homework1 packege

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Problem 2

Part A

1 Data analysis projects
2 Raw data manipulation
3 Database

Firstly, I would like to go through some data analysis projects to practice application of ML methods, such as xgboost, nnw, lgb, etc. Secondly, I am willing to work on raw data sets, which have flaws(like: Missing data, type error, measure error) and are not manipulated to be neat and formal. It is good to learn how to make raw data to be informative. In addition, knowledge of database is helpful when handling data.

Part B

Noraml distribution:

$$f(x|\mu,\sigma^2) = \frac{1}{\sqrt{2\pi}\sigma} e^{\frac{-(x-\mu)^2}{2\sigma^2}} \tag{1}$$

T distribution:

$$f(x|\nu) = \frac{\Gamma(\frac{\nu+1}{2})}{\Gamma(\frac{\nu}{2})} \frac{1}{\sqrt{\nu\pi}} \frac{1}{(1+(\frac{x^2}{\nu}))^{(\frac{(\nu+1)}{2})}} \tag{2}$$

Cauchy distribution:

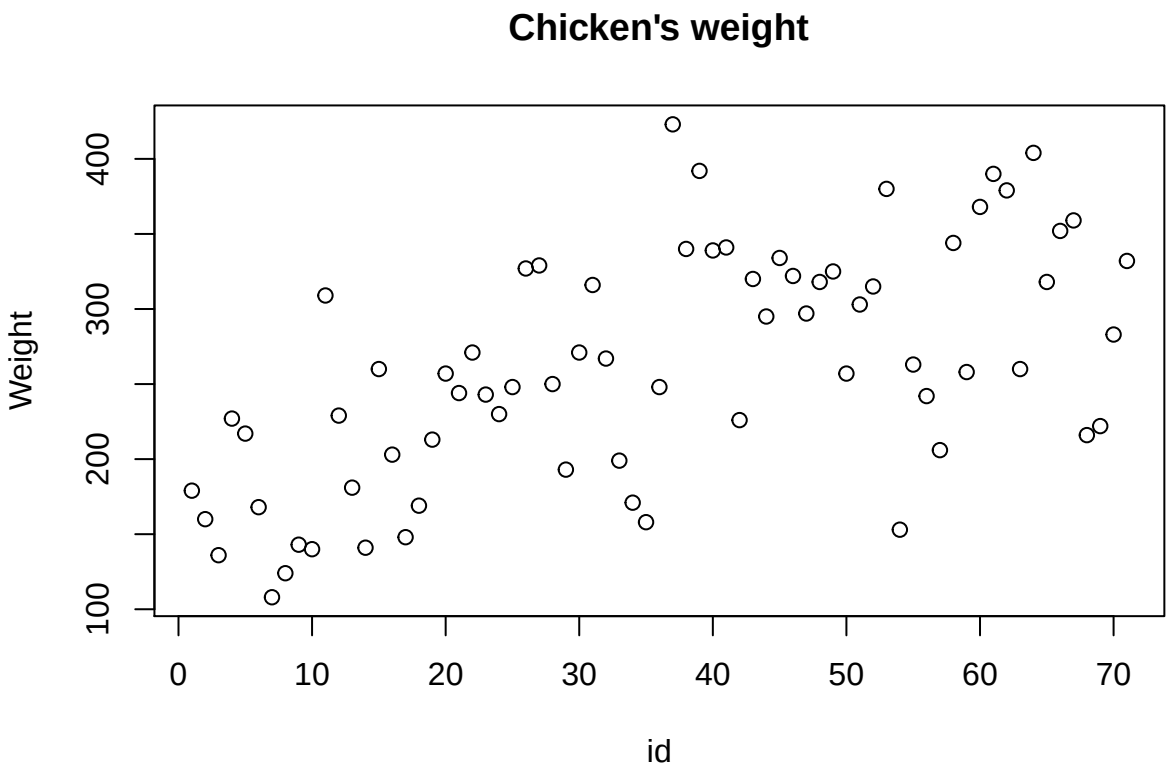
$$f(x|\theta,\sigma) = \frac{1}{\pi\sigma} \frac{1}{1+(\frac{x-\theta}{\sigma})^2} \tag{3}$$

Problem 3,4

```
#See data frams of chickwts
str(chickwts)
```

```
## 'data.frame':    71 obs. of  2 variables:
##  $ weight: num  179 160 136 227 217 168 108 124 143 140 ...
##  $ feed  : Factor w/ 6 levels "casein","horsebean",..: 2 2 2 2 2 2 2 2 2 2 ...
```

```
#Choose weight as Y id as X to produce the scatter plot
plot(x = seq(1:length(chickwts$weight)), y=chickwts$weight, type="p", ylab = "Weight", xlab = "id", mai
```


Chicken's weight
Weight
100
200
300
400
0
10
20
30
40
50
60
70
id