Advanced Statistics HW1

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Exercises 1

1. Write out a linear model with dependent variable y and predictor x.
2. Display the dataset `mpg` with `kable`.

Answer:

1. The linear model is
$$y = \alpha + \beta x + \varepsilon.$$
2. The table of dataset `mpg` with `kable` is shown below

```
knitr::kable(head(mpg),
   caption = 'Table of the first several data', booktabs = TRUE)
```

Table 1: Table of the first several data

manufacturer	model	displ	year	cyl	trans	drv	cty	hwy	fl	class
audi	a4	1.8	1999	4	auto(l5)	f	18	29	p	compact
audi	a4	1.8	1999	4	manual(m5)	f	21	29	p	compact
audi	a4	2.0	2008	4	manual(m6)	f	20	31	p	compact
audi	a4	2.0	2008	4	auto(av)	f	21	30	p	compact
audi	a4	2.8	1999	6	auto(l5)	f	16	26	p	compact
audi	a4	2.8	1999	6	manual(m5)	f	18	26	p	compact

Exercises 2

Plot the `hwy` against `displ`.

Answer:

The code and figure are given below

```
ggplot(data = mpg) +
    geom_point(mapping = aes(x = displ, y = hwy))
```

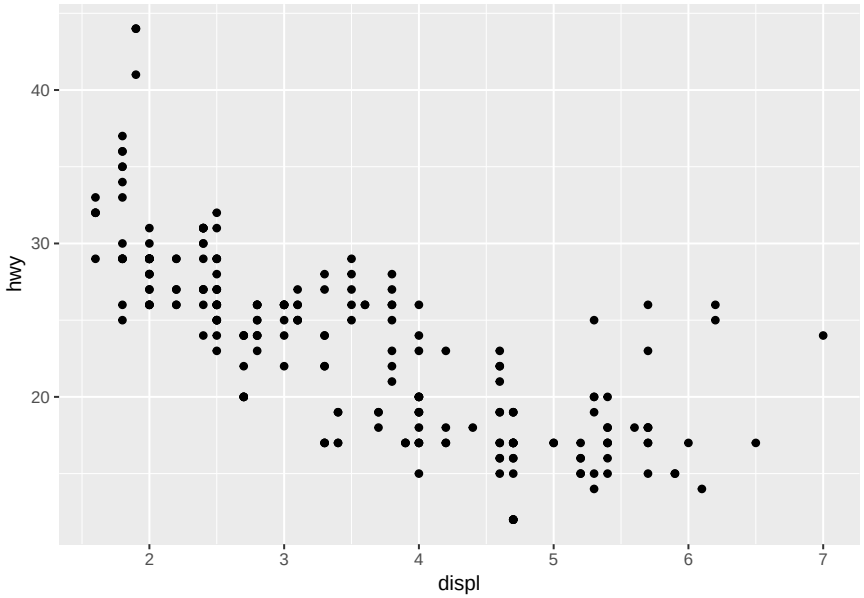

Figure 1: ggplot of hwy vs displ