

Simplex.R

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```
library(lpSolve)

## Warning: package 'lpSolve' was built under R version 3.5.3

# problem

## t = number of tables; c = number of chairs
## maximize total profit

## Objective: $7t + $5c

## Constrains:
## 3t + 4c <= 2400
## 2t + 1c <= 1000
## 1t + 0c >= 100
## 0t + 1c <= 450

# defining parameters

obj.fun <- c(7, 5)
constr <- matrix(c(3, 4, 2, 1, 1, 0, 0, 1), ncol = 2, byrow = TRUE)
constr

##      [,1] [,2]
## [1,]    3    4
## [2,]    2    1
## [3,]    1    0
## [4,]    0    1

constr.dir <- c("<=", "<=", ">=", "<=")
rhs <- c(2400, 1000, 100, 450)

# solving model
prod.sol <- lp(direction = "max", obj.fun, constr, constr.dir, rhs, compute.sens = TRUE)

# answers
prod.sol #total profit

## Success: the objective function is 4040
prod.sol$solution # number of tables and chares should be produced to max profit

## [1] 320 360
```