Heart_Start

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

```
## Model name:
##              x11    x12    x13    x21    x22    x23
## Minimize     622    614    630    641    645    649
## R1             1      0      0      1      0      0    =    80
## R2             0      1      0      0      1      0    =    60
## R3             0      0      1      0      0      1    =    70
## R4             1      1      1      0      0      0   <=   100
## R5             0      0      0      1      1      1   <=   120
## Kind         Std    Std    Std    Std    Std    Std
## Type        Real   Real   Real   Real   Real   Real
## Upper        Inf    Inf    Inf    Inf    Inf    Inf
## Lower          0      0      0      0      0      0
```

```r
solve(x)
```

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

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

```
## [1] 132790
```

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

```
## [1]   0 60 40 80  0 30
```

```r
get.constraints(x)
```

```
## [1]   80   60   70 100 110
```

```r
get.sensitivity.objex(x)
```

```
## $objfrom
## [1]  6.220000e+02 -1.000000e+30  6.180000e+02 -8.756744e+16  6.330000e+02
```

```
## [6]  6.490000e+02
##
## $objtill
## [1] 1.00e+30 6.26e+02 6.30e+02 6.41e+02 1.00e+30 6.61e+02
##
## $objfromvalue
## [1]  4e+01 -1e+30 -1e+30 -1e+30  3e+01 -1e+30
##
## $objtillvalue
## [1] NA NA NA NA NA NA
```

```
get.sensitivity.rhs(x)
```

```
## $duals
##  [1] 641 633 649 -19   0   0   0   0   0  12   0
##
## $dualsfrom
##  [1]  0e+00  3e+01  4e+01  9e+01 -1e+30 -3e+01 -1e+30 -1e+30 -1e+30 -4e+01
## [11] -1e+30
##
## $dualstill
##  [1] 9.0e+01 7.0e+01 8.0e+01 1.3e+02 1.0e+30 4.0e+01 1.0e+30 1.0e+30 1.0e+30
## [10] 3.0e+01 1.0e+30
```