Lab 01 - Hello R

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Load packages and data

```
library(tidyverse)
library(datasauRus)
```

Exercises

Exercise 1

The datasaurus_dozen file has 1846 rows and 3 columns. The three variables are `dataset`, `x`, and `y`.

```
datasaurus_dozen %>%
  count(dataset) %>%
  print(13)
```

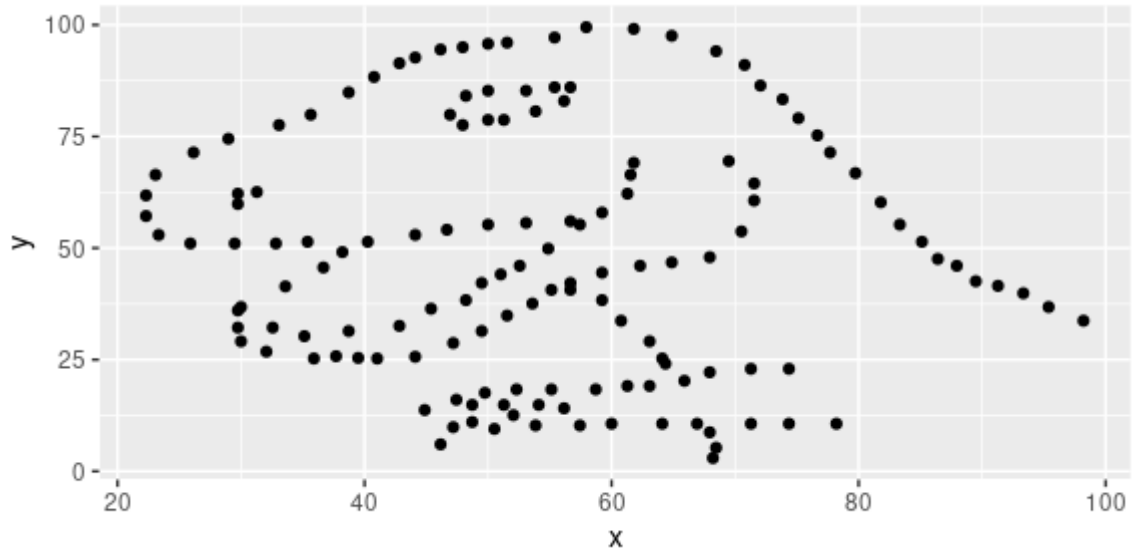
```
## # A tibble:
## #   13 × 2
##    dataset
##    <chr>
##  1 away
##  2 bullseye
##  3 circle
##  4 dino
##  5 dots
##  6 h_lines
##  7 high_lines
##  8 slant_down
##  9 slant_up
## 10 star
## 11 v_lines
## 12 wide_lines
## 13 x_shape
## # ... with 1
## #   more
## #   variable:
## #   n <int>
```

Exercise 2

First let's plot the data in the dino dataset:

```
dino_data <- datasaurus_dozen %>%
  filter(dataset == "dino")

ggplot(data = dino_data, mapping = aes(x = x, y = y)) +
  geom_point()
```



The correlation between `x` and `y` in this dataset is seen below:

```
dino_data %>%
  summarize(r = cor(x, y))
```

```
## # A tibble: 1 × 1
##         r
##     <dbl>
## 1 -0.0645
```

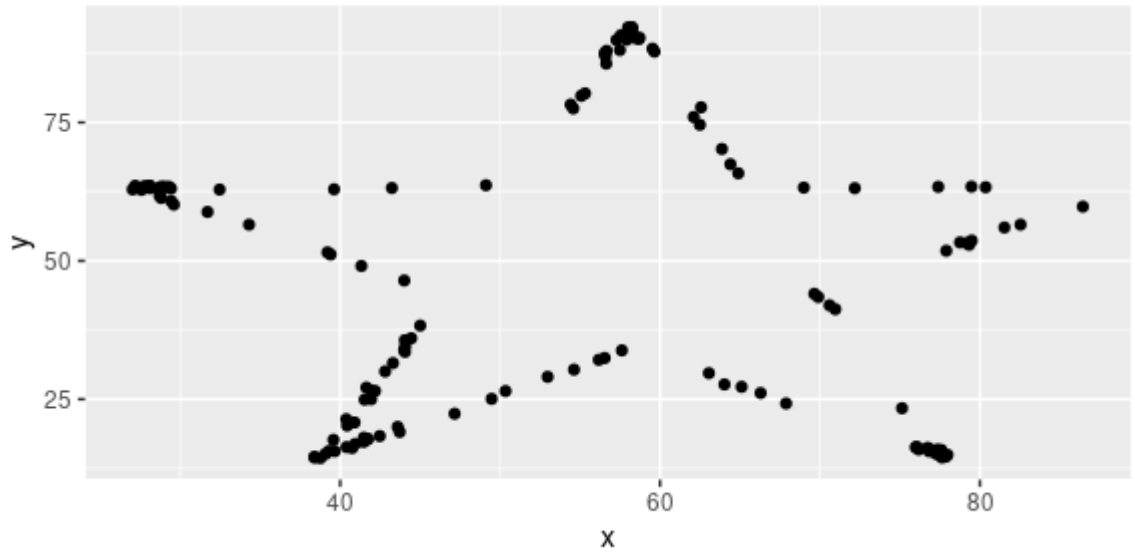
As we can see, there is essentially no linear relationship between `x` and `y` in the `dino_data` dataset!

Exercise 3

Next, let's plot the data in the star dataset:

```
star_data <- datasaurus_dozen %>%
  filter(dataset == "star")

ggplot(data = star_data, mapping = aes(x = x, y = y)) +
  geom_point()
```



The correlation between `x` and `y` in this dataset is seen below:

```
star_data %>%
  summarize(r = cor(x, y))
```

```
## # A tibble: 1 × 1
##         r
##     <dbl>
## 1 -0.0630
```

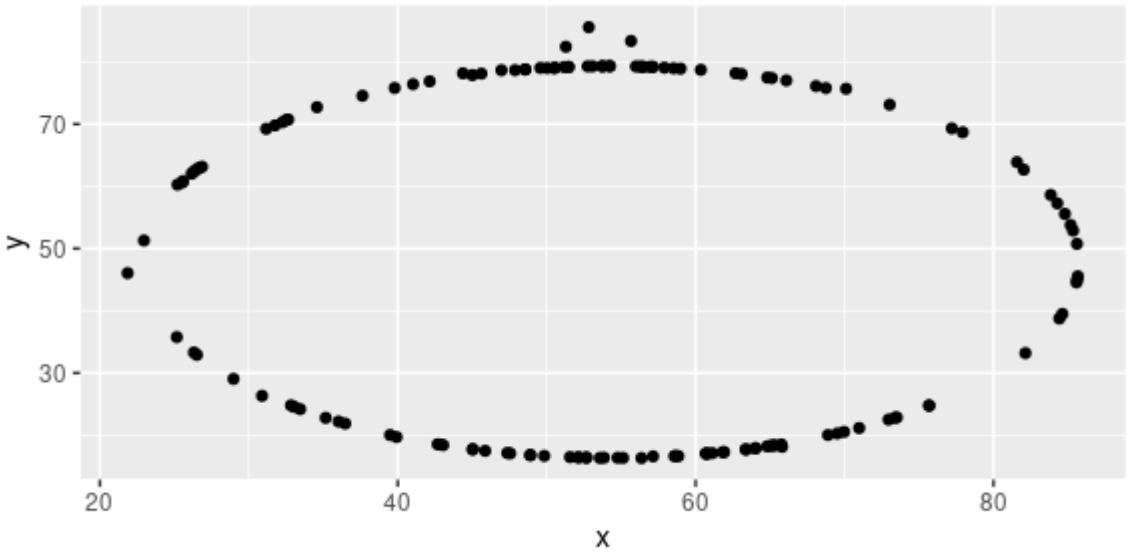
As we can see, there is essentially no linear relationship between `x` and `y` in the `star_data` dataset! However, there is a slighly larger (negative magnitude) correlation in the `dino_data` dataset compared to the `star_data` dataset.

Exercise 4

Next, let's plot the data in the circle dataset:

```
circle_data <- datasaurus_dozen %>%
  filter(dataset == "circle")

ggplot(data = circle_data, mapping = aes(x = x, y = y)) +
  geom_point()
```



The correlation between `x` and `y` in this dataset is seen below:

```
circle_data %>%
  summarize(r = cor(x, y))
```

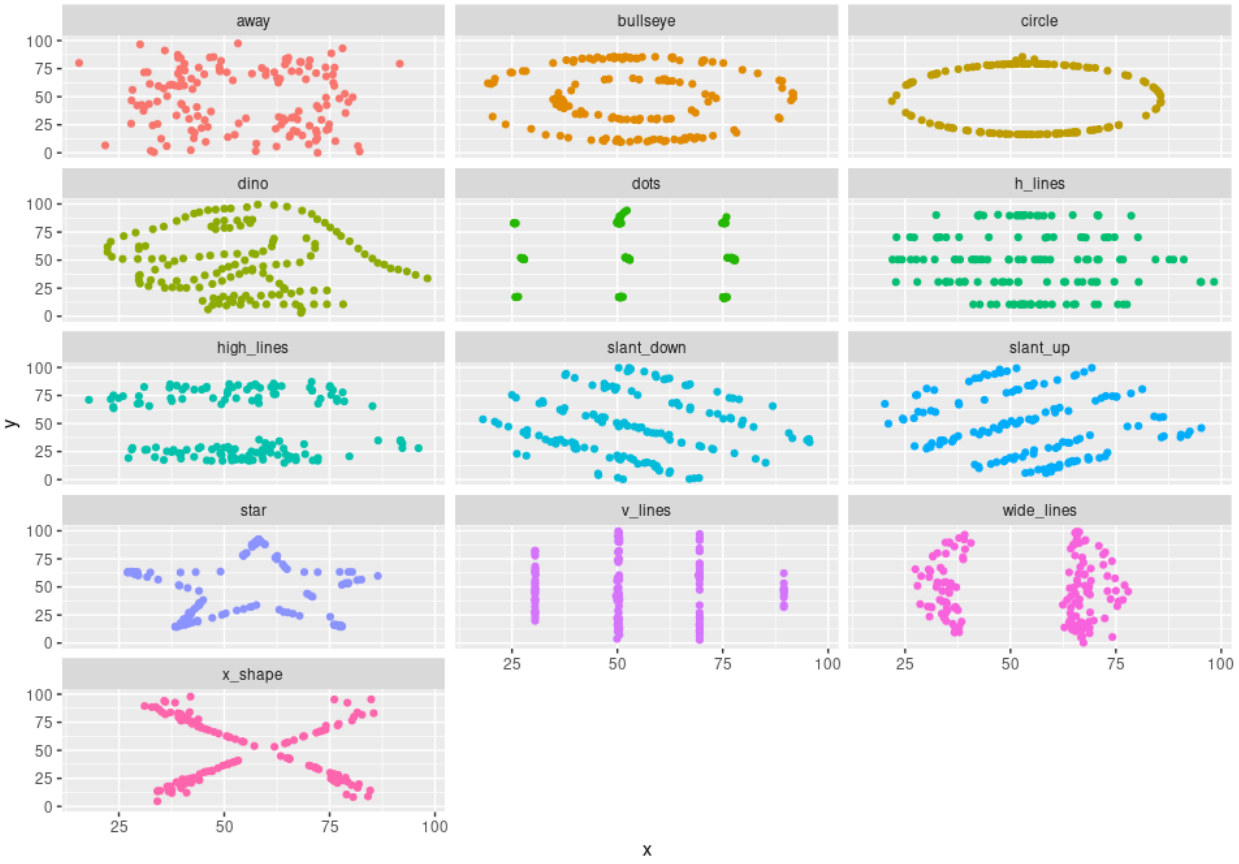
```
## # A tibble: 1 × 1
##         r
##     <dbl>
## 1 -0.0683
```

As we can see, there is essentially no linear relationship between `x` and `y` in the `circle_data` dataset! However, there is a slighly larger (negative magnitude) correlation in the `circle_data` dataset compared to the `dino_data` dataset.

Exercise 5

Now let's plot all 13 datasets in a 3 column grid using faceting:

```
ggplot(datasaurus_dozen, aes(x = x, y = y, color = dataset))+
  geom_point()+
  facet_wrap(~ dataset, ncol = 3) +
  theme(legend.position = "none")
```



Lastly, we will print the correlation coefficients for each of the datasets:

```
datasaurus_dozen %>%
  group_by(dataset) %>%
  summarize(r = cor(x, y))
```

```
## # A tibble: 13 × 2
##    dataset          r
##    <chr>        <dbl>
##  1 away       -0.0641
##  2 bullseye   -0.0686
##  3 circle     -0.0683
##  4 dino       -0.0645
##  5 dots       -0.0603
##  6 h_lines    -0.0617
##  7 high_lines -0.0685
##  8 slant_down -0.0690
##  9 slant_up   -0.0686
## 10 star       -0.0630
## 11 v_lines    -0.0694
## 12 wide_lines -0.0666
## 13 x_shape    -0.0656
```

As we can see, `v_lines` has the largest magnitude of (negative) correlation and `dots` has the smallest magnitude of (negative) correlation.