zalshaye_3

```
library(lpSolveAPI)

lprec <- make.lp(0, 9)

set.objfn(lprec, c(420, 360, 300, 420, 360, 300, 420, 360, 300))

lp.control(lprec,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(lprec, c(1, 1, 1, 0, 0, 0, 0, 0, 0), "<=", 750)
add.constraint(lprec, c(0, 0, 0, 1, 1, 1, 0, 0, 0), "<=", 900)
add.constraint(lprec, c(0, 0, 0, 0, 0, 0, 1, 1, 1), "<=", 450)
add.constraint(lprec, c(20, 15, 12, 0, 0, 0, 0, 0, 0), "<=", 13000)
add.constraint(lprec, c(0, 0, 0, 20, 15, 12, 0, 0, 0), "<=", 12000)
add.constraint(lprec, c(0, 0, 0, 0, 0, 0, 20, 15, 12), "<=", 5000)
add.constraint(lprec, c(1, 0, 0, 1, 0, 0, 1, 0, 0), "<=", 900)
add.constraint(lprec, c(0, 1, 0, 0, 1, 0, 0, 1, 0), "<=", 1200)
add.constraint(lprec, c(0, 0, 1, 0, 0, 1, 0, 0, 1), "<=", 750)
add.constraint(lprec, c(900, 900, 900, -750, -750, -750, 0, 0, 0), "=", 0)
add.constraint(lprec, c(900, 900, 900, 0, 0, 0, -750, -750, -750), "=", 0)

RowNames <- c("Plant 1 Large", "Plant 1 Medium", "Plant 1 Small", "Plant 2
Large", "Plant 2 Medium"
              , "Plant 2 Small", "Plant 3 Large", "Plant 3 Medium", "Plant 3
Small", "Eleven", "Twelve")
ColNames <- c("Large 1", "Medium 1", "Small 1", "Large 2", "Medium 2", "Small
2", "Large 3"
              , "Medium 3", "Small 3")
```

```
dimnames(lprec) <- list(RowNames, ColNames)

lprec

## Model name:
##   a linear program with 9 decision variables and 11 constraints

write.lp(lprec, filename = "wgc.lp", type = "lp")

solve(lprec)

## [1] 0

get.objective(lprec)

## [1] 445833.3

get.variables(lprec)

## [1] 347.2222   0.0000   0.0000 416.6667   0.0000   0.0000   0.0000
0.0000
## [9] 416.6667

x <- read.lp("C:/Users/Z/Desktop/Wyndsor.lp") # create an lp object x
x                          # display x

## Model name:
##            Product1  Product2
## Maximize          3         5
## Plant1            1         0  <=   4
## Plant2            0         2  <=  12
## Plant3            3         2  <=  18
## Kind            Std       Std
## Type           Real      Real
## Upper           Inf       Inf
## Lower             0         0

solve(x)

## [1] 0

get.objective(x)        # get objective value

## [1] 36

get.variables(x)        # get values of decision variables

## [1] 2 6

get.constraints(x)      # get constraint RHS values

## [1]  2 12 18

get.sensitivity.rhs(x)
```

```
## $duals
## [1] 0.0 1.5 1.0 0.0 0.0
##
## $dualsfrom
## [1] -1.0e+30  6.0e+00  1.2e+01 -1.0e+30 -1.0e+30
##
## $dualstill
## [1] 1.0e+30 1.8e+01 2.4e+01 1.0e+30 1.0e+30
```

```
get.sensitivity.obj(x)
```

```
## $objfrom
## [1] 0 2
##
## $objtill
## [1] 7.5e+00 1.0e+30
```