kornel_kovacs_hw_3_hotels

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1. Prerequisites and reads

```
library(tidyverse)
```

```
## -- Attaching packages ---------------------------------------------------------- tidyverse 1.2.1 --
```

```
## v ggplot2 3.2.1     v purrr   0.3.2
## v tibble  2.1.3     v dplyr   0.8.3
## v tidyr   1.0.0     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.4.0
```

```
## -- Conflicts ------------------------------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
hotels <- read.csv(file = "..//da_data_repo/hotels-vienna/clean/hotels-vienna.csv")
head(hotels)
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna           36  City centre     Donauturm   17. Hernals
## 2 Austria      Vienna          189  City centre     Donauturm   17. Hernals
## 3 Austria      Vienna           53  City centre     Donauturm    Alsergrund
## 4 Austria      Vienna           55  City centre     Donauturm    Alsergrund
## 5 Austria      Vienna           33  City centre     Donauturm    Alsergrund
## 6 Austria      Vienna           25  City centre     Donauturm    Alsergrund
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1    81 Vienna     4      4.5            216           1    21894     1
## 2    81 Vienna     4      3.5            708           0    21897     1
## 3    85 Vienna     4      3.5            629           0    21901     1
## 4    83 Vienna     3      4.0             52           0    21902     1
## 5    82 Vienna     4      3.5            219           1    21903     1
## 6   229 Vienna     5      4.5             27           1    21904     1
##       offer_cat year month weekend holiday distance distance_alter
## 1 15-50% offer 2017    11       0       0      2.7            4.4
## 2  1-15% offer 2017    11       0       0      1.7            3.8
## 3 15-50% offer 2017    11       0       0      1.4            2.5
## 4 15-50% offer 2017    11       0       0      1.7            2.5
## 5 15-50% offer 2017    11       0       0      1.2            2.8
## 6  1-15% offer 2017    11       0       0      0.9            3.0
##   accommodation_type nnights rating
## 1          Apartment       1    4.4
## 2              Hotel       1    3.9
## 3              Hotel       1    3.7
## 4              Hotel       1    4.0
## 5              Hotel       1    3.9
## 6          Apartment       1    4.8
```

2. Overview of data

```r
colnames(hotels)
```

```
##  [1] "country"           "city_actual"       "rating_count"
##  [4] "center1label"      "center2label"      "neighbourhood"
##  [7] "price"             "city"              "stars"
## [10] "ratingta"          "ratingta_count"    "scarce_room"
## [13] "hotel_id"          "offer"             "offer_cat"
## [16] "year"              "month"             "weekend"
## [19] "holiday"           "distance"          "distance_alter"
## [22] "accommodation_type" "nnights"          "rating"
```

3. Filtering (choosing) rows with filter() and saving

```r
head((filter(hotels, stars == 4.0)))
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna           36  City centre    Donauturm   17. Hernals
## 2 Austria      Vienna          189  City centre    Donauturm   17. Hernals
## 3 Austria      Vienna           53  City centre    Donauturm     Alsergrund
## 4 Austria      Vienna           33  City centre    Donauturm     Alsergrund
## 5 Austria      Vienna           57  City centre    Donauturm     Alsergrund
## 6 Austria      Vienna          161  City centre    Donauturm     Alsergrund
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1    81 Vienna     4      4.5            216           1    21894     1
## 2    81 Vienna     4      3.5            708           0    21897     1
## 3    85 Vienna     4      3.5            629           0    21901     1
## 4    82 Vienna     4      3.5            219           1    21903     1
## 5   103 Vienna     4      3.5            251           1    21906     0
## 6   150 Vienna     4      4.5            617           0    21907     0
##       offer_cat year month weekend holiday distance distance_alter
## 1 15-50% offer 2017    11       0       0      2.7            4.4
## 2  1-15% offer 2017    11       0       0      1.7            3.8
## 3 15-50% offer 2017    11       0       0      1.4            2.5
## 4 15-50% offer 2017    11       0       0      1.2            2.8
## 5  0% no offer 2017    11       0       0      0.9            2.4
## 6  0% no offer 2017    11       0       0      1.0            2.7
##   accommodation_type nnights rating
## 1          Apartment       1    4.4
## 2              Hotel       1    3.9
## 3              Hotel       1    3.7
## 4              Hotel       1    3.9
## 5              Hotel       1    3.9
## 6              Hotel       1    4.6
```

```r
Alsergrund_4star <- (filter(hotels, stars == 4.0))
```

3.1 Logical operators

3.1.1 AND - &

```r
Alsergrund_4star <- filter(hotels, stars == 4.0 & neighbourhood == 'Alsergrund')
Alsergrund_4star <- filter(hotels, stars == 4.0,  neighbourhood == 'Alsergrund')
```

3.1.2 OR - |

```r
Alsergrund_or_4star <- filter(hotels, stars == 4.0 | neighbourhood == 'Alsergrund')
```

3.1.3 NOT - !

```r
not_4star_in_Alsergrund_4star <- filter(hotels, stars != 4.0)
```

3.1.4 Let's combine them!

```r
not_4star_in_Alsergrund <- filter(hotels, stars != 4.0 & neighbourhood == 'Alsergrund')
```

3.1.5 Trick

```r
four_five_stars <- filter(hotels, stars %in% c(4.0,5.0))
```

3.1.6 Do not overcomplicate, do not use negation unless necessary!

```r
head(filter(hotels, !(rating > 4.0 | stars > 4.0)))
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna          189  City centre    Donauturm   17. Hernals
## 2 Austria      Vienna           53  City centre    Donauturm    Alsergrund
## 3 Austria      Vienna           55  City centre    Donauturm    Alsergrund
## 4 Austria      Vienna           33  City centre    Donauturm    Alsergrund
## 5 Austria      Vienna           57  City centre    Donauturm    Alsergrund
## 6 Austria      Vienna           50  City centre    Donauturm    Alsergrund
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1    81 Vienna     4      3.5            708           0    21897     1
## 2    85 Vienna     4      3.5            629           0    21901     1
## 3    83 Vienna     3      4.0             52           0    21902     1
## 4    82 Vienna     4      3.5            219           1    21903     1
## 5   103 Vienna     4      3.5            251           1    21906     0
## 6    80 Vienna     2      3.5            146           1    21908     1
##     offer_cat year month weekend holiday distance distance_alter
```

```
## 1  1-15% offer 2017     11        0        0       1.7          3.8
## 2 15-50% offer 2017     11        0        0       1.4          2.5
## 3 15-50% offer 2017     11        0        0       1.7          2.5
## 4 15-50% offer 2017     11        0        0       1.2          2.8
## 5  0% no offer 2017     11        0        0       0.9          2.4
## 6  1-15% offer 2017     11        0        0       0.7          2.7
##   accommodation_type nnights rating
## 1              Hotel       1    3.9
## 2              Hotel       1    3.7
## 3              Hotel       1    4.0
## 4              Hotel       1    3.9
## 5              Hotel       1    3.9
## 6              Hotel       1    3.5
```

```r
head(filter(hotels, rating <= 4.0, stars <= 4.0))
```

```
##    country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna           189  City centre    Donauturm   17. Hernals
## 2 Austria      Vienna            53  City centre    Donauturm     Alsergrund
## 3 Austria      Vienna            55  City centre    Donauturm     Alsergrund
## 4 Austria      Vienna            33  City centre    Donauturm     Alsergrund
## 5 Austria      Vienna            57  City centre    Donauturm     Alsergrund
## 6 Austria      Vienna            50  City centre    Donauturm     Alsergrund
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1    81 Vienna     4      3.5            708           0    21897     1
## 2    85 Vienna     4      3.5            629           0    21901     1
## 3    83 Vienna     3      4.0             52           0    21902     1
## 4    82 Vienna     4      3.5            219           1    21903     1
## 5   103 Vienna     4      3.5            251           1    21906     0
## 6    80 Vienna     2      3.5            146           1    21908     1
##        offer_cat year month weekend holiday distance distance_alter
## 1  1-15% offer 2017     11        0        0       1.7          3.8
## 2 15-50% offer 2017     11        0        0       1.4          2.5
## 3 15-50% offer 2017     11        0        0       1.7          2.5
## 4 15-50% offer 2017     11        0        0       1.2          2.8
## 5  0% no offer 2017     11        0        0       0.9          2.4
## 6  1-15% offer 2017     11        0        0       0.7          2.7
##   accommodation_type nnights rating
## 1              Hotel       1    3.9
## 2              Hotel       1    3.7
## 3              Hotel       1    4.0
## 4              Hotel       1    3.9
## 5              Hotel       1    3.9
## 6              Hotel       1    3.5
```

4. I skipped the NA part, because it would have been copy-pasting, which I try to avoid.

5. arrange()

5.1 Worst hotels according to ratings

Note that in a real analysis we should take into account the number of ratings as well.

```r
head(arrange(hotels, rating))
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna            1  City centre    Donauturm      Favoriten
## 2 Austria      Vienna            1  City centre    Donauturm   Innere Stadt
## 3 Austria      Vienna            1  City centre    Donauturm   Leopoldstadt
## 4 Austria      Vienna          113  City centre    Donauturm      Favoriten
## 5 Austria      Vienna            1  City centre    Donauturm   Innere Stadt
## 6 Austria      Vienna           25  City centre    Donauturm    Landstrasse
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1   127 Vienna   3.0       NA             NA           1    21938     1
## 2   135 Vienna   3.5       NA             NA           1    22034     0
## 3   587 Vienna   5.0        5              7           1    22164     1
## 4    56 Vienna   2.0        3            183           1    21948     0
## 5   253 Vienna   3.5       NA             NA           1    22055     0
## 6    79 Vienna   3.0       NA             NA           1    22116     0
##       offer_cat year month weekend holiday distance distance_alter
## 1 15-50% offer 2017    11       0       0      2.9            5.2
## 2  0% no offer 2017    11       0       0      0.3            2.6
## 3 15-50% offer 2017    11       0       0      0.7            2.2
## 4  0% no offer 2017    11       0       0      2.0            4.5
## 5  0% no offer 2017    11       0       0      0.1            2.8
## 6  0% no offer 2017    11       0       0      1.6            3.7
##   accommodation_type nnights rating
## 1          Apartment       1      1
## 2          Apartment       1      1
## 3              Hotel       1      1
## 4              Hotel       1      2
## 5          Apartment       1      2
## 6          Apartment       1      2
```

5.2 Best hotels according to ratings

```r
head(arrange(hotels, desc(rating)))
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna            1  City centre    Donauturm      Josefstadt
## 2 Austria      Vienna            2  City centre    Donauturm      Margareten
## 3 Austria      Vienna            1  City centre    Donauturm          Neubau
## 4 Austria      Vienna            3  City centre    Donauturm          Neubau
## 5 Austria      Vienna            1  City centre    Donauturm          Wieden
## 6 Austria      Vienna            2  City centre    Donauturm          Wieden
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1   363 Vienna   3.5       NA             NA           1    22079     1
## 2   150 Vienna   3.5       NA             NA           1    22210     1
## 3   160 Vienna   3.5       NA             NA           1    22245     1
## 4    98 Vienna   4.0       NA             NA           1    22257     1
## 5    84 Vienna   3.5       NA             NA           1    22400     0
## 6   109 Vienna   3.0        3             14           1    22404     1
##       offer_cat year month weekend holiday distance distance_alter
## 1 1-15% offer 2017    11       0       0      1.5            3.5
```

```
## 2   1-15% offer 2017    11        0        0        1.6            4.3
## 3   1-15% offer 2017    11        0        0        1.6            4.3
## 4  15-50% offer 2017    11        0        0        1.7            4.2
## 5    0% no offer 2017   11        0        0        0.9            3.6
## 6 50%-75% offer 2017    11        0        0        1.5            3.8
##   accommodation_type nnights rating
## 1          Apartment       1      5
## 2          Apartment       1      5
## 3          Apartment       1      5
## 4          Apartment       1      5
## 5          Apartment       1      5
## 6          Apartment       1      5
```

5. select()

```r
head(select(hotels, accommodation_type , nnights , rating))
```

```
##   accommodation_type nnights rating
## 1          Apartment       1    4.4
## 2              Hotel       1    3.9
## 3              Hotel       1    3.7
## 4              Hotel       1    4.0
## 5              Hotel       1    3.9
## 6          Apartment       1    4.8
```

```r
head(select(hotels, accommodation_type:rating))
```

```
##   accommodation_type nnights rating
## 1          Apartment       1    4.4
## 2              Hotel       1    3.9
## 3              Hotel       1    3.7
## 4              Hotel       1    4.0
## 5              Hotel       1    3.9
## 6          Apartment       1    4.8
```

```r
head(select(hotels, -(center1label:rating)))
```

```
##   country city_actual rating_count
## 1 Austria      Vienna           36
## 2 Austria      Vienna          189
## 3 Austria      Vienna           53
## 4 Austria      Vienna           55
## 5 Austria      Vienna           33
## 6 Austria      Vienna           25
```

```r
head(select(hotels, accommodation_type , rating, everything()))
```

```
##   accommodation_type rating country city_actual rating_count center1label
## 1          Apartment    4.4 Austria      Vienna           36  City centre
```

```
## 2                 Hotel    3.9 Austria      Vienna          189  City centre
## 3                 Hotel    3.7 Austria      Vienna           53  City centre
## 4                 Hotel    4.0 Austria      Vienna           55  City centre
## 5                 Hotel    3.9 Austria      Vienna           33  City centre
## 6             Apartment    4.8 Austria      Vienna           25  City centre
##   center2label neighbourhood price   city stars ratingta ratingta_count
## 1   Donauturm    17. Hernals    81 Vienna     4      4.5            216
## 2   Donauturm    17. Hernals    81 Vienna     4      3.5            708
## 3   Donauturm      Alsergrund   85 Vienna     4      3.5            629
## 4   Donauturm      Alsergrund   83 Vienna     3      4.0             52
## 5   Donauturm      Alsergrund   82 Vienna     4      3.5            219
## 6   Donauturm      Alsergrund  229 Vienna     5      4.5             27
##   scarce_room hotel_id offer     offer_cat year month weekend holiday
## 1           1    21894     1 15-50% offer 2017    11       0       0
## 2           0    21897     1  1-15% offer 2017    11       0       0
## 3           0    21901     1 15-50% offer 2017    11       0       0
## 4           0    21902     1 15-50% offer 2017    11       0       0
## 5           1    21903     1 15-50% offer 2017    11       0       0
## 6           1    21904     1  1-15% offer 2017    11       0       0
##   distance distance_alter nnights
## 1      2.7            4.4       1
## 2      1.7            3.8       1
## 3      1.4            2.5       1
## 4      1.7            2.5       1
## 5      1.2            2.8       1
## 6      0.9            3.0       1
```

```r
head(rename(hotels, customer_rating = rating))
```

```
##   country city_actual rating_count center1label center2label neighbourhood
## 1 Austria      Vienna           36  City centre    Donauturm    17. Hernals
## 2 Austria      Vienna          189  City centre    Donauturm    17. Hernals
## 3 Austria      Vienna           53  City centre    Donauturm      Alsergrund
## 4 Austria      Vienna           55  City centre    Donauturm      Alsergrund
## 5 Austria      Vienna           33  City centre    Donauturm      Alsergrund
## 6 Austria      Vienna           25  City centre    Donauturm      Alsergrund
##   price   city stars ratingta ratingta_count scarce_room hotel_id offer
## 1    81 Vienna     4      4.5            216           1    21894     1
## 2    81 Vienna     4      3.5            708           0    21897     1
## 3    85 Vienna     4      3.5            629           0    21901     1
## 4    83 Vienna     3      4.0             52           0    21902     1
## 5    82 Vienna     4      3.5            219           1    21903     1
## 6   229 Vienna     5      4.5             27           1    21904     1
##       offer_cat year month weekend holiday distance distance_alter
## 1 15-50% offer 2017    11       0       0      2.7            4.4
## 2  1-15% offer 2017    11       0       0      1.7            3.8
## 3 15-50% offer 2017    11       0       0      1.4            2.5
## 4 15-50% offer 2017    11       0       0      1.7            2.5
## 5 15-50% offer 2017    11       0       0      1.2            2.8
## 6  1-15% offer 2017    11       0       0      0.9            3.0
##   accommodation_type nnights customer_rating
## 1          Apartment       1             4.4
## 2              Hotel       1             3.9
## 3              Hotel       1             3.7
```

```
## 4        Hotel     1        4.0
## 5        Hotel     1        3.9
## 6    Apartment     1        4.8
```