Integer programming

Shashidhar Reddy

2022-11-18

Questions

Formulate and solving the problem :

```
# Loading required package
library(lpSolveAPI)
getwd()
```

```
## [1] "C:/Users/shash/Dropbox/PC/Downloads"
```

```
setwd( "C:/Users/shash/OneDrive/Documents")
# Reading the lp file
IP <- read.lp("shashi.lp")
#Displaying the file
IP
```

```
## Model name:
##             X1   X2   X3   X4   X5   X6   X7
## Minimize   775  800  800  800  800  775  750
## Shift_Sun    0    1    1    1    1    1    0  >=  18
## Shift_Mon    0    0    1    1    1    1    1  >=  27
## Shift_Tue    1    0    0    1    1    1    1  >=  22
## Shift_Wed    1    1    0    0    1    1    1  >=  26
## Shift_Thu    1    1    1    0    0    1    1  >=  25
## Shift_Fri    1    1    1    1    0    0    1  >=  21
## Shift_Sat    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
```

```
# See if the model converges

solve(IP)
```

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

What was the total cost?

```
# Refer to the Objective Function solution.
get.objective(IP)
```

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

```
# In order to meet the required number of workers working every day, the weekly total salary must be $2
```

```
# Determine the best number of variables.
get.variables(IP)
```

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

```
# Total: $25,675.
```

How many workers are available each day?

```
# Look at the restrictions.
get.constraints(IP)
```

```
## [1] 18 27 24 28 25 24 19
```