Aim : - LPP for maximization/minimization of an objective function and graphical representation of feasible solution.

```
library(lpSolve)
require(lpSolve)

## Set the coefficients of the decision variables -> C
C <- c(3, 5)

# Create constraint martix B
A <- matrix(c(1, 2, 1, 1, 0, 1), nrow = 3, byrow = TRUE)

# Right hand side for the constraints
B <- c(2000, 1500, 600)

# Direction of the constraints
constranints_direction  <- c("<=", "<=", "<=")
plot.new()
plot.window(xlim = c(0,2000), ylim=c(0,2000))
axis(1)
axis(2)
title(main = "LPP using Graphical method")
title(xlab = "X axis")
title(ylab = "Y axis")
box()

#draw line
segments(x0 = 2000, y0 = 0, x1 = 0, y1 = 1000, col = "purple")
segments(x0 = 1500, y0 = 0, x1 = 0, y1 = 1500, col = "green")
segments(x0 = 0, y0 = 0, x1 = 600, y1 = 0, col = "red")
```

```
#find the optimal solution
optimum <-  lp(direction="max",
               objective.in = C,
               const.mat = A,
               const.dir = constranints_direction,
               const.rhs = B,
               all.int = T)
print(optimum$status)

# Display the optimum values for x_4p, x_3p and x_w
best_sol <- optimum$solution
names(best_sol) <- c("x1", "x2")
print(best_sol)

# Check the value of objective function at optimal point
print(paste("Total cost: ", optimum$objval, sep=""))
```

```
[1] 0
  x1   x2
1000  500
[1] "Total cost: 5500"
```