Assignment_5

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```
library(lpSolveAPI)
x <- read.lp("CalMan.lp")
x
```

```
## Model name:
##             x1   x2   x3   x4   x5   x6   x7
## Minimize   775  800  800  800  800  775  750
## SunLabor     0    1    1    1    1    1    0  >=  18
## MonLabor     0    0    1    1    1    1    1  >=  27
## TueLabor     1    0    0    1    1    1    1  >=  22
## WedLabor     1    1    0    0    1    1    1  >=  26
## ThurLabor    1    1    1    0    0    1    1  >=  25
## FriLabor     1    1    1    1    0    0    1  >=  21
## SatLabor     1    1    1    1    1    0    0  >=  19
## Kind       Std  Std  Std  Std  Std  Std  Std
## Type       Int  Int  Int  Int  Int  Int  Int
## Upper      Inf  Inf  Inf  Inf  Inf  Inf  Inf
## Lower        0    0    0    0    0    0    0
```

```
solve(x)
```

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

```
get.objective(x)
```

```
## [1] 25675
```

```
get.variables(x)
```

```
## [1]  2  4  5  0  8  1 13
```

Comment
Number of workers taken Monday and Sun off is 2
Number of workers taken Monday and Tue off is 4
Number of workers taken Tue and Wed off is 5
Number of workers taken Wed and Thur off is 0
Number of workers taken Thur and Fri off is 8
Number of workers taken Fri and Sat off is 1
Number of workers taken Sat and Sun off is 13

We assume x1, x2... x7 as number of workers assigned to shift 1-7. Because every worker is assigned to one and only one shift, number of workers for a day is the total of every one not taking that day off.

Mon workers = 5 + 0 + 8 + 1+ 13 = 27
Tue workers = 2+ 0 + 8 + 1 + 13 = 24
Wed workers = 2+ 4 + 8 + 1+ 13 = 28

Thur workers = 2+ 4+ 5 + 1+ 13= 25
Fri workers = 2+ 4+ 5 + 0 + 13 = 24
Sat workers = 2+ 4+ 5 + 0 + 8 = 19
Sun workers = 4+ 5 + 0 + 8 + 1= 18

The optimal solution, or the lowest wage is Z = $25675 while keeping the sufficient number of workers. The number of workers each day is 27 (Monday), 24 (Tuesday), 28 (Wednesday), 25 (Thursday), 24 (Friday), 19 (Saturday), 18 (Sunday).