# Week-2- Homework

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```
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#Exercise 1
sample <- sample(1:50, size = 50)


boys <- (sample%%2==1)
boys <- c(sort(sample[lapply(sample, "%%", 2) == 1]))
girls <- c(sort(sample[lapply(sample, "%%", 2) == 0]))
# done just for practice


midterms <- c(11,16,23,31,36,47,50)
Finals <- c(3,9,16,20,27,31,36,49,50)


#(Part 1)
boys_passed <- union(midterms, Finals)
print(list(boys_passed[lapply(boys_passed, "%%", 2) == 1])) # li
st of boys who passed both midterms and finals
## [[1]]
## [1] 11 23 31 47  3  9 27 49
# boys_passed <- list(midterms[lapply(midterms, "%%", 2) == 1],F
inals[lapply(Finals, "%%", 2) == 1])
# boys_passed # list of boys who passed both midterms and finals
option number 2
```

```
#(Part 2)
girls_passed <- union(midterms, Finals)
print(list(girls_passed[lapply(girls_passed, "%%", 2) == 0]))
## [[1]]
## [1] 16 36 50 20
#girls_passed <- list(midterms[lapply(midterms, "%%", 2) == 0] , Finals[lapply(Finals, "%%", 2) == 0])
#girls_passed # list of girls who passed both midterm and finals

#(Part 3)
M <- setdiff(midterms,Finals)
print(list(M[lapply(M, "%%", 2) == 1])) # list of boys who passed midtems but failed finals
## [[1]]
## [1] 11 23 47

#(Part 4)
H <- setdiff(Finals, midterms)
print(list(H[lapply(H, "%%", 2) == 0])) # list of girls who failed midterms but passed finals
## [[1]]
## [1] 20
```

# Exercise 2 (Part 1)

```
setwd('~/Documents/NTU Third Semester/Computing in Epidemiology
and Biostatistics/Data')

Seizure <- read.csv('seizure.csv')

summary(lm(y ~ ltime, data = Seizure))

##
## Call:
## lm(formula = y ~ ltime, data = Seizure)
##
## Residuals:
##     Min      1Q  Median      3Q     Max
## -23.155  -5.103  -3.103   1.897  81.845
##
## Coefficients:
##             Estimate Std. Error t value Pr(>|t|)
## (Intercept)   -3.922      1.460  -2.687  0.00763 **
## ltime         15.907      1.306  12.179  < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' '
1
## Residual standard error: 12.33 on 288 degrees of freedom
## Multiple R-squared:   0.34,  Adjusted R-squared:  0.3377
## F-statistic: 148.3 on 1 and 288 DF,  p-value: < 2.2e-16
```

# Exercise 2 (Part 2)

```
x <- cbind(rep(1, nrow(Seizure)), Seizure$ltime)

solve(t(x)%*%x)%*%t(x)%*%matrix(Seizure$y, ncol = 1)

##           [,1]
## [1,] -3.922414
## [2,] 15.906957
```