]
Max 3.25 x[Columbian,Robust] + 3.4 x[Brazilian,Robust] + 2.7
x[Sumatran,Robust] + 2.95 x[Columbian,Light] + 3.1 x[Brazilian,Light]
+ 2.4000000000000004 x[Sumatran,Light]
Subject to
 RSLowerBound : -0.6 x[Columbian,Robust] - 0.6 x[Brazilian,Robust] +
0.4 x[Sumatran,Robust] ≥ 0
 RSLowerColumbian : 0.9 x[Columbian,Robust] - 0.1 x[Brazilian,Robust]
- 0.1 x[Sumatran,Robust] ≥ 0
 LBLowerBrazilian : -0.5 x[Columbian,Light] + 0.5 x[Brazilian,Light] -
0.5 x[Sumatran,Light] ≥ 0
 RSUpperBound : -0.75 x[Columbian,Robust] - 0.75 x[Brazilian,Robust] +
0.25 x[Sumatran,Robust] ≤ 0
 LBUpperBrazilian : -0.6 x[Columbian,Light] + 0.4 x[Brazilian,Light] -
0.6 x[Sumatran,Light] ≤ 0
 LBUpperSumatran : -0.2 x[Columbian,Light] - 0.2 x[Brazilian,Light] +
0.8 x[Sumatran,Light] ≤ 0
 ColAvailable : x[Columbian,Robust] + x[Columbian,Light] ≤ 550
 BraAvailable : x[Brazilian,Robust] + x[Brazilian,Light] ≤ 450
 SumAvailable : x[Sumatran,Robust] + x[Sumatran,Light] ≤ 650
 x[Columbian,Robust] ≥ 0
 x[Brazilian,Robust] ≥ 0
 x[Sumatran,Robust] ≥ 0
 x[Columbian,Light] ≥ 0
 x[Brazilian,Light] ≥ 0
 x[Sumatran,Light] ≥ 0
```