

Data Visualization Homework 2

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Problem 1

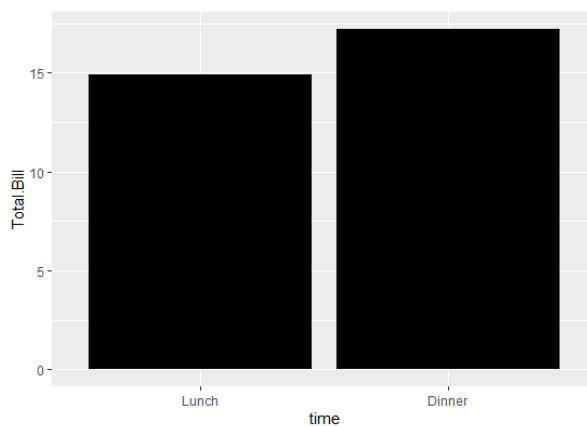
Create a data frame with two column as:

time	total_bill
Lunch	14.89
Dinner	17.23

Then use and write functions to draw four graphs, respectively. (30 points)

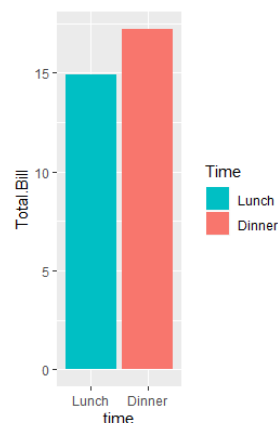
```
library(ggplot2)
spend <- data.frame("Time"= factor(c("Lunch","Dinner")),
  "Total Bill"= c(14.89, 17.23))
```

(a)



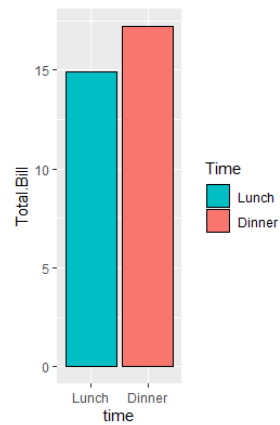
```
ggplot(spend, aes(x= reorder(Time, Total.Bill), y= Total.Bill ))
+ geom_bar(stat= "identity", fill= "black")
+ xlab("time")
```

(b)



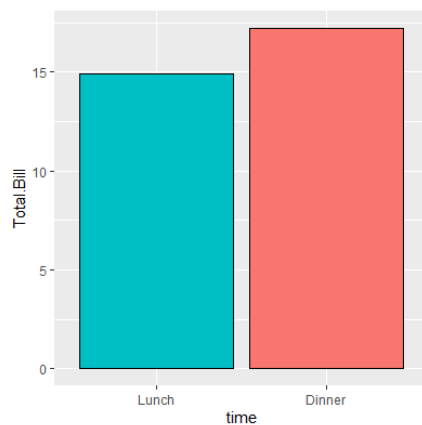
```
ggplot(spend, aes(x= reorder(Time, Total.Bill), y= Total.Bill, fill= Time))
+ geom_bar(stat= "identity")
+ xlab("time")
+ guides(fill= guide_legend(reverse= TRUE))
+ theme(aspect.ratio = 3/1)
```

(c)



```
ggplot(spend, aes(x= reorder(Time, Total.Bill), y= Total.Bill, fill= Time))
+ geom_bar(stat= "identity", color="black")
+ guides(fill= guide_legend(reverse= TRUE))
+ theme(aspect.ratio = 3/1)
+ xlab("time")
```

(d)



```
ggplot(spend, aes(x= reorder(Time, Total.Bill), y= Total.Bill, fill= Time))
+ geom_bar(stat= "identity", color="black")
+ xlab("time")
+ guides(fill= FALSE)
+ theme(aspect.ratio = 1/1)
```

Problem 2

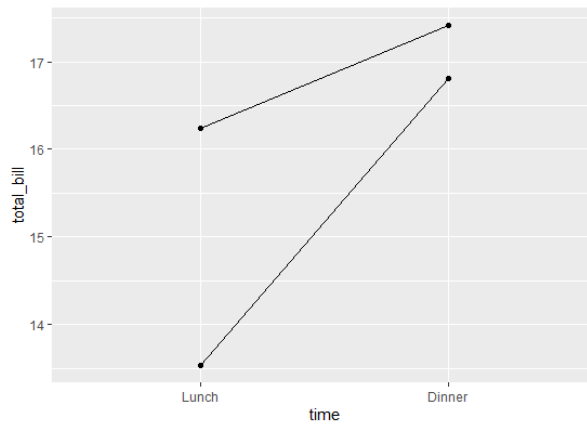
Create a data frame with three column as:

sex	time	total_bill
Female	Lunch	13.53
Female	Dinner	16.81
Male	Lunch	16.24
Male	Dinner	17.42

Then use and write functions to draw four graphs, respectively. (30 points)

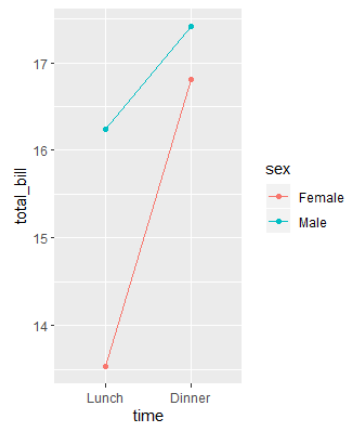
```
prob2 <- data.frame(  
  "sex"= factor(c("Female", "Female", "Male", "Male")),  
  "time"= factor(c("Lunch", "Dinner", "Lunch", "Dinner")),  
  "total_bill"= c(13.53, 16.81, 16.24, 17.42))
```

(a)



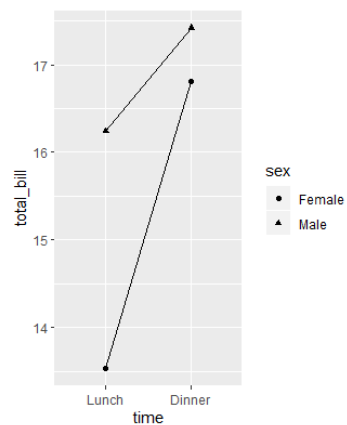
```
ggplot(prob2, aes(x = reorder(time, desc(time)), y= total_bill, group= sex))  
+ geom_line()  
+ geom_point()  
+ xlab("time")
```

(b)



```
ggplot(prob2, aes(x = reorder(time, desc(time)), y= total_bill, group= sex, color= sex))
+ geom_line()
+ geom_point()
+ xlab("time")
+ theme(aspect.ratio = 2/1)
```

(c)



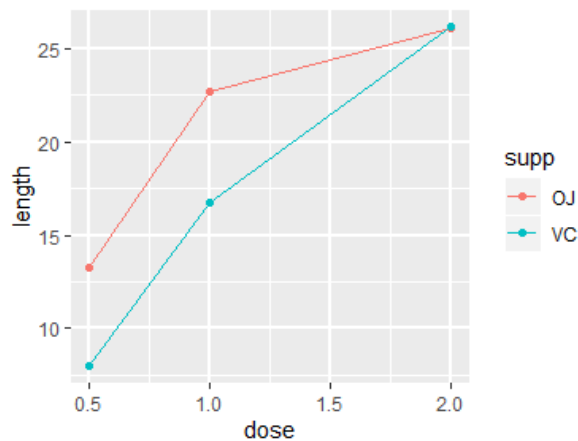
```
ggplot(prob2, aes(x = reorder(time, desc(time)),
                  y= total_bill, group= sex, shape= sex))
+ geom_line()
+ geom_point()
+ xlab("time")
+ theme(aspect.ratio = 2/1)
```

Problem 3

Use the data frame `ToothGrowth` to draw three graphs, respectively. (40 points)

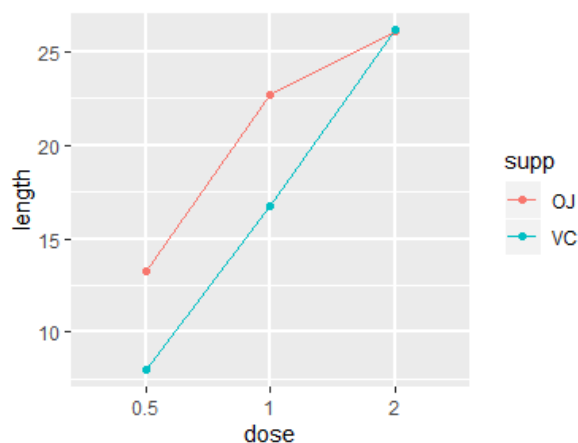
```
tg <- ddply(ToothGrowth, c("supp", "dose"), summarise, length = mean(len))
```

(a)



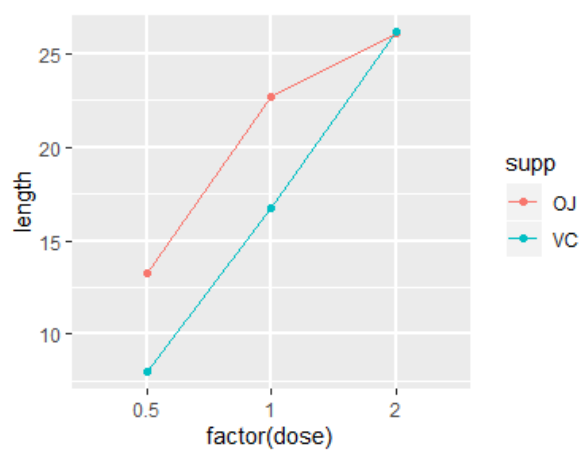
```
ggplot(tg, aes(x=dose, y=length, colour=supp))
+ geom_line()
+ geom_point()
+ theme(panel.grid.major = element_line(color= "white", size= 1),
        panel.grid.minor = element_line(colour= "white", size=0.5))
```

(b)



```
ggplot(tg, aes(x=factor(dose), y=length, colour=supp, group=supp))
+ geom_line()
+ geom_point()
+ xlab("dose")
+ theme(panel.grid.major = element_line(color= "white", size= 1),
        panel.grid.minor = element_line(colour= "white", size=0.5))
```

(c)



```
ggplot(tg,aes(x=factor(dose),y=length,colour=supp,group=supp))  
+ geom_line()  
+ geom_point()  
+ theme(panel.grid.major = element_line(color= "white", size= 1), panel.grid.minor =
```