Goal Programming

This document contains the code for Goal Programming for the R&D Division of Emax Corp

R&D Division of Emax Co.

```
library(lpSolveAPI)
gp <- read.lp("rnd.lp")
gp
```

```
## Model name:
##             x1    x2    x3   y1p   y1m   y2m   y2p
## Maximize    20    15    25    -6    -6    -3     0
## R1           6     4     5    -1     1     0     0  =  50
## R2           8     7     5     0     0     1    -1  =  75
## Kind       Std   Std   Std   Std   Std   Std   Std
## Type      Real  Real  Real  Real  Real  Real  Real
## Upper      Inf   Inf   Inf   Inf   Inf   Inf   Inf
## Lower        0     0     0     0     0     0     0
```

Solve

```
solve(gp)
```

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

```
get.objective(gp)
```

```
## [1] 225
```

```
get.variables(gp)
```

```
## [1]  0  0 15 25  0  0  0
```

Remarks

Applying the simplex method to this formulation yields an optimal solution of x1 = 0, x2 = 0, x3 = 15, y1p = 25, y1m = 0, y2m = 0, y2p = 0. Note that the solution is given in the order in which the variables appear in the formulation. This implies that y2 = 0, so the next year earnings goal is fully satisfied, but the employment goal is exceeded by 25 (2500 employees). which will reduce the profit by 150 (6*25). As a result of that, Z is equal to 225.