

class_participation

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----- tidyverse 2.0.0 --
## v dplyr      1.1.4      v readr      2.1.5
## v forcats    1.0.0      v stringr   1.5.1
## v ggplot2     3.5.1      v tibble    3.2.1
## v lubridate   1.9.4      v tidyr     1.3.1
## v purrr       1.0.2
## -- Conflicts ----- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
scores <-
  tibble(
    name = c("mike", "carol", "greg", "marcia", "peter", "jan", "bobby", "cindy", "alice"),
    school = c("south", "south", "south", "south", "north", "north", "north", "south", "south"),
    teacher = c("johnson", "johnson", "johnson", "johnson", "smith", "smith", "smith", "perry", "perry"),
    sex = c("male", "female", "male", "female", "male", "female", "male", "female", "female"),
    math_score = c(4, 3, 2, 4, 3, 4, 5, 4, 5),
    reading_score = c(1, 5, 2, 4, 5, 4, 1, 5, 4)
  )
```

```
scores %>%
  slice(1:3)
```

```
## # A tibble: 3 x 6
##   name school teacher sex    math_score reading_score
##   <chr> <chr>  <chr>  <chr>      <dbl>         <dbl>
## 1 mike  south  johnson male         4             1
## 2 carol south  johnson female        3             5
## 3 greg  south  johnson male         2             2
```

```
scores_small <- scores %>%
  slice(1:3)
scores_small
```

```
## # A tibble: 3 x 6
##   name school teacher sex    math_score reading_score
##   <chr> <chr>  <chr>  <chr>      <dbl>         <dbl>
## 1 mike  south  johnson male         4             1
## 2 carol south  johnson female        3             5
## 3 greg  south  johnson male         2             2
```

11.5

```
# sort data by math_score
scores %>%
```

```
arrange(desc(math_score)) # no quotes needed around math_score
```

```
## # A tibble: 9 x 6
##   name    school teacher sex    math_score reading_score
##   <chr>  <chr>   <chr>  <chr>      <dbl>      <dbl>
## 1 bobby  north   smith   male         5          1
## 2 alice  south   perry   female        5          4
## 3 mike   south   johnson male         4          1
## 4 marcia south   johnson female        4          4
## 5 jan    north   smith   female        4          4
## 6 cindy  south   perry   female        4          5
## 7 carol  south   johnson female        3          5
## 8 peter  north   smith   male         3          5
## 9 greg   south   johnson male         2          2
```

```
# ex 11.6 sort name in aplha order
```

```
scores %>%
  arrange(name)
```

```
## # A tibble: 9 x 6
##   name    school teacher sex    math_score reading_score
##   <chr>  <chr>   <chr>  <chr>      <dbl>      <dbl>
## 1 alice  south   perry   female        5          4
## 2 bobby  north   smith   male         5          1
## 3 carol  south   johnson female        3          5
## 4 cindy  south   perry   female        4          5
## 5 greg   south   johnson male         2          2
## 6 jan    north   smith   female        4          4
## 7 marcia south   johnson female        4          4
## 8 mike   south   johnson male         4          1
## 9 peter  north   smith   male         3          5
```

```
# 11.7
```

```
# 11.8
```

```
scores %>%
  arrange(school, teacher, sex, math_score, reading_score)
```

```
## # A tibble: 9 x 6
##   name    school teacher sex    math_score reading_score
##   <chr>  <chr>   <chr>  <chr>      <dbl>      <dbl>
## 1 jan    north   smith   female        4          4
## 2 peter  north   smith   male         3          5
## 3 bobby  north   smith   male         5          1
## 4 carol  south   johnson female        3          5
## 5 marcia south   johnson female        4          4
## 6 greg   south   johnson male         2          2
## 7 mike   south   johnson male         4          1
## 8 cindy  south   perry   female        4          5
## 9 alice  south   perry   female        5          4
```

```
# ex 11.9
```

```
scores %>%
  select(name, math_score, reading_score)
```

```
## # A tibble: 9 x 3
##   name    math_score reading_score
```

```
##   <chr>      <dbl>      <dbl>
## 1 mike      4          1
## 2 carol     3          5
## 3 greg      2          2
## 4 marcia    4          4
## 5 peter     3          5
## 6 jan       4          4
## 7 bobby     5          1
## 8 cindy     4          5
## 9 alice     5          4
```

ex 11.10

```
scores %>%
  select(-sex)
```

```
## # A tibble: 9 x 5
##   name  school teacher math_score reading_score
##   <chr> <chr>   <chr>      <dbl>      <dbl>
## 1 mike  south   johnson      4          1
## 2 carol  south   johnson      3          5
## 3 greg   south   johnson      2          2
## 4 marcia south   johnson      4          4
## 5 peter  north   smith        3          5
## 6 jan    north   smith        4          4
## 7 bobby  north   smith        5          1
## 8 cindy  south   perry        4          5
## 9 alice  south   perry        5          4
```

```
scores %>%
  select(-math_score, -reading_score)
```

```
## # A tibble: 9 x 4
##   name  school teacher sex
##   <chr> <chr>   <chr>  <chr>
## 1 mike  south   johnson male
## 2 carol  south   johnson female
## 3 greg   south   johnson male
## 4 marcia south   johnson female
## 5 peter  north   smith   male
## 6 jan    north   smith   female
## 7 bobby  north   smith   male
## 8 cindy  south   perry   female
## 9 alice  south   perry   female
```

```
scores %>%
  select(sex, everything())
```

```
## # A tibble: 9 x 6
##   sex  name  school teacher math_score reading_score
##   <chr> <chr> <chr>   <chr>      <dbl>      <dbl>
## 1 male  mike  south   johnson      4          1
## 2 female carol  south   johnson      3          5
## 3 male  greg   south   johnson      2          2
## 4 female marcia south   johnson      4          4
## 5 male  peter  north   smith        3          5
## 6 female jan    north   smith        4          4
```

```
## 7 male bobby north smith 5 1
## 8 female cindy south perry 4 5
## 9 female alice south perry 5 4
```

part 3: Filter. row wise operation

```
scores %>%
  filter(sex == "male" & school == "south")
```

```
## # A tibble: 2 x 6
```

```
##   name school teacher sex math_score reading_score
##   <chr> <chr> <chr> <chr> <dbl> <dbl>
## 1 mike south johnson male 4 1
## 2 greg south johnson male 2 2
```

11.14

```
scores %>%
  filter(math_score > mean(math_score))
```

```
## # A tibble: 6 x 6
```

```
##   name school teacher sex math_score reading_score
##   <chr> <chr> <chr> <chr> <dbl> <dbl>
## 1 mike south johnson male 4 1
## 2 marcia south johnson female 4 4
## 3 jan north smith female 4 4
## 4 bobby north smith male 5 1
## 5 cindy south perry female 4 5
## 6 alice south perry female 5 4
```

11.15

```
scores %>%
  filter(math_score >= 4 & reading_score >= 3)
```

```
## # A tibble: 4 x 6
```

```
##   name school teacher sex math_score reading_score
##   <chr> <chr> <chr> <chr> <dbl> <dbl>
## 1 marcia south johnson female 4 4
## 2 jan north smith female 4 4
## 3 cindy south perry female 4 5
## 4 alice south perry female 5 4
```