Assignment 4

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Installing and loading packages:

```
#install.packages("lpSolveAPI")
library(lpSolveAPI)

## Warning: package 'lpSolveAPI' was built under R version 3.6.3
```

Reading lp file:

```
lprec <- read.lp("jstadden_4.lp")
lprec

## Model name:
##   a linear program with 9 decision variables and 11 constraints
```

Solving lp:

```
solve(lprec)

## [1] 0
```

Value of 0 means solution was found

Objective value:

```
get.objective(lprec)

## [1] 696000
```

The max value found for the objective function was 696,000

Decision variable values:

```
get.variables(lprec)
```

```
## [1]   0.0000 166.6667 416.6667 177.7778 666.6667   0.0000 516.6667
0.0000
## [9]   0.0000
```

Small units produced at plant 1: x1 = 0;
Small units produced at plant 2: x2 = 166.67;
Small units produced at plant 3: x3 = 416.67;
Medium units produced at plant 1: y1 = 177.78;
Medium units produced at plant 2: y2 = 666.67;
Medium units produced at plant 3: y3 = 0;
Large units produced at plant 1: z1 = 516.67;
Large units produced at plant 2: z2 = 0;
Large units produced at plant 3: z3 = 0;

Constraint RHS values:

```
get.constraints(lprec)

##  [1]   694.4444   833.3333   416.6667 13000.0000 12000.0000  5000.0000
##  [7]   583.3333   844.4444   516.6667     0.0000     0.0000
```

694.44 <= 750;
833.33 <= 900;
416.67 <= 450;
13,000 <= 13,000;
12,000 <= 12,000;
5,000 <= 5,000;
583.33 <= 750;
844.44 <= 1,200;
516.67 <= 900;
(Last two zeros are for the equaivalent percentage contraints)