Assignment 4

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```
setwd("C:/Users/anura/Desktop/Quant Management Modelling/Assignment 4")
library(readr)
library(lpSolve)
library(lpSolveAPI)

lp<- make.lp(0, 6)

#Set Objective function
set.objfn(lp, c(622, 614, 630, 641, 645, 649))
#Add Constraints
add.constraint(lp, c(1, 1, 1, 0, 0, 0),"<=", 100)
add.constraint(lp, c(0, 0, 0, 1, 1, 1),"<=", 120)

add.constraint(lp, c(1, 0, 0, 1, 0, 0),"=", 80)
add.constraint(lp, c(0, 1, 0, 0, 1, 0),"=", 60)
add.constraint(lp, c(0, 0, 1, 0, 0, 1),"=", 70)

#Set Bounds
set.bounds(lp, lower = c(0, 0, 0, 0, 0, 0),
           columns = c(1:6))
rownames<-
c("PlanACapacity","PlantBCapacity","DemandW1","DemandW2","DemandW3")
colnames<-
c("PlantAW1","PlantAW2","PlantAW3","PlantBW1","PlantBW2","PlantBW3")
dimnames(lp) <- list(rownames,colnames)
write.lp(lp,filename="Assignment-4.lp",type = "lp")

#Print
print(lp)
```

```
## Model name:
##                 PlantAW1  PlantAW2  PlantAW3  PlantBW1  PlantBW2  PlantBW3
## Minimize             622       614       630       641       645       649
## PlanACapacity          1         1         1         0         0         0
<=  100
## PlantBCapacity         0         0         0         1         1         1
<=  120
## DemandW1               1         0         0         1         0         0
=   80
## DemandW2               0         1         0         0         1         0
=   60
## DemandW3               0         0         1         0         0         1
```

```
=   70
## Kind                  Std       Std       Std       Std       Std       Std
## Type                 Real      Real      Real      Real      Real      Real
## Upper                 Inf       Inf       Inf       Inf       Inf       Inf
## Lower                   0         0         0         0         0         0
```

```
solve(lp)
```

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

```
#Get Objective
get.objective(lp)
```

```
## [1] 132790
```

Minimum combined cost of production and shipping is $132,790

```
#Get Variables
get.variables(lp)
```

```
## [1]  0 60 40 80  0 30
```

Plant A should produce 100 units and ship 60 units to warehouse 2 and 40 units to warehouse 3.

Plant B should produce 110 units and ship 80 units to warehouse 1 and 30 units to warehouse 3.