Homework #2

Q1:(10pts) Create the table below as a `data.frame` object;

name	order	is.weekend
Monday	1	FALSE
Tuesday	2	FALSE
Wednesday	3	FALSE
Thursday	4	FALSE
Friday	5	FALSE
Saturday	6	TRUE
Sunday	7	TRUE

Q2:(20pts) Create a numeric matrix with 5 columns and 15 rows using following `x` vector.

```
set.seed(1); x <- rnorm(75)
```

1. What is the *mean* of each columns?
2. What is the *mean* of each rows?
3. What are the *row* and *column* indices of **minimum value** in the *matrix*?
4. What are the *row* and *column* indices of **maximum value** in the *matrix*?

Q3:(20pts) Create a `list` having the properties below and discuss the struct of the resultant object.

1. First element is vector from 1 to 10.
2. Second element is *names of persons* in the class.
3. Third element is the `matrix` created in first question.
4. Fourth element is the `data.frame` created in second question.

Q4:(10pts) `airquality` data frame is one of datasets comes with base R (help: `?airquality`) and is consist of daily air quality measurements of *ozone*, *solar radiation*, *wind speed* and *temperature*.

1. What are the *minimum*, *1st quartile*, *median*, *mean*, *3th quartile* and *maximum* of the measurements.
2. Calculate *standart deviation* and *variance* of the measurements.

Q5:(40pts) As you see in previous question, *ozone* data has `NA` values. Calculate the *mean* of *ozone* by applying each of the methods below and conclude which one is better? Or each of them has their own advanteges?

1. Mean of *ozone* by removing `NA`s. *(Already calculated in previous question)*
2. **(15pts)** Fill NAs in *ozone* by replacing NA by mean of *ozone* at step 1 then calculate *mean*.
3. **(15pts)** Fill NAs in *ozone* by linear interpolation then calculate *mean*. (**Hint:** `approx` function)