

Cronin_#2

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```
library(lpSolve)
library(lpSolveAPI)
```

```
# 0 constraints / 9 variables
factory = make.lp(0,9)
```

```
set.objfn(factory, c(420, 360, 300, 420, 360, 300 ,420, 360, 300))
lp.control(factory, sense = 'max')
```

```

## $anti.degen
## [1] "fixedvars" "stalling"
##
## $basis.crash
## [1] "none"
##
## $bb.depthlimit
## [1] -50
##
## $bb.floorfirst
## [1] "automatic"
##
## $bb.rule
## [1] "pseudononint" "greedy"          "dynamic"          "rcostfixing"
##
## $break.at.first
## [1] FALSE
##
## $break.at.value
## [1] 1e+30
##
## $epsilon
##      epsb      epsd      epsel      epsint  epsperturb  epspivot
##      1e-10      1e-09      1e-12      1e-07        1e-05        2e-07
##
## $improve
## [1] "dualfeas" "thetagap"
##
## $infinite
## [1] 1e+30
##
## $maxpivot
## [1] 250
##
## $mip.gap
## absolute relative
##      1e-11      1e-11
##
## $negrange
## [1] -1e+06
##
## $obj.in.basis
## [1] TRUE
##
## $pivoting
## [1] "devex"      "adaptive"
##
## $presolve
## [1] "none"
##
## $scalelimit
## [1] 5

```

```
##
## $scaling
## [1] "geometric"    "equilibrate" "integers"
##
## $sense
## [1] "maximize"
##
## $simplextype
## [1] "dual"    "primal"
##
## $timeout
## [1] 0
##
## $verbose
## [1] "neutral"
```

```
add.constraint(factory, c(1,1,1,0,0,0,0,0,0), "<=",750) #capacity plant 1
add.constraint(factory, c(0,0,0,1,1,1,0,0,0), "<=",900) #capacity plant 2
add.constraint(factory, c(0,0,0,0,0,0,1,1,1), "<=",450) #capacity plant 3
add.constraint(factory, c(20,15,12,0,0,0,0,0,0), "<=",13000) #space limit plant 1
add.constraint(factory, c(0,0,0,20,15,12,0,0,0), "<=",12000) #space limit plant 2
add.constraint(factory, c(0,0,0,0,0,0,20,15,12), "<=",5000) #space limit plant 3
add.constraint(factory, c(1,0,0,1,0,0,1,0,0), "<=",900) #demand large
add.constraint(factory, c(0,1,0,0,1,0,0,1,0), "<=",1200) #demand medium
add.constraint(factory, c(0,0,1,0,0,1,0,0,1), "<=",750) #demand small
```

```
Rownames = c('P1L', 'P1M', 'P1S', 'P2L', 'P2M', 'P2S', 'P3L', 'P3M', 'P3S')
Colnames = c('P1L', 'P1M', 'P1S', 'P2L', 'P2M', 'P2S', 'P3L', 'P3M', 'P3S')
dimnames(factory) = list(Rownames, Colnames)
```

```
factory
```

```
## Model name:
##    a linear program with 9 decision variables and 9 constraints
```

```
write.lp(factory, filename = 'cronin.lp', type = 'lp')
```

```
solve(factory)
```

```
## [1] 0
```

```
get.objective(factory)
```

```
## [1] 708000
```

```
get.variables(factory)
```

```
## [1] 350.0000 400.0000 0.0000 0.0000 400.0000 500.0000 0.0000 133.3333  
## [9] 250.0000
```

```
get.constraints(factory)
```

```
## [1] 750.0000 900.0000 383.3333 13000.0000 12000.0000 5000.0000 350.0000  
## [8] 933.3333 750.0000
```

Solution is = 350P1L + 400P1M + 0P1S + 0P2L + 400P2M + 500P2S + 0P3L + 133P3M + 250P3S