

ggplot을 이용한 그림그리기

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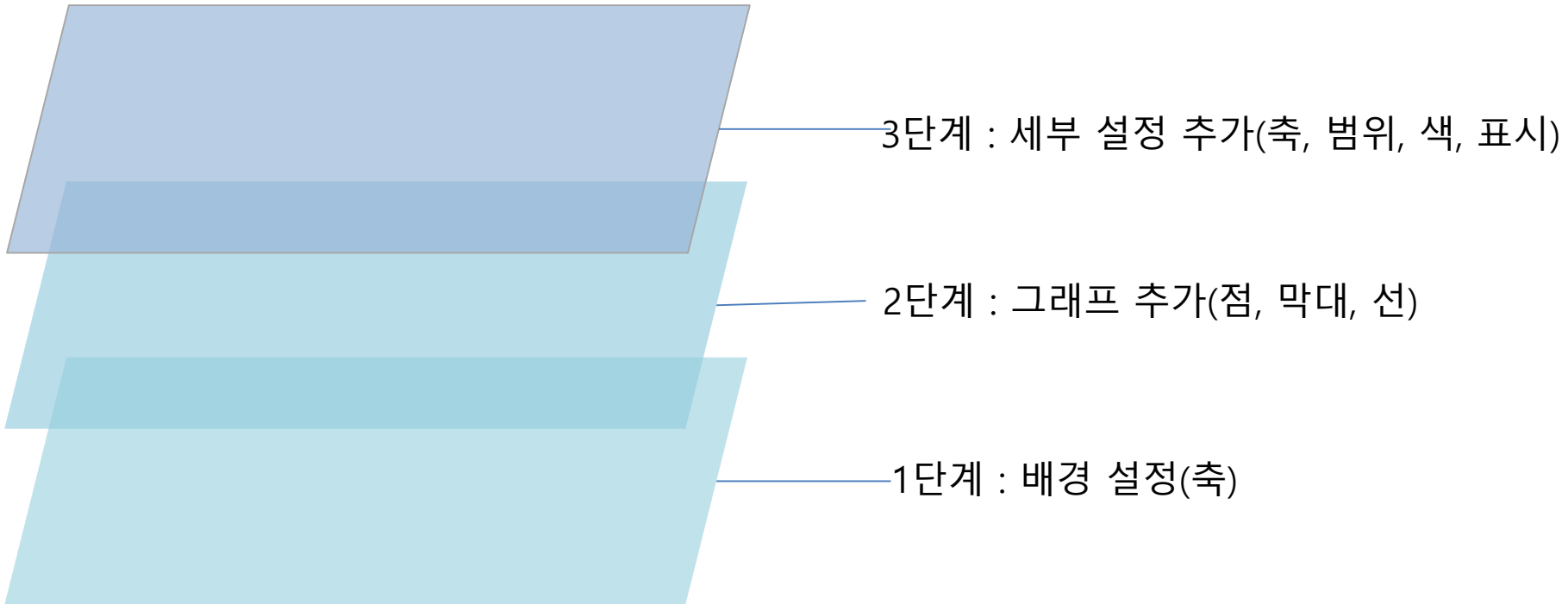
4. 상자그래프

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0. ggplot2 레이어 구조



- ggplot2는 데이터를 시각화하는 패키지로 보통 3단계로 구성되어 있음
 - 1단계 : 배경 설정으로 데이터 축을 설정
 - 2단계 : 그래프 추가(점, 막대, 선 등)
 - 3단계 : 세부 설정 추가(축 범위, 색, 표식 등)

- ggplot2의 함수 구조의 예를 들면 다음과 같음

```
ggplot(data=data1, aes(x=var1, y=var2))+geom_point()+xlim(3,6)
```

(1단계) (2단계) (3단계)

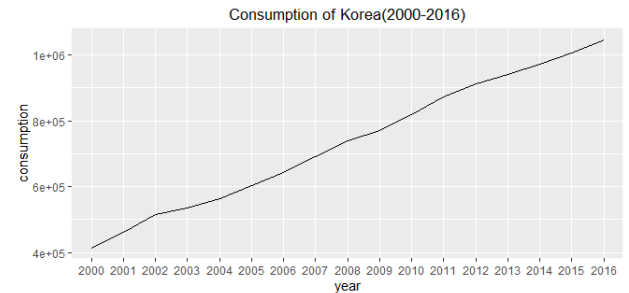
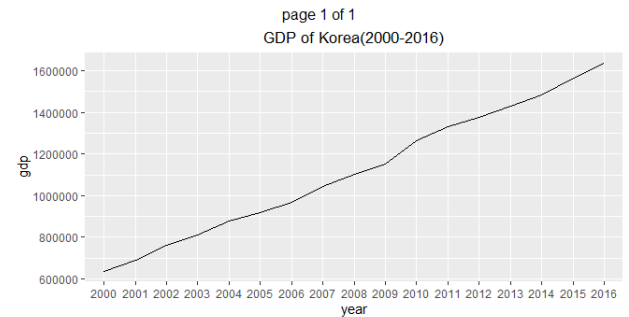
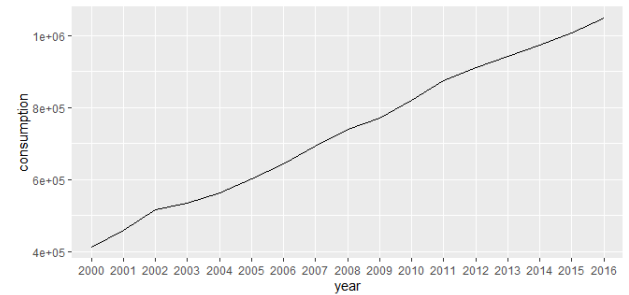
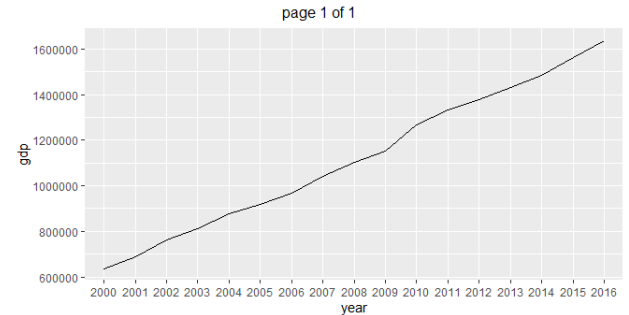
 - 1단계에서 data는 사용할 데이터, aes의 괄호 안은 x축 변수, y축 변수
 - 2단계는 그래프의 종류를 나타내는데 주로 사용하는 종류는 다음과 같음
 - geom_point() : 산포도
 - geom_smooth() : 평활그래프
 - geom_bar() : 막대그래프(빈도 막대그래프로 x축만 설정)
 - geom_col() : 막대그래프(집단간 차이를 나타냄)
 - geom_boxplot() : 상자그래프
 - geom_histogram() : 히스토그램
 - geom_line() : 선그래프
 - 3단계에서 xlim의 괄호 안은 x축에 그릴 데이터의 범위를 나타냄

1. 선 그래프

b1-ch3-1-ggplot.R

```

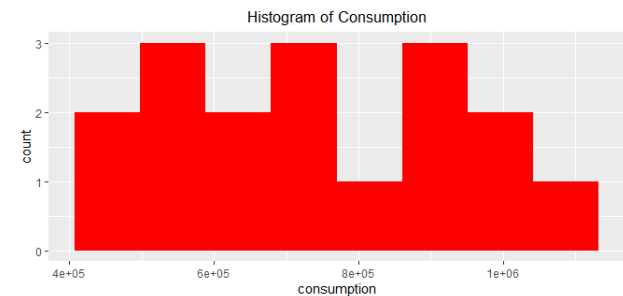
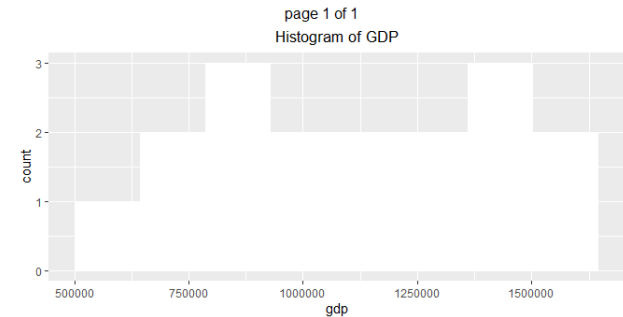
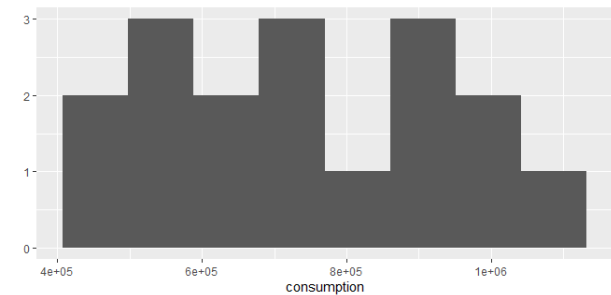
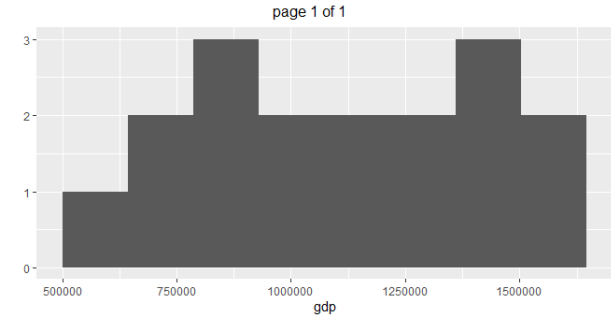
library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/sample1-
n.xlsx")
year<-sample1$year
gdp<-sample1$gdp
consumption<-sample1$consumption
gdp
consumption
qp1<-qplot(year, gdp, group=1, geom="line")
qp2<-qplot(year, consumption, group=1, geom="line")
marrangeGrob(grobs=list(qp1, qp2), nrow=2, ncol=1)
plot1<-ggplot(data=sample1, aes(x=year, y=gdp, group=1)) + geom
_line() + ggtitle("GDP of Korea(2000-2016)") + theme(plot.title = ele
ment_text(hjust = 0.5))
plot2<-ggplot(data=sample1, aes(x=year, y=consumption, group=1)
) + geom_line() + ggtitle("Consumption of Korea(2000-2016)") + the
me(plot.title = element_text(hjust = 0.5))
marrangeGrob(grobs=list(plot1, plot2), nrow=2, ncol=1)
    
```



2. 히스토그램

b1-ch3-2-ggplot.R

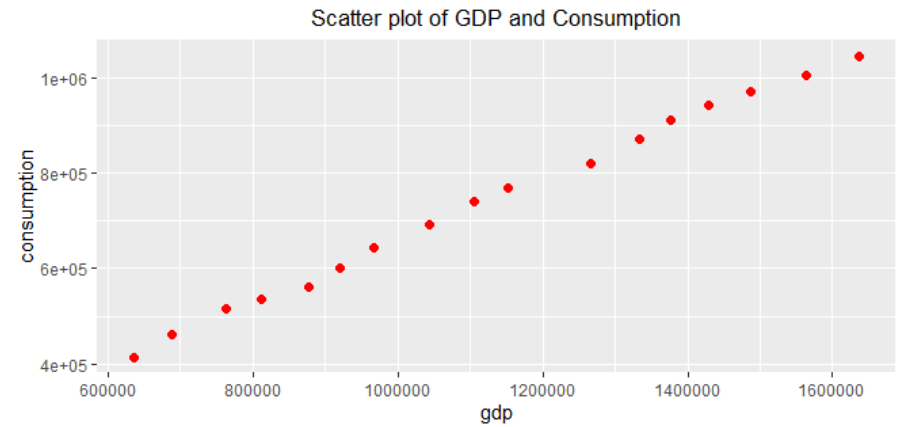
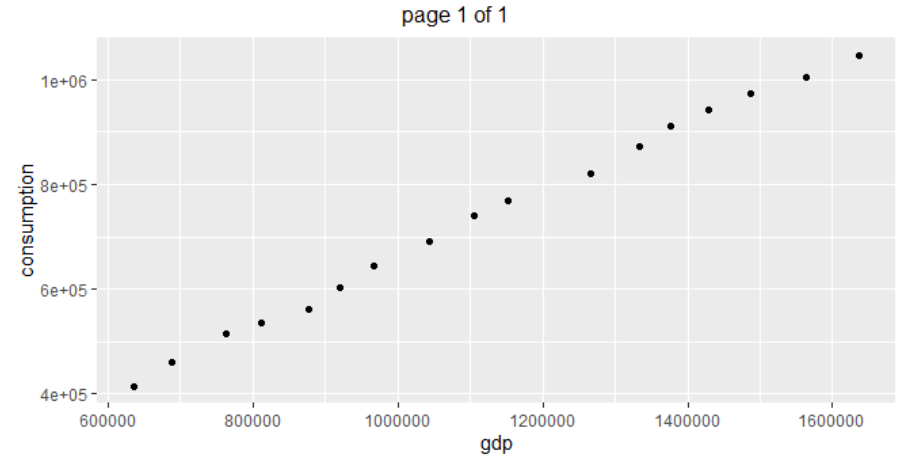
```
library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/sample1-n.xlsx")
year<-sample1$year
gdp<-sample1$gdp
consumption<-sample1$consumption
gdp
consumption
qp1<-qplot(gdp, bins=8, geom="auto")
qp2<-qplot(consumption, bins=8, geom="auto")
marrangeGrob(grobs=list(qp1, qp2), nrow=2, ncol=1)
plot1<-ggplot(data=sample1, aes(x=gdp)) + geom_histogram(fill="white",bins=8) + ggtitle("Histogram of GDP")+ theme(plot.title = element_text(hjust = 0.5))
plot2<-ggplot(data=sample1, aes(x=consumption)) + geom_histogram(fill="red",bins=8) + ggtitle("Histogram of Consumption") + theme(plot.title = element_text(hjust = 0.5))
marrangeGrob(grobs=list(plot1, plot2), nrow=2, ncol=1)
```



3. 산포도

b1-ch3-3-ggplot.R

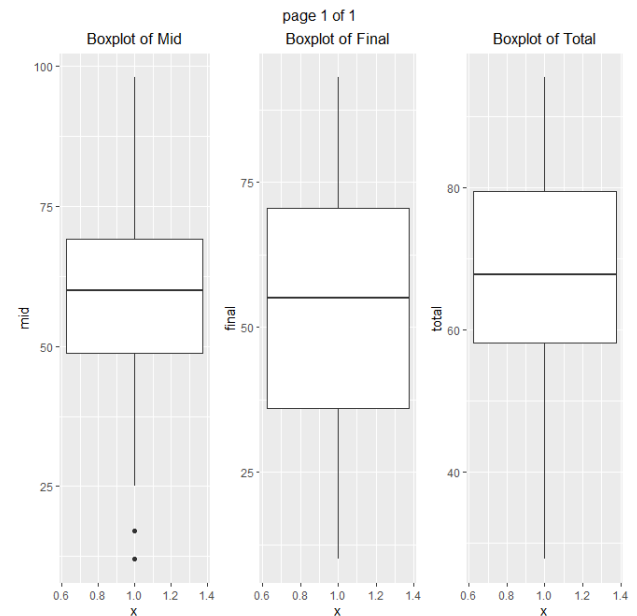
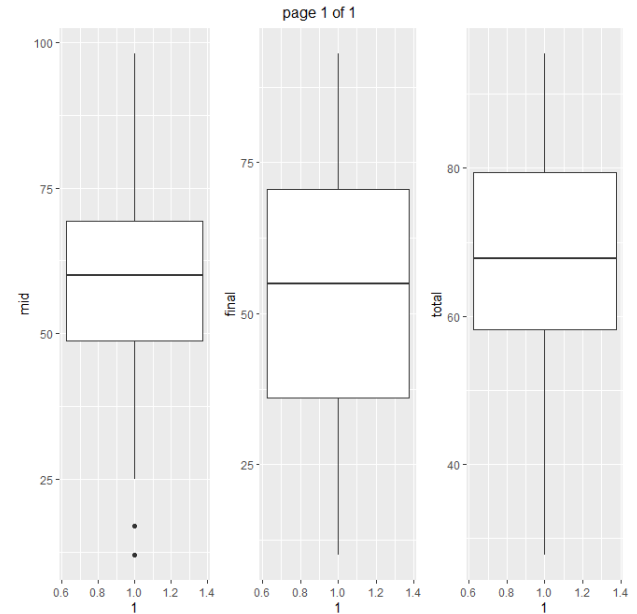
```
library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/sample1-
n.xlsx")
year<-sample1$year
gdp<-sample1$gdp
consumption<-sample1$consumption
gdp
consumption
plot1<-qplot(gdp, consumption, geom="auto")
plot2<-ggplot(data=sample1, aes(x=gdp, y=consumption)) + geom_
point(colour="red", size=2) + ggtitle("Scatter plot of GDP and Consu
mption")+ theme(plot.title = element_text(hjust = 0.5))
marrangeGrob(grobs=list(plot1, plot2), nrow=2, ncol=1)
```



4. 상자그래프

b1-ch3-4-ggplot.R

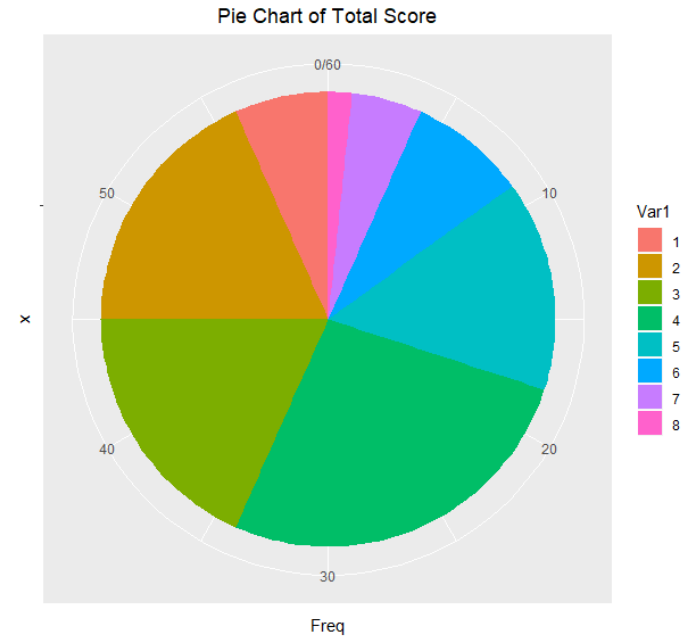
```
library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/stat-1.xlsx")
mid<-sample1$mid
final<-sample1$final
total<-sample1$total
grade<-sample1$grade
qp1<-qplot(x=1, y=mid, geom="boxplot")
qp2<-qplot(x=1, y=final, geom="boxplot")
qp3<-qplot(x=1, y=total, geom="boxplot")
marrangeGrob(grobs=list(qp1, qp2, qp3), nrow=1, ncol=3)
plot1<-ggplot(data=sample1, aes(x=1, y=mid)) + geom_boxplot() + ggtitle("
Boxplot of Mid")+ theme(plot.title = element_text(hjust = 0.5))
plot2<-ggplot(data=sample1, aes(x=1, y=final)) + geom_boxplot() + ggtitle("
Boxplot of Final")+ theme(plot.title = element_text(hjust = 0.5))
plot3<-ggplot(data=sample1, aes(x=1, y=total)) + geom_boxplot() + ggtitle("
Boxplot of Total")+ theme(plot.title = element_text(hjust = 0.5))
marrangeGrob(grobs=list(plot1, plot2, plot3), nrow=1, ncol=3)
```



5. 원그래프

b1-ch3-5-ggplot.R

```
library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/stat-1.xlsx")
mid<-sample1$mid
final<-sample1$final
total<-sample1$total
grade<-sample1$grade
t.grade<-data.frame(table(sample1$grade))
ggplot(t.grade, aes(x="", y=Freq, fill=Var1)) + geom_bar(width=1, stat=
"identity") + coord_polar(theta="y") + ggtitle("Pie Chart of Total Score"
)+ theme(plot.title = element_text(hjust = 0.5))
```

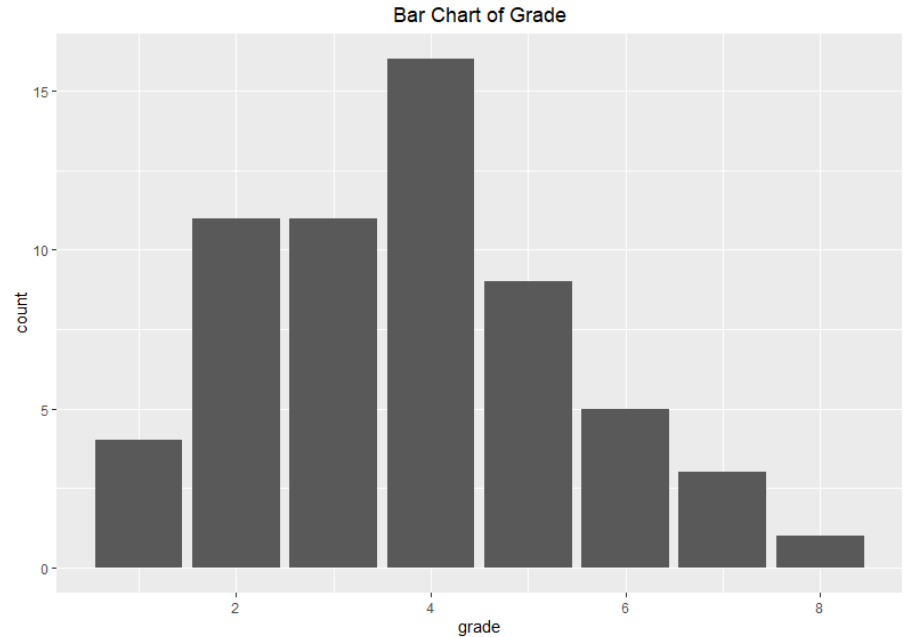


6. 막대그래프-1

b1-ch3-6-ggplot.R

```

library(openxlsx)
library(ggplot2)
library(gridExtra)
sample1<-read.xlsx("http://kanggc.iptime.org/book/data/stat-1.xlsx")
mid<-sample1$mid
final<-sample1$final
total<-sample1$total
grade<-sample1$grade
ggplot(data=sample1, aes(x=grade)) + geom_bar() + ggtitle("Bar Chart of Grade")+ theme(plot.title = element_text(hjust = 0.5))
    
```



7. 막대그래프-2

b1-ch3-7-ggplot.R

```
library(openxlsx)
library(dplyr)
library(ggplot2)
library(gridExtra)

df<-read.xlsx("http://kanggc.iptime.org/book/data/subtotal-e.xlsx")
df

dept_name_1 <- df %>%
  group_by(dept, class) %>%
  summarise(mean_total = mean(total))
dept_name_1

plot1<-ggplot(data=dept_name_1, aes(x=dept, y=mean_total, fill=class
)) +
  geom_col(position="dodge2") + ggtitle("Bar Chart of Total Mean by d
ept & class")+ theme(plot.title = element_text(hjust = 0.5))
plot2<-ggplot(data=dept_name_1, aes(x=class, y=mean_total, fill=dept
)) +
  geom_col(position="dodge2") + ggtitle("Bar Chart of Total Mean by cl
ass & dept")+ theme(plot.title = element_text(hjust = 0.5))
marrangeGrob(grobs=list(plot1, plot2), nrow=2, ncol=1)
```

