

# final exam

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```
#I assumed that groups were assembling for a class for the objectives of this project.According to my a
#The total score based on all three criteria. Here, dividing the GPA by four would standardise the GPA,

library(dplyr)

##
## Attaching package: 'dplyr'

## The following objects are masked from 'package:stats':
##
##   filter, lag

## The following objects are masked from 'package:base':
##
##   intersect, setdiff, setequal, union

NR_DATA <- data.frame("Student_Name" = c(1:12), "GPA" = c(3.4, 3.7,3.5, 3.1, 3.1, 2.3, 3 , 3.2, 3.4, 3.1, 3.5, 3.2))
NR_DATA_Coeff <- mutate(NR_DATA, "coeff" = (((GPA/4)*.5) + ((activity/10)*.25) + (Participation *.25)))
View(NR_DATA_Coeff)

## Warning in system2("/usr/bin/otool", c("-L", shQuote(DSO)), stdout = TRUE):
## running command ''/usr/bin/otool' -L '/Library/Frameworks/R.framework/Resources/
## modules/R_de.so'' had status 1

#In order for the execution of the problem to make sense, restrictions on group size (three students pe
#participation - In order to ensure that each group has high level of participation, a constraint was a

getwd()

## [1] "/Users/nikhilreddya/Documents/assignments/QMM/final"

library(lpSolveAPI)
NR <- read.lp("/Users/nikhilreddya/Documents/assignments/QMM/final/final.lp")
NR

## Model name:
##   a linear program with 78 decision variables and 32 constraints

solve(NR)

## [1] 0

get.objective(NR)

## [1] 267
```

```
get.variables(NR)
```

```
## [1] 0.0 0.0 1.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 0.0
## [20] 1.0 0.0 0.0 0.0 1.0 1.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0 1.0 0.0 0.0 0.0 0.0
## [39] 0.0 1.0 0.0 0.0 1.0 0.0 1.0 0.0 0.0 0.0 1.1 0.0 0.0 0.0 0.0 0.0 0.0 1.6 0.0 0.0
## [58] 0.0 0.0 0.0 0.0 0.0 1.1 0.0 0.0 0.0 0.0 0.0 0.0 0.0 1.6 0.0 0.0 0.0 0.0 0.0
## [77] 0.0 0.0
```

```
get.constraints(NR)
```

```
## [1] 3.0 3.0 3.0 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0
## [13] 1.0 1.0 1.0 1.0 8.6 10.2 9.6 8.9 21.0 21.0 21.0 21.0
## [25] 210.8 232.7 201.7 219.5 278.9 245.1 226.6 245.0
```

*#Optimal Groups based on output below:*

*#Group1:Student 1, Student 4, Student 6*

*#Group2:Student 3, Student 9, Student 12*

*#Group3:Student 2, Student 7, Student 11*

*#Group4:Student 5, Student 8, Student 10*

“““