MATH2411 T1B Tutorial 1

A Brief Introduction to R and RSudio

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Clear the space

```
rm(list=ls())
```

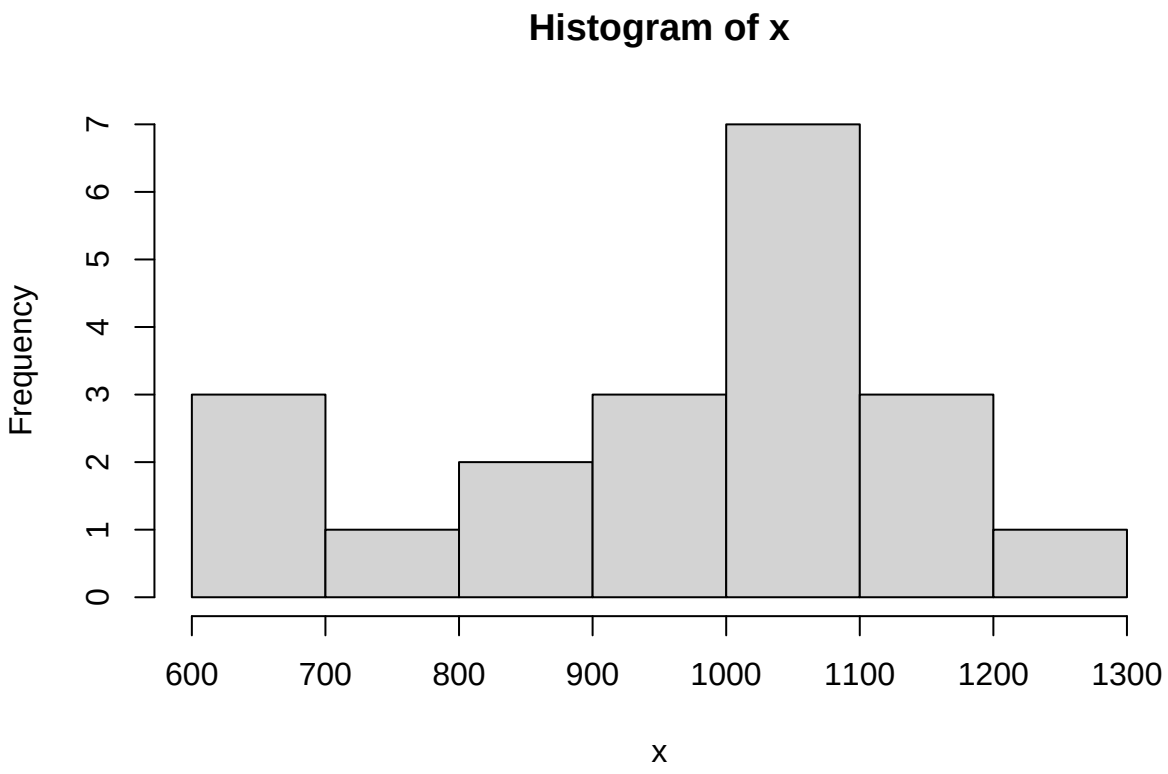
The example of the class

Create vector x

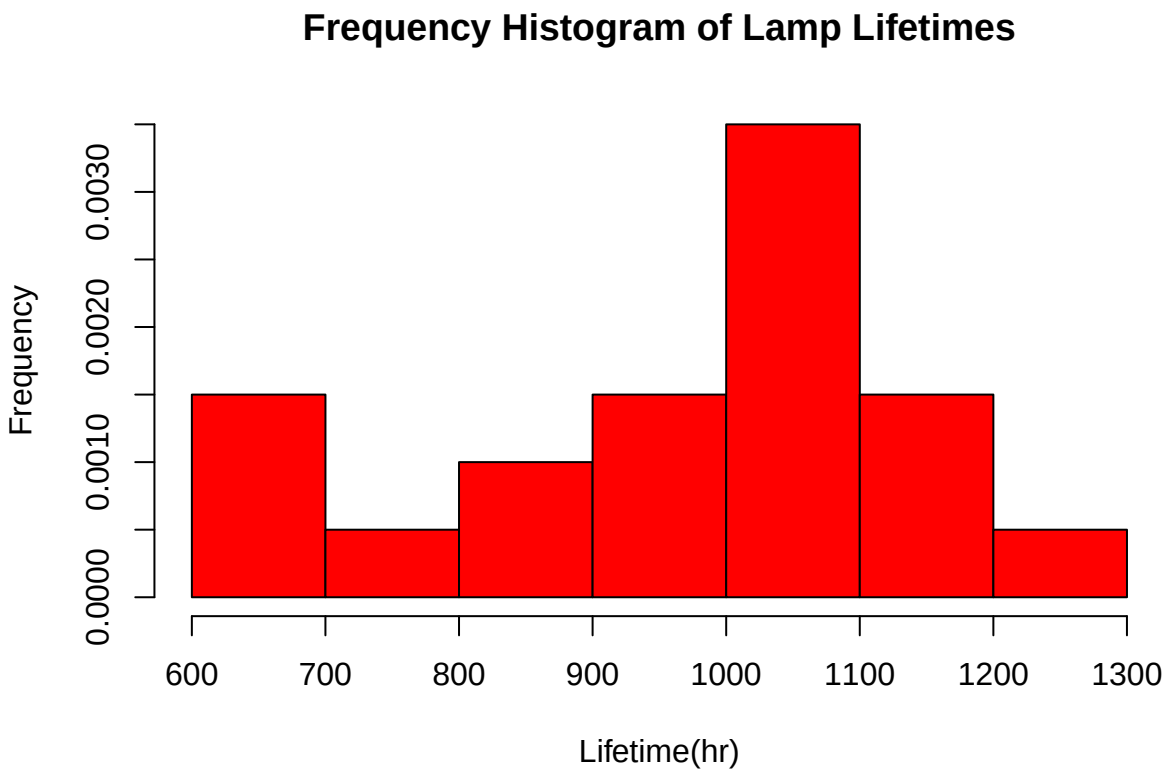
```
x <- c( 970,  612, 1201, 1003,  666, 1088,
        744,  898,  964, 1135,  983, 1016,
       1029, 1058, 1085, 1122, 1022,
        623, 1197,  883)
```

Draw a histogram

```
hist(x, 7)
```




```
hist(x,
main="Frequency Histogram of Lamp Lifetimes",
xlab="Lifetime(hr)",
ylab="Frequency",
col="red",
freq=FALSE
)
```

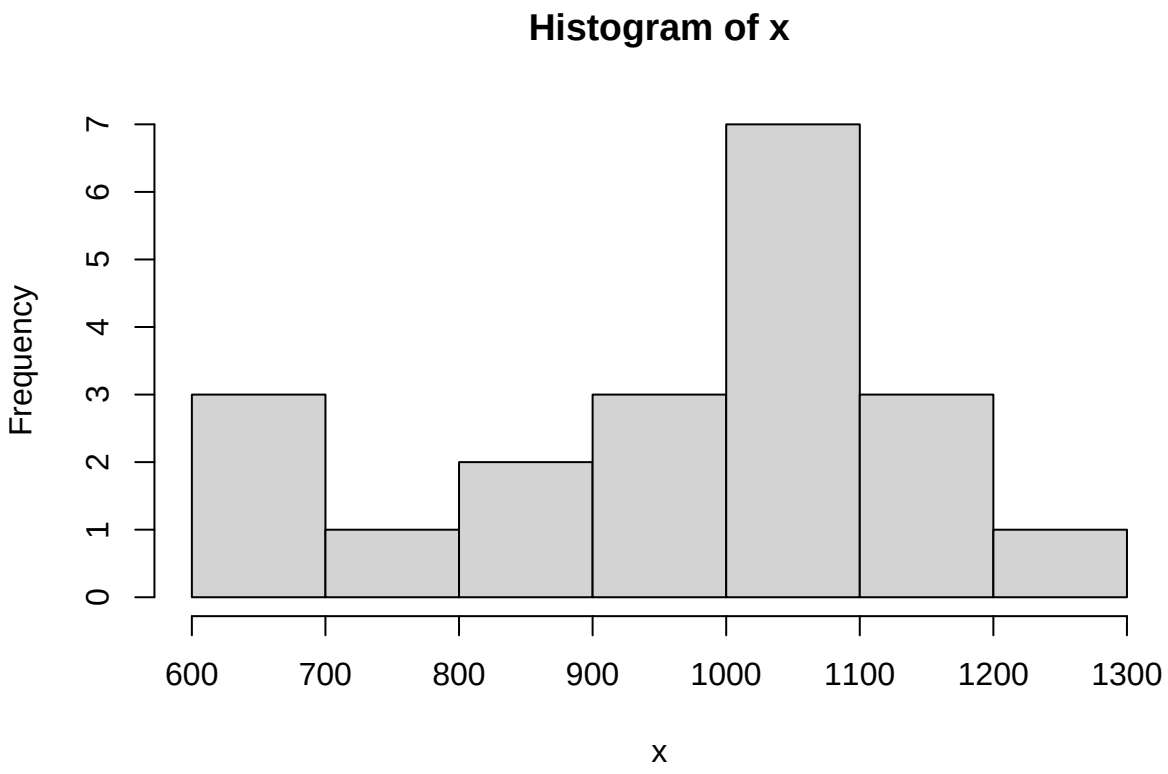


Use the number sign # to make a comment

```
#help("hist")
```

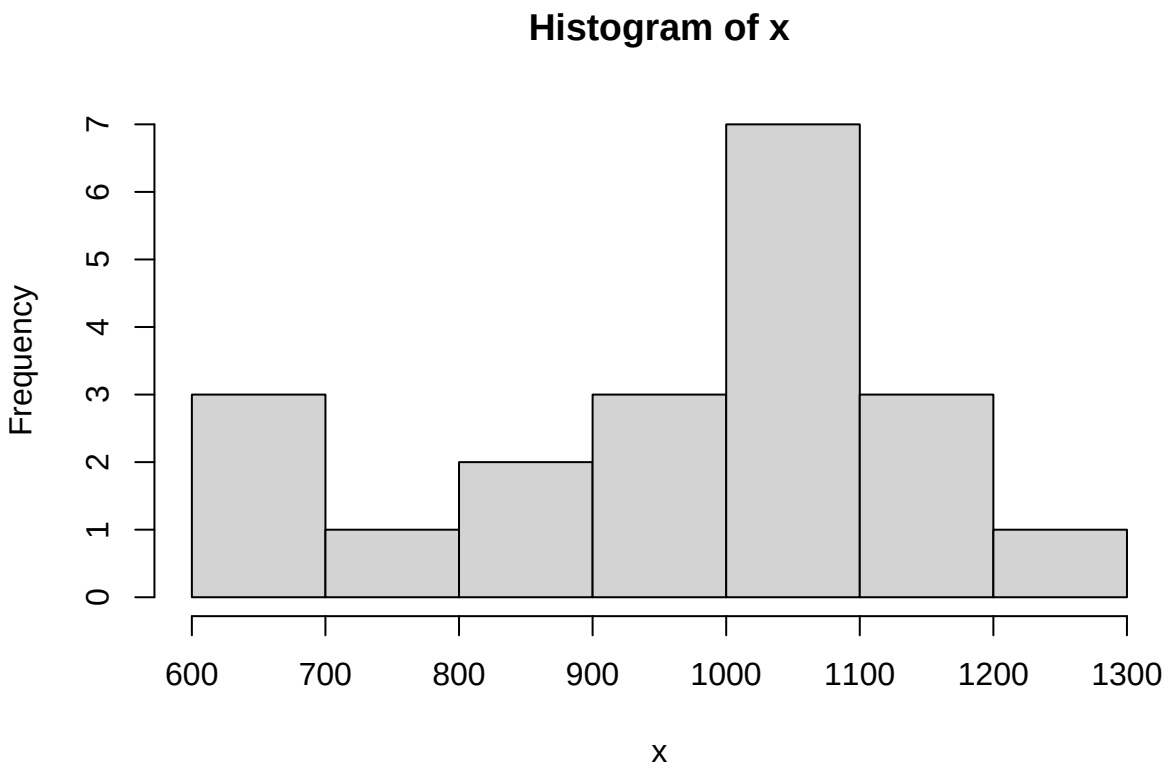
Find what the function “hist” will return

```
names(hist(x, 7))
```




```
## [1] "breaks"   "counts"   "density"  "mids"     "xname"    "equidist"
```

```
res <- hist(x, 7)
```




```
res
```

```
## $breaks
## [1]  600  700  800  900 1000 1100 1200 1300
##
## $counts
## [1] 3 1 2 3 7 3 1
##
## $density
## [1] 0.0015 0.0005 0.0010 0.0015 0.0035 0.0015 0.0005
##
## $mids
## [1]  650  750  850  950 1050 1150 1250
##
## $xname
## [1] "x"
##
## $equidist
## [1] TRUE
##
## attr(,"class")
## [1] "histogram"
```

```
res$breaks
```

```
## [1]  600  700  800  900 1000 1100 1200 1300
```

```
res$counts
```

```
## [1] 3 1 2 3 7 3 1
```

```
mean(x)
```

```
## [1] 964.95
```

Package

Install a package

```
# install.packages("TSA")
```

Document: https://cran.r-project.org/web/packages/TSA/index.html

Before using it, we should library it.

```
library(TSA)
```

Load the data

```
data("airpass")
```

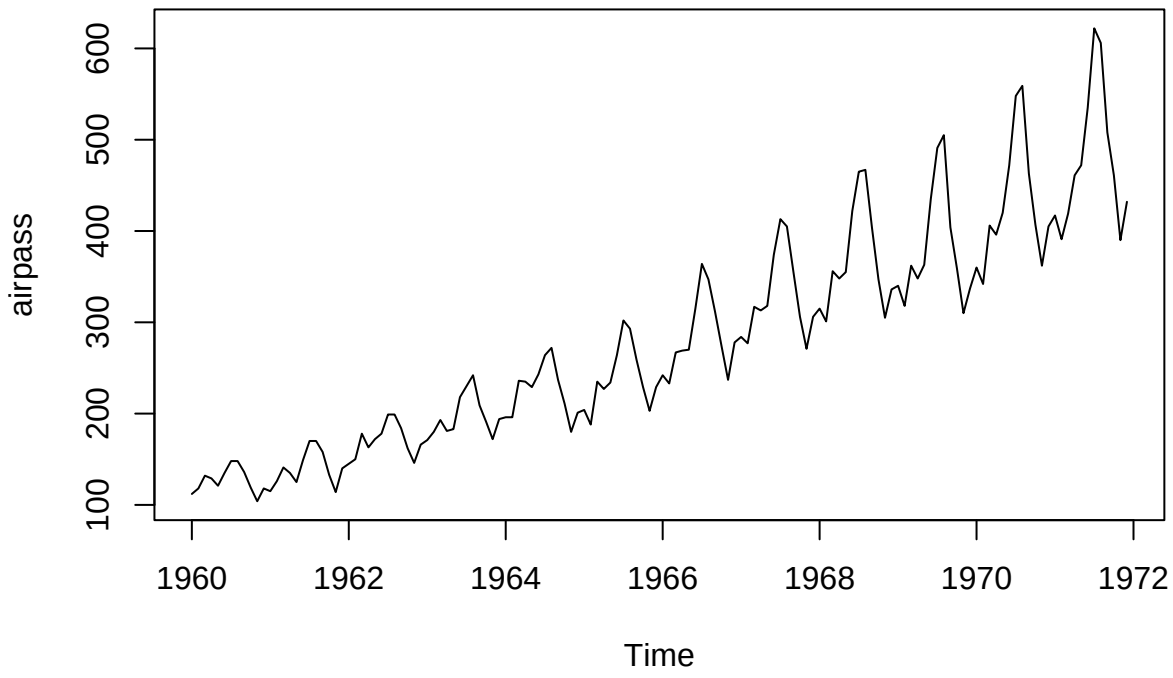
We get the variable 'airpass' directly.

```
airpass
```

```
##      Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
## 1960 112 118 132 129 121 135 148 148 136 119 104 118
## 1961 115 126 141 135 125 149 170 170 158 133 114 140
## 1962 145 150 178 163 172 178 199 199 184 162 146 166
## 1963 171 180 193 181 183 218 230 242 209 191 172 194
## 1964 196 196 236 235 229 243 264 272 237 211 180 201
## 1965 204 188 235 227 234 264 302 293 259 229 203 229
## 1966 242 233 267 269 270 315 364 347 312 274 237 278
## 1967 284 277 317 313 318 374 413 405 355 306 271 306
## 1968 315 301 356 348 355 422 465 467 404 347 305 336
## 1969 340 318 362 348 363 435 491 505 404 359 310 337
## 1970 360 342 406 396 420 472 548 559 463 407 362 405
## 1971 417 391 419 461 472 535 622 606 508 461 390 432
```

Plot the data

```
plot(airpass)
```




```
mean(airpass)
```

```
## [1] 280.2986
```

```
sd(airpass)
```

```
## [1] 119.9663
```

```
fivenum(airpass)
```

```
## [1] 104.0 180.0 265.5 361.0 622.0
```