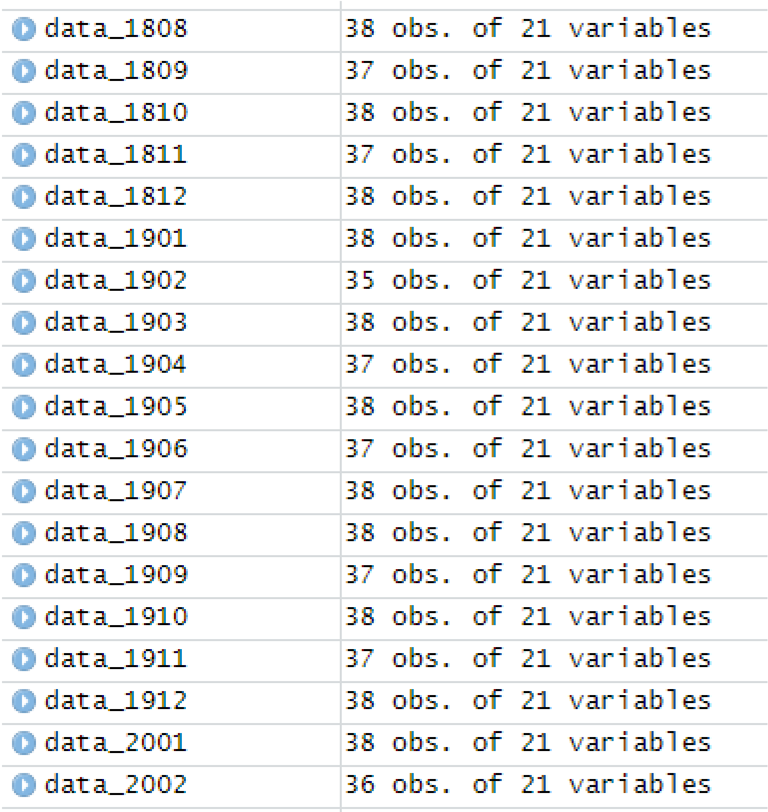
Assignment 1

Data Importing and Extraction

Outputs

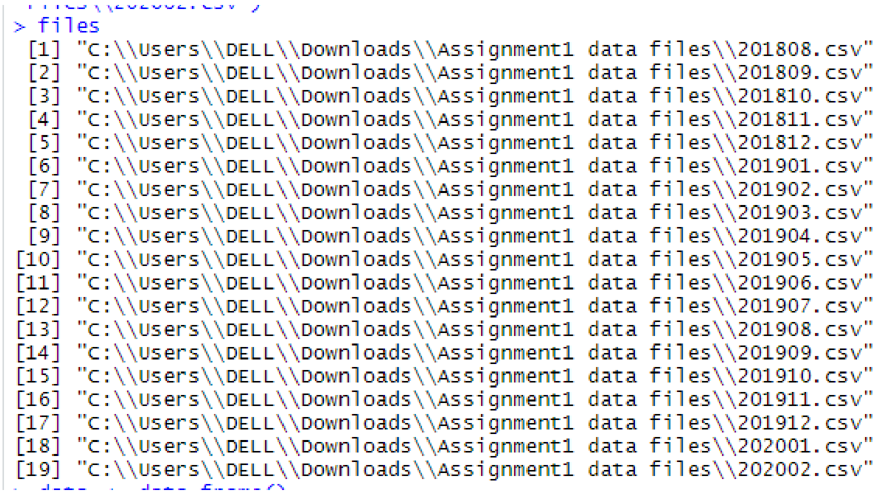
Part A

1) Loading of all .CSV files:

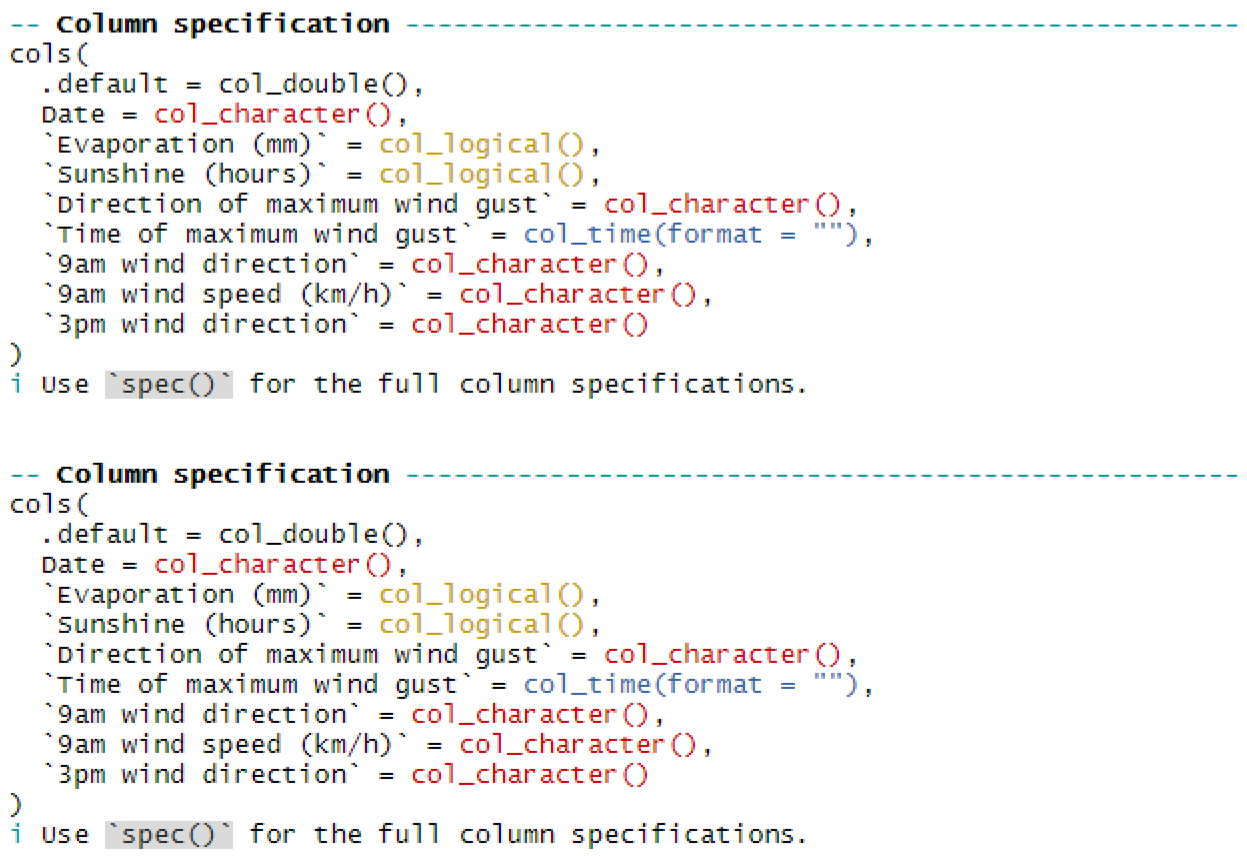


data_1808	38 obs. of 21 variables
data_1809	37 obs. of 21 variables
data_1810	38 obs. of 21 variables
data_1811	37 obs. of 21 variables
data_1812	38 obs. of 21 variables
data_1901	38 obs. of 21 variables
data_1902	35 obs. of 21 variables
data_1903	38 obs. of 21 variables
data_1904	37 obs. of 21 variables
data_1905	38 obs. of 21 variables
data_1906	37 obs. of 21 variables
data_1907	38 obs. of 21 variables
data_1908	38 obs. of 21 variables
data_1909	37 obs. of 21 variables
data_1910	38 obs. of 21 variables
data_1911	37 obs. of 21 variables
data_1912	38 obs. of 21 variables
data_2001	38 obs. of 21 variables
data_2002	36 obs. of 21 variables

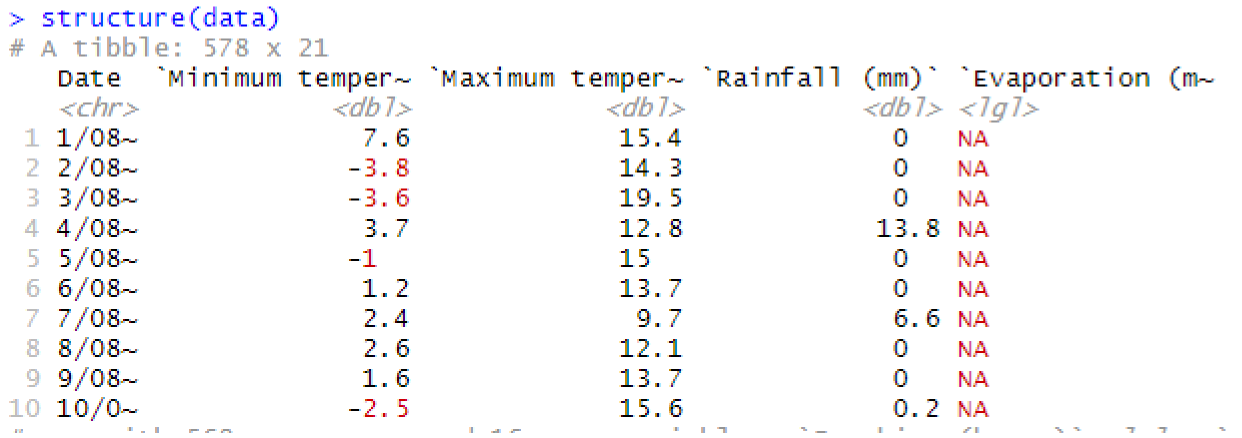
2) Concatenation of files:



```
> files
 [1] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201808.csv"
 [2] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201809.csv"
 [3] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201810.csv"
 [4] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201811.csv"
 [5] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201812.csv"
 [6] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201901.csv"
 [7] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201902.csv"
 [8] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201903.csv"
 [9] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201904.csv"
[10] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201905.csv"
[11] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201906.csv"
[12] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201907.csv"
[13] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201908.csv"
[14] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201909.csv"
[15] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201910.csv"
[16] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201911.csv"
[17] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\201912.csv"
[18] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\202001.csv"
[19] "C:\\Users\\DELL\\Downloads\\Assignment1 data files\\202002.csv"
```

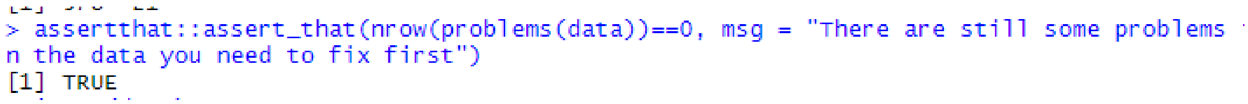


```
-- Column specification --------------------------------------------------------
cols(
  .default = col_double(),
  Date = col_character(),
  `Evaporation (mm)` = col_logical(),
  `Sunshine (hours)` = col_logical(),
  `Direction of maximum wind gust` = col_character(),
  `Time of maximum wind gust` = col_time(format = ""),
  `9am wind direction` = col_character(),
  `9am wind speed (km/h)` = col_character(),
  `3pm wind direction` = col_character()
)
i Use `spec()` for the full column specifications.

-- Column specification --------------------------------------------------------
cols(
  .default = col_double(),
  Date = col_character(),
  `Evaporation (mm)` = col_logical(),
  `Sunshine (hours)` = col_logical(),
  `Direction of maximum wind gust` = col_character(),
  `Time of maximum wind gust` = col_time(format = ""),
  `9am wind direction` = col_character(),
  `9am wind speed (km/h)` = col_character(),
  `3pm wind direction` = col_character()
)
i Use `spec()` for the full column specifications.
```



```
> structure(data)
# A tibble: 578 x 21
   Date   `Minimum temper~ `Maximum temper~ `Rainfall (mm)` `Evaporation (m~
   <chr>             <dbl>            <dbl>           <dbl> <lgl>
 1 1/08~               7.6             15.4             0   NA
 2 2/08~              -3.8             14.3             0   NA
 3 3/08~              -3.6             19.5             0   NA
 4 4/08~               3.7             12.8            13.8 NA
 5 5/08~              -1               15               0   NA
 6 6/08~               1.2             13.7             0   NA
 7 7/08~               2.4              9.7             6.6 NA
 8 8/08~               2.6             12.1             0   NA
 9 9/08~               1.6             13.7             0   NA
10 10/0~              -2.5             15.6             0.2 NA
```

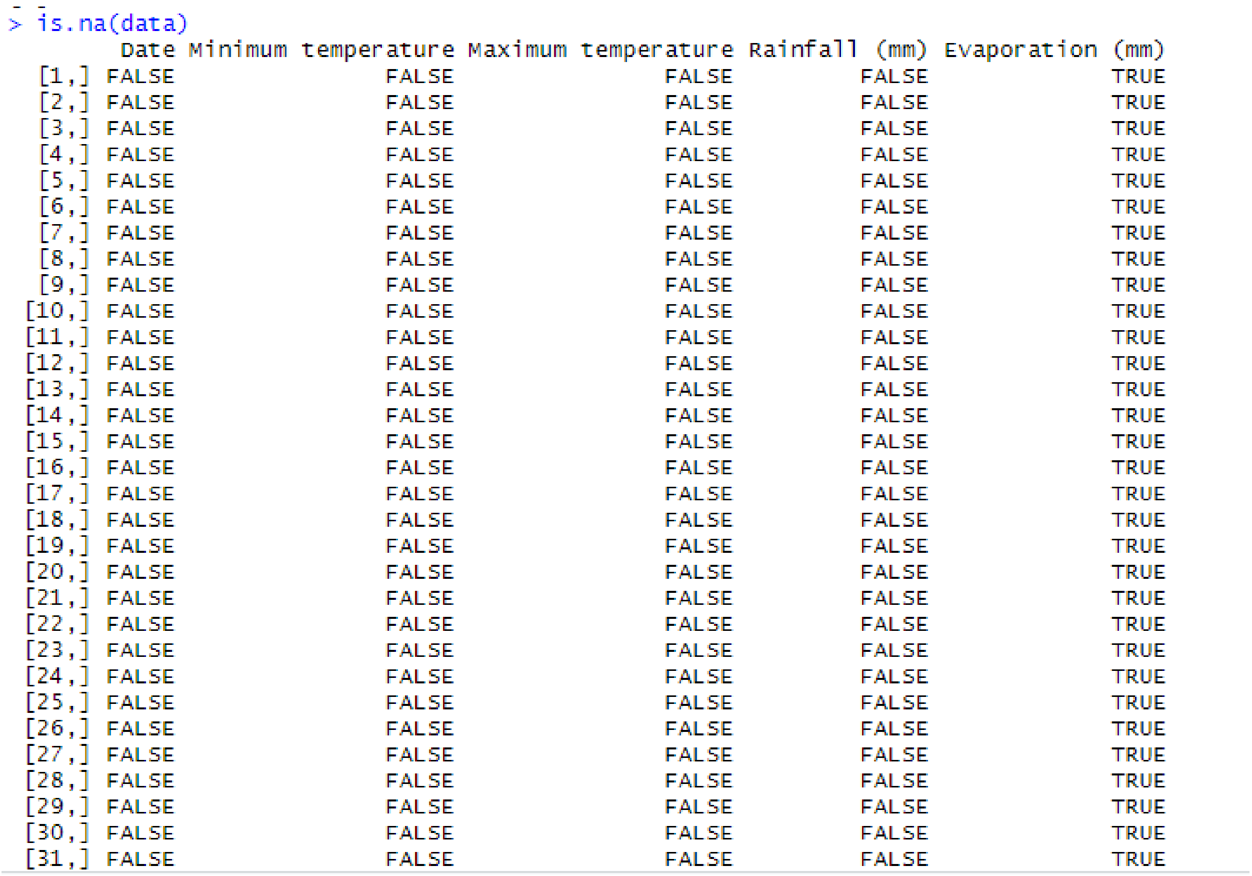
3) Problem in the data:



```
> assertthat::assert_that(nrow(problems(data))==0, msg = "There are still some problems 
n the data you need to fix first")
[1] TRUE
```

Part B

1. Variables with NA values:

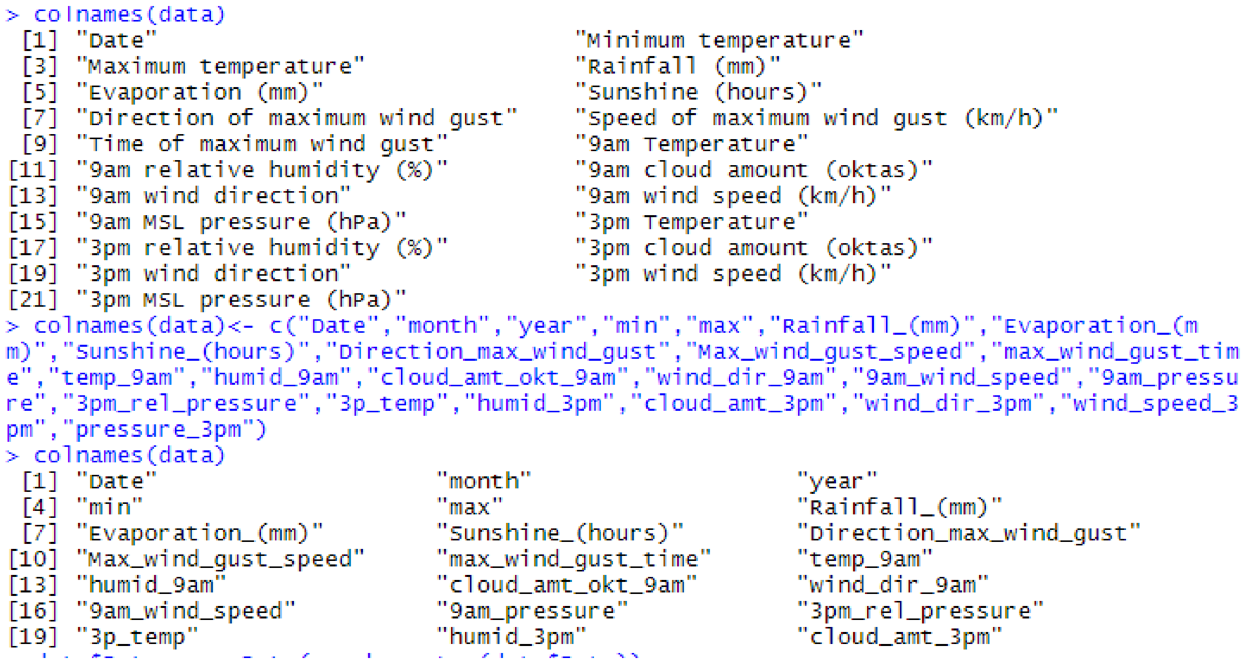


```
> is.na(data)
       Date Minimum temperature Maximum temperature Rainfall (mm) Evaporation (mm)
 [1,] FALSE               FALSE               FALSE         FALSE             TRUE
 [2,] FALSE               FALSE               FALSE         FALSE             TRUE
 [3,] FALSE               FALSE               FALSE         FALSE             TRUE
 [4,] FALSE               FALSE               FALSE         FALSE             TRUE
 [5,] FALSE               FALSE               FALSE         FALSE             TRUE
 [6,] FALSE               FALSE               FALSE         FALSE             TRUE
 [7,] FALSE               FALSE               FALSE         FALSE             TRUE
 [8,] FALSE               FALSE               FALSE         FALSE             TRUE
 [9,] FALSE               FALSE               FALSE         FALSE             TRUE
[10,] FALSE               FALSE               FALSE         FALSE             TRUE
[11,] FALSE               FALSE               FALSE         FALSE             TRUE
[12,] FALSE               FALSE               FALSE         FALSE             TRUE
[13,] FALSE               FALSE               FALSE         FALSE             TRUE
[14,] FALSE               FALSE               FALSE         FALSE             TRUE
[15,] FALSE               FALSE               FALSE         FALSE             TRUE
[16,] FALSE               FALSE               FALSE         FALSE             TRUE
[17,] FALSE               FALSE               FALSE         FALSE             TRUE
[18,] FALSE               FALSE               FALSE         FALSE             TRUE
[19,] FALSE               FALSE               FALSE         FALSE             TRUE
[20,] FALSE               FALSE               FALSE         FALSE             TRUE
[21,] FALSE               FALSE               FALSE         FALSE             TRUE
[22,] FALSE               FALSE               FALSE         FALSE             TRUE
[23,] FALSE               FALSE               FALSE         FALSE             TRUE
[24,] FALSE               FALSE               FALSE         FALSE             TRUE
[25,] FALSE               FALSE               FALSE         FALSE             TRUE
[26,] FALSE               FALSE               FALSE         FALSE             TRUE
[27,] FALSE               FALSE               FALSE         FALSE             TRUE
[28,] FALSE               FALSE               FALSE         FALSE             TRUE
[29,] FALSE               FALSE               FALSE         FALSE             TRUE
[30,] FALSE               FALSE               FALSE         FALSE             TRUE
[31,] FALSE               FALSE               FALSE         FALSE             TRUE
```

2. Removing the variables with few data:

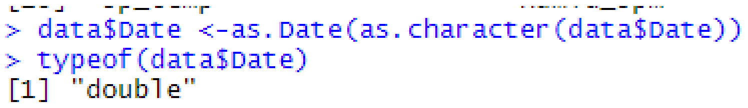
```
> na.omit(reading_data)
 [1] Daily.weather.observations.for.Canberra..Australian.Capital.Territory.for.August.201
8
 [2] X

 [3] X.1

 [4] X.2

 [5] X.3

 [6] X.4

 [7] X.5

 [8] X.6

 [9] X.7

[10] X.8

[11] X.9

[12] X.10

[13] X.11

[14] X.12

[15] X.13

[16] X.14
```

3. Changing colnames:



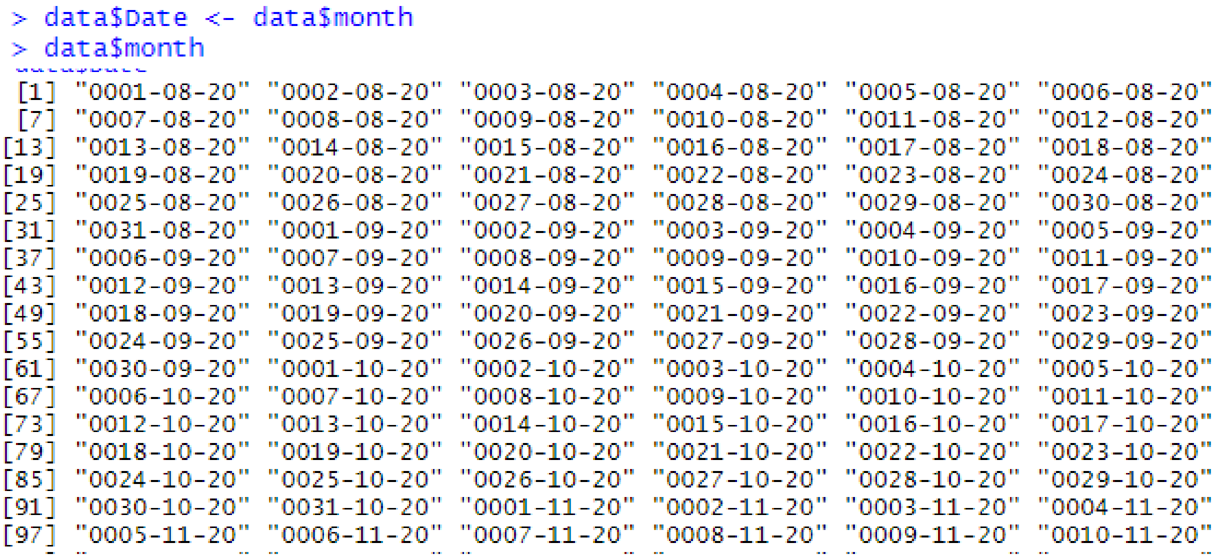
```
> colnames(data)
 [1] "Date"                              "Minimum temperature"
 [3] "Maximum temperature"               "Rainfall (mm)"
 [5] "Evaporation (mm)"                  "Sunshine (hours)"
 [7] "Direction of maximum wind gust"    "Speed of maximum wind gust (km/h)"
 [9] "Time of maximum wind gust"         "9am Temperature"
[11] "9am relative humidity (%)"         "9am cloud amount (oktas)"
[13] "9am wind direction"                "9am wind speed (km/h)"
[15] "9am MSL pressure (hPa)"            "3pm Temperature"
[17] "3pm relative humidity (%)"         "3pm cloud amount (oktas)"
[19] "3pm wind direction"                "3pm wind speed (km/h)"
[21] "3pm MSL pressure (hPa)"
> colnames(data)<- c("Date","month","year","min","max","Rainfall_(mm)","Evaporation_(m
m)","Sunshine_(hours)","Direction_max_wind_gust","Max_wind_gust_speed","max_wind_gust_tim
e","temp_9am","humid_9am","cloud_amt_okt_9am","wind_dir_9am","9am_wind_speed","9am_pressu
re","3pm_rel_pressure","3p_temp","humid_3pm","cloud_amt_3pm","wind_dir_3pm","wind_speed_3
pm","pressure_3pm")
> colnames(data)
 [1] "Date"                "month"               "year"
 [4] "min"                 "max"                 "Rainfall_(mm)"
 [7] "Evaporation_(mm)"    "Sunshine_(hours)"    "Direction_max_wind_gust"
[10] "Max_wind_gust_speed" "max_wind_gust_time"  "temp_9am"
[13] "humid_9am"           "cloud_amt_okt_9am"   "wind_dir_9am"
[16] "9am_wind_speed"      "9am_pressure"        "3pm_rel_pressure"
[19] "3p_temp"             "humid_3pm"           "cloud_amt_3pm"
```

4. Changing datatype of date:



```
> data$Date <-as.Date(as.character(data$Date))
> typeof(data$Date)
[1] "double"
```

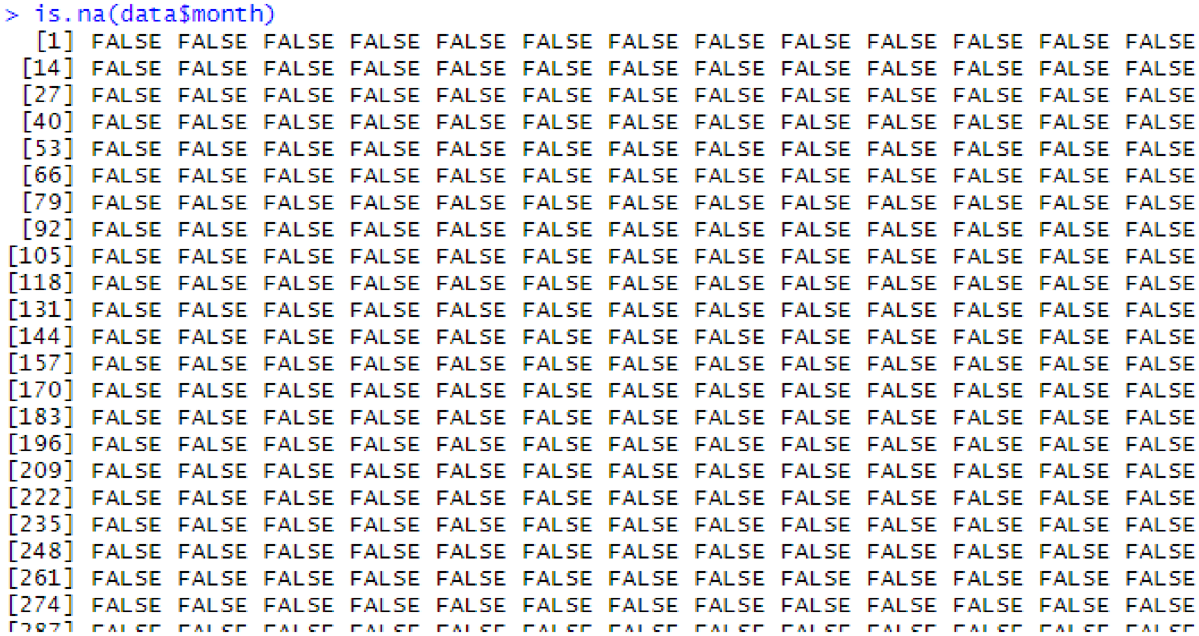
5. Adding columns:



```
> data$Date <- data$month
> data$month
 [1] "0001-08-20" "0002-08-20" "0003-08-20" "0004-08-20" "0005-08-20" "0006-08-20"
 [7] "0007-08-20" "0008-08-20" "0009-08-20" "0010-08-20" "0011-08-20" "0012-08-20"
[13] "0013-08-20" "0014-08-20" "0015-08-20" "0016-08-20" "0017-08-20" "0018-08-20"
[19] "0019-08-20" "0020-08-20" "0021-08-20" "0022-08-20" "0023-08-20" "0024-08-20"
[25] "0025-08-20" "0026-08-20" "0027-08-20" "0028-08-20" "0029-08-20" "0030-08-20"
[31] "0031-08-20" "0001-09-20" "0002-09-20" "0003-09-20" "0004-09-20" "0005-09-20"
[37] "0006-09-20" "0007-09-20" "0008-09-20" "0009-09-20" "0010-09-20" "0011-09-20"
[43] "0012-09-20" "0013-09-20" "0014-09-20" "0015-09-20" "0016-09-20" "0017-09-20"
[49] "0018-09-20" "0019-09-20" "0020-09-20" "0021-09-20" "0022-09-20" "0023-09-20"
[55] "0024-09-20" "0025-09-20" "0026-09-20" "0027-09-20" "0028-09-20" "0029-09-20"
[61] "0030-09-20" "0001-10-20" "0002-10-20" "0003-10-20" "0004-10-20" "0005-10-20"
[67] "0006-10-20" "0007-10-20" "0008-10-20" "0009-10-20" "0010-10-20" "0011-10-20"
[73] "0012-10-20" "0013-10-20" "0014-10-20" "0015-10-20" "0016-10-20" "0017-10-20"
[79] "0018-10-20" "0019-10-20" "0020-10-20" "0021-10-20" "0022-10-20" "0023-10-20"
[85] "0024-10-20" "0025-10-20" "0026-10-20" "0027-10-20" "0028-10-20" "0029-10-20"
[91] "0030-10-20" "0031-10-20" "0001-11-20" "0002-11-20" "0003-11-20" "0004-11-20"
[97] "0005-11-20" "0006-11-20" "0007-11-20" "0008-11-20" "0009-11-20" "0010-11-20"
```

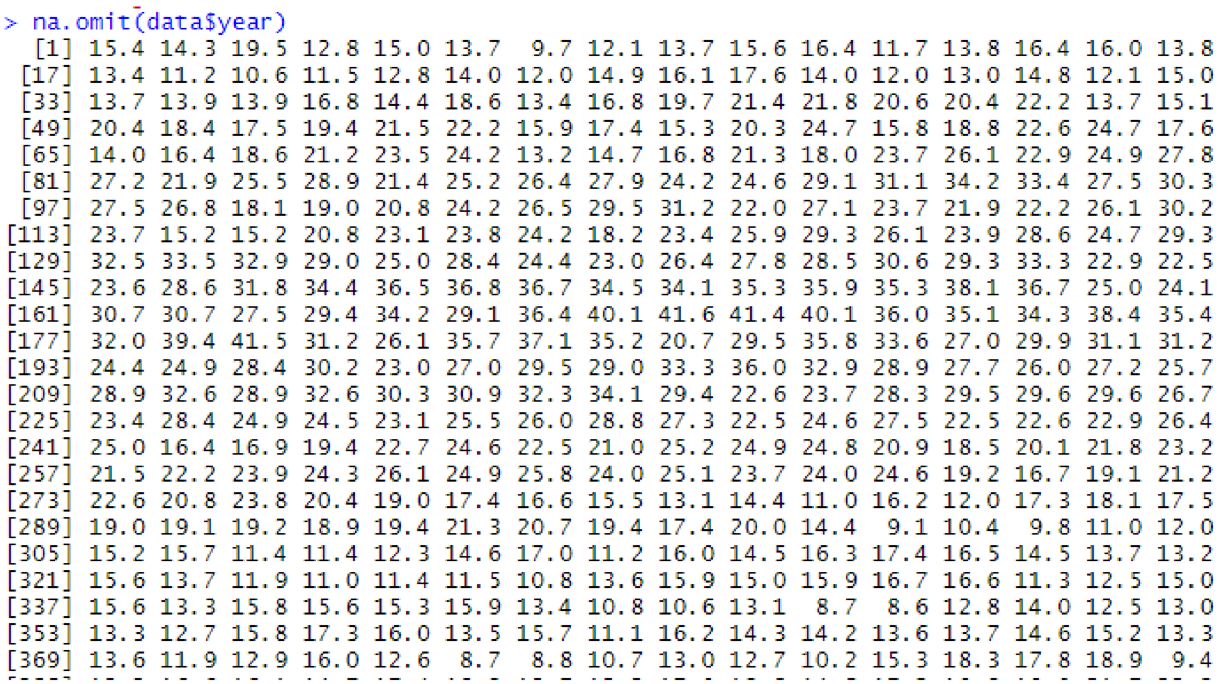
6. NA values in months and year:

```
> is.na(data$year)
  [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [14] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [27] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [40] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [53] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [66] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [79] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [92] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[105] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[118] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[131] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[144] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[157] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[170] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[183] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[196] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[209] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[222] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[235] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[248] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[261] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[274] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[287] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[300] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[313] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
```



```
> is.na(data$month)
  [1] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [14] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [27] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [40] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [53] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [66] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [79] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
 [92] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[105] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[118] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[131] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[144] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[157] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[170] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[183] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[196] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[209] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[222] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[235] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[248] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[261] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[274] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
[287] FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE FALSE
```

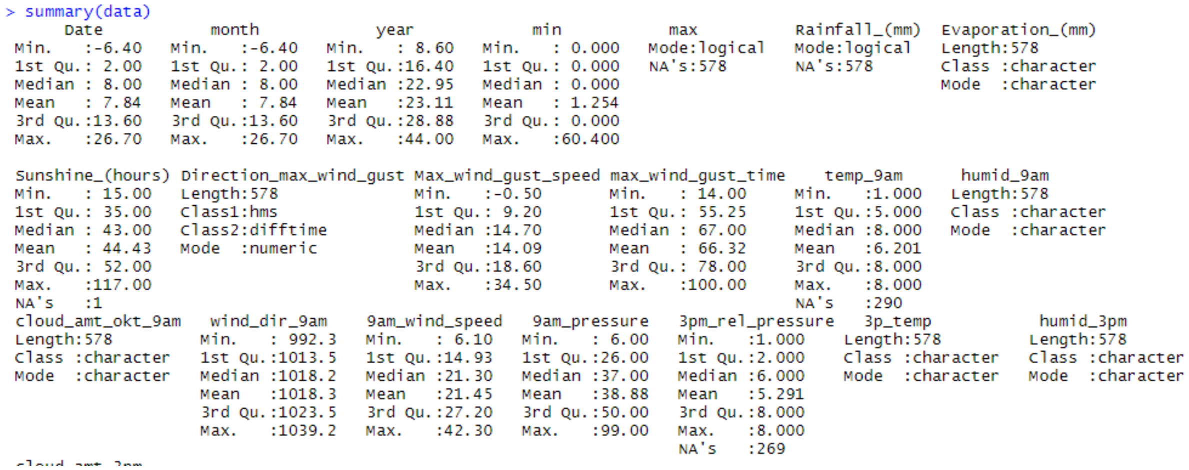
7. Replacing the null values:



```
> na.omit(data$year)
  [1] 15.4 14.3 19.5 12.8 15.0 13.7  9.7 12.1 13.7 15.6 16.4 11.7 13.8 16.4 16.0 13.8
 [17] 13.4 11.2 10.6 11.5 12.8 14.0 12.0 14.9 16.1 17.6 14.0 12.0 13.0 14.8 12.1 15.0
 [33] 13.7 13.9 13.9 16.8 14.4 18.6 13.4 16.8 19.7 21.4 21.8 20.6 20.4 22.2 13.7 15.1
 [49] 20.4 18.4 17.5 19.4 21.5 22.2 15.9 17.4 15.3 20.3 24.7 15.8 18.8 22.6 24.7 17.6
 [65] 14.0 16.4 18.6 21.2 23.5 24.2 13.2 14.7 16.8 21.3 18.0 23.7 26.1 22.9 24.9 27.8
 [81] 27.2 21.9 25.5 28.9 21.4 25.2 26.4 27.9 24.2 24.6 29.1 31.1 34.2 33.4 27.5 30.3
 [97] 27.5 26.8 18.1 19.0 20.8 24.2 26.5 29.5 31.2 22.0 27.1 23.7 21.9 22.2 26.1 30.2
[113] 23.7 15.2 15.2 20.8 23.1 23.8 24.2 18.2 23.4 25.9 29.3 26.1 23.9 28.6 24.7 29.3
[129] 32.5 33.5 32.9 29.0 25.0 28.4 24.4 23.0 26.4 27.8 28.5 30.6 29.3 33.3 22.9 22.5
[145] 23.6 28.6 31.8 34.4 36.5 36.8 36.7 34.5 34.1 35.3 35.9 35.3 38.1 36.7 25.0 24.1
[161] 30.7 30.7 27.5 29.4 34.2 29.1 36.4 40.1 41.6 41.4 40.1 36.0 35.1 34.3 38.4 35.4
[177] 32.0 39.4 41.5 31.2 26.1 35.7 37.1 35.2 20.7 29.5 35.8 33.6 27.0 29.9 31.1 31.2
[193] 24.4 24.9 28.4 30.2 23.0 27.0 29.5 29.0 33.3 36.0 32.9 28.9 27.7 26.0 27.2 25.7
[209] 28.9 32.6 28.9 32.6 30.3 30.9 32.3 34.1 29.4 22.6 23.7 28.3 29.5 29.6 29.6 26.7
[225] 23.4 28.4 24.9 24.5 23.1 25.5 26.0 28.8 27.3 22.5 24.6 27.5 22.5 22.6 22.9 26.4
[241] 25.0 16.4 16.9 19.4 22.7 24.6 22.5 21.0 25.2 24.9 24.8 20.9 18.5 20.1 21.8 23.2
[257] 21.5 22.2 23.9 24.3 26.1 24.9 25.8 24.0 25.1 23.7 24.0 24.6 19.2 16.7 19.1 21.2
[273] 22.6 20.8 23.8 20.4 19.0 17.4 16.6 15.5 13.1 14.4 11.0 16.2 12.0 17.3 18.1 17.5
[289] 19.0 19.1 19.2 18.9 19.4 21.3 20.7 19.4 17.4 20.0 14.4  9.1 10.4  9.8 11.0 12.0
[305] 15.2 15.7 11.4 11.4 12.3 14.6 17.0 11.2 16.0 14.5 16.3 17.4 16.5 14.5 13.7 13.2
[321] 15.6 13.7 11.9 11.0 11.4 11.5 10.8 13.6 15.9 15.0 15.9 16.7 16.6 11.3 12.5 15.0
[337] 15.6 13.3 15.8 15.6 15.3 15.9 13.4 10.8 10.6 13.1  8.7  8.6 12.8 14.0 12.5 13.0
[353] 13.3 12.7 15.8 17.3 16.0 13.5 15.7 11.1 16.2 14.3 14.2 13.6 13.7 14.6 15.2 13.3
[369] 13.6 11.9 12.9 16.0 12.6  8.7  8.8 10.7 13.0 12.7 10.2 15.3 18.3 17.8 18.9  9.4
```

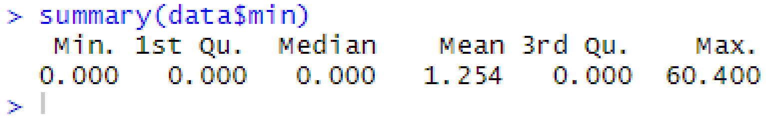
Part C

1) Summary :



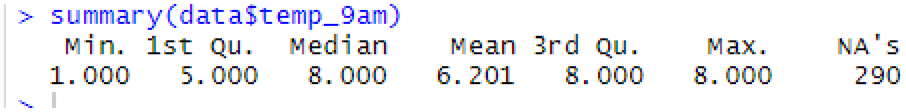
```
> summary(data)
      Date            month             year              min              max          Rainfall_(mm)  Evaporation_(mm)  
 Min.   :-6.40   Min.   :-6.40   Min.   : 8.60   Min.   : 0.000   Mode:logical   Mode:logical   Length:578        
 1st Qu.: 2.00   1st Qu.: 2.00   1st Qu.:16.40   1st Qu.: 0.000   NA's:578       NA's:578       Class :character  
 Median : 8.00   Median : 8.00   Median :22.95   Median : 0.000                                 Mode  :character  
 Mean   : 7.84   Mean   : 7.84   Mean   :23.11   Mean   : 1.254                                                   
 3rd Qu.:13.60   3rd Qu.:13.60   3rd Qu.:28.88   3rd Qu.: 0.000                                                   
 Max.   :26.70   Max.   :26.70   Max.   :44.00   Max.   :60.400                                                   
                                                                                                                   
 Sunshine_(hours) Direction_max_wind_gust Max_wind_gust_speed max_wind_gust_time    temp_9am       humid_9am        
 Min.   : 15.00   Length:578              Min.   :-0.50       Min.   : 14.00     Min.   :1.000   Length:578        
 1st Qu.: 35.00   Class1:hms              1st Qu.: 9.20       1st Qu.: 55.25     1st Qu.:5.000   Class :character  
 Median : 43.00   Class2:difftime         Median :14.70       Median : 67.00     Median :8.000   Mode  :character  
 Mean   : 44.43   Mode  :numeric          Mean   :14.09       Mean   : 66.32     Mean   :6.201                     
 3rd Qu.: 52.00                           3rd Qu.:18.60       3rd Qu.: 78.00     3rd Qu.:8.000                     
 Max.   :117.00                           Max.   :34.50       Max.   :100.00     Max.   :8.000                     
 NA's   :1                                                                       NA's   :290                       
 cloud_amt_okt_9am   wind_dir_9am    9am_wind_speed   9am_pressure   3pm_rel_pressure   3p_temp            humid_3pm        
 Length:578         Min.   : 992.3   Min.   : 6.10   Min.   : 6.00   Min.   :1.000    Length:578         Length:578        
 Class :character   1st Qu.:1013.5   1st Qu.:14.93   1st Qu.:26.00   1st Qu.:2.000    Class :character   Class :character  
 Mode  :character   Median :1018.2   Median :21.30   Median :37.00   Median :6.000    Mode  :character   Mode  :character  
                    Mean   :1018.3   Mean   :21.45   Mean   :38.88   Mean   :5.291                                         
                    3rd Qu.:1023.5   3rd Qu.:27.20   3rd Qu.:50.00   3rd Qu.:8.000                                         
                    Max.   :1039.2   Max.   :42.30   Max.   :99.00   Max.   :8.000                                         
                                                                     NA's   :269                                           
```

Minimum temp:



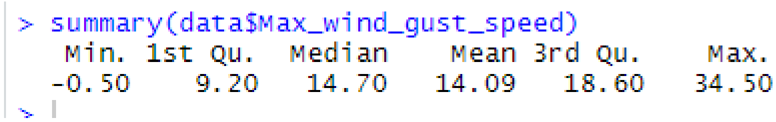
```
> summary(data$min)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
  0.000   0.000   0.000   1.254   0.000  60.400 
> 
```

9_am_temp:



```
> summary(data$temp_9am)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's 
  1.000   5.000   8.000   6.201   8.000   8.000     290 
> 
```

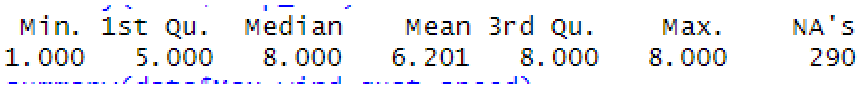
Speed_of_max_wind_gust:



```
> summary(data$Max_wind_gust_speed)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
  -0.50    9.20   14.70   14.09   18.60   34.50 
> 
```

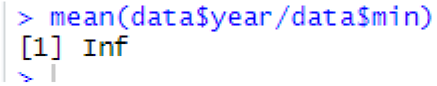
2) Min temperature per month:

```
> mean(data$month/data$min)
```



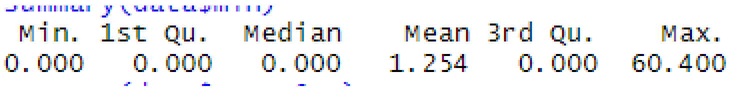
```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max.    NA's 
  1.000   5.000   8.000   6.201   8.000   8.000     290 
```

Min temperature per year:

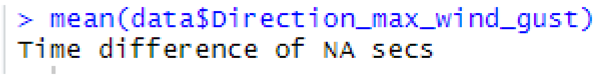


```
> mean(data$year/data$min)
[1] Inf
> 
```

3) Avg wind gust:



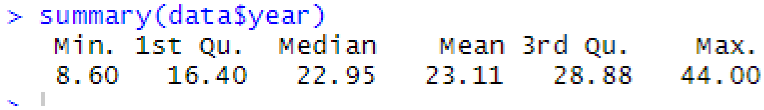
```
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
  0.000   0.000   0.000   1.254   0.000  60.400 
```



```
> mean(data$Direction_max_wind_gust)
Time difference of NA secs
```

4) According to the analysis the 5th and 6th months of the year 2019 are the dry hot months.

5) In the year 2019 the summary of the data looks like below:



```
> summary(data$year)
   Min. 1st Qu.  Median    Mean 3rd Qu.    Max. 
   8.60   16.40   22.95   23.11   28.88   44.00 
> 
```

6) The final histogram of the data will look like: