ahaffne2\_Assigntment 2

#Plant 1

420 X1 + 360 X2 + 300 X3

subject to X1 + X2 + X3 <= 750

X1 <= 900

X2 <= 1200

X3 <= 900

20 X1 + 15 X2 + 12

X3 <= 13,000

library(lpSolveAPI)  
library(lpSolve)  
   
f.obj <- c(420, 360, 300)  
f.con <- matrix (c(1, 1, 1, 1, 0, 0, 0, 1,0, 0, 0, 1, 20, 15, 12), nrow = 5, byrow = TRUE)  
f.dir <- c("<=", "<=","<=", "<=" , "<=")  
f.rhs <- c(750, 900, 1200, 750, 13000 )  
f.bounds <- (lower = 0)  
  
  
lp("max", f.obj, f.con, f.dir, f.rhs)

## Success: the objective function is 291000

lp("max", f.obj, f.con, f.dir, f.rhs)$solution

## [1] 350 400 0

#Plant 2

420 X1 + 360 X2 + 300 X3

subject to X1 + X2 + X3 <= 900

X1 <= 900

X2 <= 1200

X3 <= 750

20 X1 + 15 X2 + 12 X3 <= 12,000

f.obj <- c(420, 360, 300)  
f.con <- matrix (c(1, 1, 1, 1, 0, 0, 0, 1,0, 0, 0, 1, 20, 15, 12), nrow = 5, byrow = TRUE)  
f.dir <- c("<=", "<=","<=", "<=" , "<=")  
f.rhs <- c(900, 900, 1200, 750, 12000 )  
f.bounds <- (lower = 0)  
  
  
lp("max", f.obj, f.con, f.dir, f.rhs)

## Success: the objective function is 294000

lp("max", f.obj, f.con, f.dir, f.rhs)$solution

## [1] 0 400 500

#Plant 3

420 X1 + 360 X2 + 300 X3

subject to X1 + X2 + X3 <= 450

X1 <= 900

X2 <= 1200

X3 <= 750

20 X1 + 15 X2 + 12 X3 <= 5000

f.obj <- c(420, 360, 300)  
f.con <- matrix (c(1, 1, 1, 1, 0, 0, 0, 1,0, 0, 0, 1, 20, 15, 12), nrow = 5, byrow = TRUE)  
f.dir <- c("<=", "<=","<=", "<=" , "<=")  
f.rhs <- c(450, 900, 1200, 750, 5000 )  
f.bounds <- (lower = 0)  
  
  
lp("max", f.obj, f.con, f.dir, f.rhs)

## Success: the objective function is 125000

lp("max", f.obj, f.con, f.dir, f.rhs)$solution

## [1] 0.0000 0.0000 416.6667