Assignment 4

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Installing package

#install.packages("lpSolve")  
library("lpSolve")

Objective Function

$$\text{Objective function: } Max \hspace{.2cm} Z = 420 (L\_1+L\_2+L\_3) + 360 (M\_1+M\_2+M\_3) + 300 (S\_1+S\_2+S\_3)$$

Subject to constraints

Non Negativity Constraints

The above constraints can be written

Defining Objective Function and onstraints

f1.obj <- c(420,360,300,420,360,300,420,360,300)  
f1.con <- matrix(c(1,1,1,0,0,0,0,0,0,  
 0,0,0,1,1,1,0,0,0,  
 0,0,0,0,0,0,1,1,1,  
 20,15,12,0,0,0,0,0,0,  
 0,0,0,20,15,12,0,0,0,  
 0,0,0,0,0,0,20,15,12,  
 1,0,0,1,0,0,1,0,0,  
 0,1,0,0,1,0,0,1,0,  
 0,0,1,0,0,1,0,0,1), nrow = 9, byrow=T)  
  
f1.dir <- c('<=',  
  
 '<=',  
  
 '<=',  
  
 '<=',  
  
 '<=',  
  
 '<=',  
  
 '<=',  
  
 '<=',  
  
 '<=')

Defining the constants f1.rhs

f1.rhs <- c(750,900,450,13000,12000,5000,900,1200,750)

Calling lp function

lp('max',f1.obj,f1.con,f1.dir,f1.rhs)

## Success: the objective function is 708000

lp('max',f1.obj,f1.con,f1.dir,f1.rhs)$solution

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