HW1 Yuefei Chen

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Q1. Ask an important question you want answered

ANS:

We want to solve the problem about estimation of rental price. In details, we will find out which factors are significantly related to rental prices, and how to use these factors to build an effective model to estimate the rental price of properties.

Q2 Answer why this question(s) is/are important to you

ANS:

That is because on the one hand, from the market participants' perspective, understanding what factors are related to rental prices can provide valuable insights to them and help them learn more about the dynamics of the real estate market. Tenants, taken as an example, can assess an reasonable price accurately to rent a room when they know how to estimate rents by factors. On the other hand, a deep analysis of the factors affecting rents can also provide an advice to government to formulate and evaluate policies that affect the housing market, such as controlling rent increases and improving housing affordability.

Q3 Data (need one dependent variable and more than 3 dependent variables)

```
data <- read.csv(file = 'Dataset/Rent_House.csv', header = TRUE, sep = ',')
names(data)
```

```
##  [1] "area"           "rooms"          "bathroom"       "parking.spaces"
##  [5] "floor"          "animal"         "furniture"      "hoa"
##  [9] "rent.amount"    "property.tax"   "fire.insurance"
```

ANS:

In this dataset, The dependent variable is "rent.amount", and independent variables are "area", "rooms", "bathroom", "parking.spaces", "floor", "animal", "furniture", "hoa", property.tax", "fire.insurance"

Q4 create a data dictionary

ANS:

In this dataset, The "area" is the house area. The "rooms" represents quantity of rooms. The "bathrooms" means quantity of bathroom. The "floor" is the floor of each house. It is a character because some of elements are '-' if the elements is unknown. The "animal" means whether accept animals or not? It is a boolean variable. The "parking.spaces" is quantity of parking spaces The "hoa" is homeowners association tax The "fire.insurance" is fire insurance The "property.tax" is property tax The "furniture" is with furniture or not.
The "rent.amount" is rent price The range of data are as follows.

```
summary(data)
```

```
##       area             rooms           bathroom      parking.spaces
##  Min.   :   11.0   Min.   : 1.000   Min.   : 1.000   Min.   : 0.000
##  1st Qu.:   56.0   1st Qu.: 2.000   1st Qu.: 1.000   1st Qu.: 0.000
##  Median :   90.0   Median : 2.000   Median : 2.000   Median : 1.000
##  Mean   :  149.2   Mean   : 2.506   Mean   : 2.237   Mean   : 1.609
##  3rd Qu.:  182.0   3rd Qu.: 3.000   3rd Qu.: 3.000   3rd Qu.: 2.000
##  Max.   :46335.0   Max.   :13.000   Max.   :10.000   Max.   :12.000
##     floor              animal           furniture             hoa
##  Length:10692       Length:10692       Length:10692       Min.   :      0
##  Class :character   Class :character   Class :character   1st Qu.:    170
##  Mode  :character   Mode  :character   Mode  :character   Median :    560
##                                                           Mean   :   1174
##                                                           3rd Qu.:   1238
##                                                           Max.   :1117000
##   rent.amount     property.tax      fire.insurance
##  Min.   :  450   Min.   :     0.0   Min.   :  3.0
##  1st Qu.: 1530   1st Qu.:    38.0   1st Qu.: 21.0
##  Median : 2661   Median :   125.0   Median : 36.0
##  Mean   : 3896   Mean   :   366.7   Mean   : 53.3
##  3rd Qu.: 5000   3rd Qu.:   375.0   3rd Qu.: 68.0
##  Max.   :45000   Max.   :313700.0   Max.   :677.0
```

```
str(data)
```

```
## 'data.frame':    10692 obs. of  11 variables:
##  $ area          : int  70 320 80 51 25 376 72 213 152 35 ...
##  $ rooms         : int  2 4 1 2 1 3 2 4 2 1 ...
##  $ bathroom      : int  1 4 1 1 1 3 1 4 2 1 ...
##  $ parking.spaces: int  1 0 1 0 0 7 0 4 1 0 ...
##  $ floor         : chr  "7" "20" "6" "2" ...
##  $ animal        : chr  "acept" "acept" "acept" "acept" ...
##  $ furniture     : chr  "furnished" "not furnished" "not furnished" "not furnished" ...
##  $ hoa           : int  2065 1200 1000 270 0 0 740 2254 1000 590 ...
##  $ rent.amount   : int  3300 4960 2800 1112 800 8000 1900 3223 15000 2300 ...
##  $ property.tax  : int  211 1750 0 22 25 834 85 1735 250 35 ...
##  $ fire.insurance: int  42 63 41 17 11 121 25 41 191 30 ...
```