# Assignment 2

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2022-09-23

#Getting required Packages

```
#install.packages("lpSolve")
#install.packages("knitr")
#install.packages("tinytex")
#tinytex::install_tinytex()
library(tinytex)
library(knitr)
library(lpSolve)
```

#Objective Function is to maximize

```
f.obj <- c(420,360,300,420,360,300,420,360,300)
```

#Constraints

```
f.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=TRUE)
```

#Directions of the inequalities

```
f.dir <- c("<=",
           "<=",
           "<=",
           "<=",
           "<=",
           "<=",
           "<=",
           "<=",
           "<=")
```

#Right-hand side coefficients

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

#Finding the value of Objective function

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

```
## Success: the objective function is 708000
```

#Finding the solution of the variables

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

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