

Homework 3 Output - Using the Tidyverse

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Loading libraries

```
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    3.5.2      v tibble     3.2.1
v lubridate  1.9.4      v tidyr      1.3.1
v purrr      1.0.4
-- 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
```

```
library(palmerpenguins)
```

Attaching package: 'palmerpenguins'

The following objects are masked from 'package:datasets':

penguins, penguins_raw

Task 1

Question a: Why `read_csv` cannot be used to read the `data.txt` file

The function `read_csv()` can only be used to read in files that use the delimiters of commas or tabs. The function `read_csv2()` must be used in files with semicolons as the separator (commas can be used for decimal points).

```
data <- read.csv2('~/.ST558 Repo/Homework3/Data/data.txt',
                  header = T)
data
```

```
  x y z
1 1 2 3
2 5 3 8
```

Question b: Reading in 2nd file

In this file, “6” is the delimiter.

```
data_2 <- read_delim('~/.ST558 Repo/Homework3/Data/data2.txt',
                     delim = '6',
                     col_types= 'fdc')
data_2
```

```
# A tibble: 3 x 3
  x      y z
  <fct> <dbl> <chr>
1 1      2 3
2 5      3 8
3 7      4 2
```

Task 2

Data tidying skills

Question a: Reading Data

Reading in the trailblazer.csv data

```
trailblazer <- read_csv('~/.ST558 Repo/Homework3/Data/trailblazer.csv',
                        col_names= TRUE)
```

```

Rows: 9 Columns: 11
-- Column specification -----
Delimiter: ","
chr  (1): Player
dbl (10): Game1_Home, Game2_Home, Game3_Away, Game4_Home, Game5_Home, Game6_...

i Use `spec()` to retrieve the full column specification for this data.
i Specify the column types or set `show_col_types = FALSE` to quiet this message.

```

```
trailblazer
```

```

# A tibble: 9 x 11
  Player      Game1_Home Game2_Home Game3_Away Game4_Home Game5_Home Game6_Away
  <chr>      <dbl>      <dbl>      <dbl>      <dbl>      <dbl>      <dbl>
1 Damian Lill~      20        19        12        20        25        14
2 CJ McCollum      24        28        20        25        14        25
3 Norman Powe~      14        16        NA        NA        12        14
4 Robert Covi~       8         6         0         3         9         6
5 Jusuf Nurkic      20         9         4        17        14        13
6 Cody Zeller       5         5         8        10         9         6
7 Anfernee Si~      11        18        12        17         5        19
8 Larry Nance~       2         8         5         8         3         8
9 Nassir Litt~       7        11         5         9         8         8
# i 4 more variables: Game7_Away <dbl>, Game8_Away <dbl>, Game9_Home <dbl>,
#   Game10_Home <dbl>

```

Question b: Pivoting the data longer

```

trailblazer_longer <- trailblazer |>
  pivot_longer(cols = 2:11,
               names_to = c('Game', 'Location'),
               names_prefix = 'Game',
               names_sep = '_',
               values_to = 'Points')

print(trailblazer_longer, n=5)

```

```

# A tibble: 90 x 4
  Player      Game Location Points
  <chr>      <chr> <chr>      <dbl>

```

```

1 Damian Lillard 1      Home      20
2 Damian Lillard 2      Home      19
3 Damian Lillard 3      Away      12
4 Damian Lillard 4      Home      20
5 Damian Lillard 5      Home      25
# i 85 more rows

```

Question c: Who scored more when playing at home versus away

```
library(kableExtra)
```

Attaching package: 'kableExtra'

The following object is masked from 'package:dplyr':

group_rows

```

trailblazer_wider <- trailblazer_longer |>
  pivot_wider(names_from = (Location),
              values_from = Points) |>
  group_by(Player) |>
  summarize(mean_home = mean(Home, na.rm=T),
            mean_away = mean (Away, na.rm=T)) |>
  mutate(diff_points = (mean_home - mean_away)) |>
  arrange(desc(diff_points)) |>
  kbl(digits=2)

trailblazer_wider

```

Player	mean_home	mean_away	diff_points
Jusuf Nurkic	14.17	7.50	6.67
Robert Covington	9.50	3.00	6.50
Nassir Little	8.33	4.25	4.08
Damian Lillard	18.83	18.00	0.83
Cody Zeller	5.83	5.25	0.58
Larry Nance Jr	4.50	5.00	-0.50
CJ McCollum	20.83	21.50	-0.67
Anfernee Simons	12.83	15.75	-2.92
Norman Powell	16.00	19.67	-3.67

While they did not necessarily score the most points, Jusuf Nurkic (6.67) and Robert Covington (6.5) scored on average more points at home than away through the first 10 games of the season.

Task 3

Question a. Describing what some values mean

indicates that there were no values within a column. For example, there were no bill_length measurements for Gentoo species on Torgersen island.

<dbl [52]> indicates that within that cell there would be 52 observations (which are doubles) for bill length.

indicates a list-column within a tibble. List-columns occur when each element within a column is a list. For example, the above cell of Adelie species on Torgersen island, there is a list of 52 doubles within that cell / element.

Question b. Creating a new table

```
penguins_island_ct <- penguins |>
  select(species, island) |>
  group_by(species, island) |>
  summarise(n = n(), .groups='drop', ) |>
  pivot_wider(
    names_from = island, values_from = n, values_fill = 0)

penguins_island_ct
```

```
# A tibble: 3 x 4
  species   Biscoe Dream Torgersen
  <fct>     <int> <int>     <int>
1 Adelie      44    56         52
2 Chinstrap    0    68          0
3 Gentoo    124     0          0
```

Task 4

Replacing 2 missing values for bill length

```
penguins_fixed_bill_length <- penguins |>
  mutate(bill_length_mm = case_when(species == "Gentoo" & is.na(bill_length_mm) ~ 30, TRUE ~
    bill_length_mm)) |>
  mutate(bill_length_mm = case_when(species == "Adelie" & is.na(bill_length_mm) ~ 26, TRUE ~
    bill_length_mm)) |>
  arrange(bill_length_mm)

print(penguins_fixed_bill_length, n = 10)
```

```
# A tibble: 344 x 8
  species island  bill_length_mm bill_depth_mm flipper_length_mm body_mass_g
  <fct>   <fct>         <dbl>         <dbl>         <int>         <int>
1 Adelie  Torgersen         26             NA             NA             NA
2 Gentoo  Biscoe          30             NA             NA             NA
3 Adelie  Dream          32.1          15.5          188          3050
4 Adelie  Dream          33.1          16.1          178          2900
5 Adelie  Torgersen        33.5          19            190          3600
6 Adelie  Dream           34            17.1          185          3400
7 Adelie  Torgersen        34.1          18.1          193          3475
8 Adelie  Torgersen        34.4          18.4          184          3325
9 Adelie  Biscoe          34.5          18.1          187          2900
10 Adelie Torgersen        34.6          21.1          198          4400
# i 334 more rows
# i 2 more variables: sex <fct>, year <int>
```

delete

```
trailblazer_wider <- trailblazer_longer |>
  mutate(Game = as.integer(Game)) |>
  pivot_wider(names_from = ('Location'),
    values_from = 'Points') |>
  group_by(Player) |>
  mutate(mean_home = mean(Home, na.rm=TRUE),
    mean_away = mean(Away, na.rm=TRUE),
    diff_points = (mean_home - mean_away)) |>
  arrange(desc(diff_points))
```

```
print(trailblazer_wider, n = 25)
```

```
# A tibble: 90 x 7
```

```
# Groups:   Player [9]
```

	Player	Game	Home	Away	mean_home	mean_away	diff_points
	<chr>	<int>	<dbl>	<dbl>	<dbl>	<dbl>	<dbl>
1	Jusuf Nurkic	1	20	NA	14.2	7.5	6.67
2	Jusuf Nurkic	2	9	NA	14.2	7.5	6.67
3	Jusuf Nurkic	3	NA	4	14.2	7.5	6.67
4	Jusuf Nurkic	4	17	NA	14.2	7.5	6.67
5	Jusuf Nurkic	5	14	NA	14.2	7.5	6.67
6	Jusuf Nurkic	6	NA	13	14.2	7.5	6.67
7	Jusuf Nurkic	7	NA	7	14.2	7.5	6.67
8	Jusuf Nurkic	8	NA	6	14.2	7.5	6.67
9	Jusuf Nurkic	9	10	NA	14.2	7.5	6.67
10	Jusuf Nurkic	10	15	NA	14.2	7.5	6.67
11	Robert Covington	1	8	NA	9.5	3	6.5
12	Robert Covington	2	6	NA	9.5	3	6.5
13	Robert Covington	3	NA	0	9.5	3	6.5
14	Robert Covington	4	3	NA	9.5	3	6.5
15	Robert Covington	5	9	NA	9.5	3	6.5
16	Robert Covington	6	NA	6	9.5	3	6.5
17	Robert Covington	7	NA	0	9.5	3	6.5
18	Robert Covington	8	NA	6	9.5	3	6.5
19	Robert Covington	9	19	NA	9.5	3	6.5
20	Robert Covington	10	12	NA	9.5	3	6.5
21	Nassir Little	1	7	NA	8.33	4.25	4.08
22	Nassir Little	2	11	NA	8.33	4.25	4.08
23	Nassir Little	3	NA	5	8.33	4.25	4.08
24	Nassir Little	4	9	NA	8.33	4.25	4.08
25	Nassir Little	5	8	NA	8.33	4.25	4.08

```
# i 65 more rows
```