Data Visualization Lab(L13+L14)

Name: Alpanshu Kataria

Reg. No.: 18BCE1267

Faculty: Dr.Parvathi.R.

Lab 3(Lattice Plot)

Task:

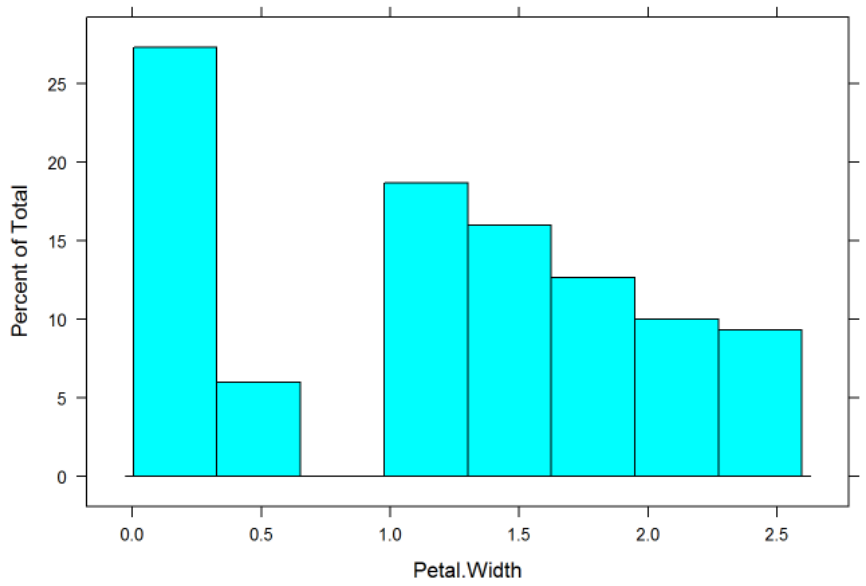
1. **Bar chart, dot plot, histogram, density plot, bw plot, splom and xyplot**

With iris dataset:

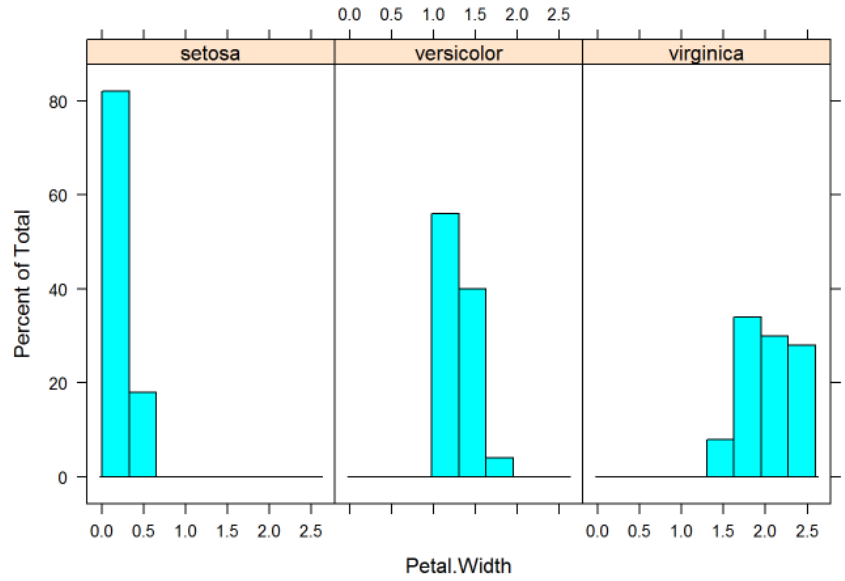
```
datasets::iris
```

```
##     Sepal.Length Sepal.Width Petal.Length Petal.Width    Species
## 1            5.1         3.5          1.4         0.2     setosa
## 2            4.9         3.0          1.4         0.2     setosa
## 3            4.7         3.2          1.3         0.2     setosa
## 4            4.6         3.1          1.5         0.2     setosa
## 5            5.0         3.6          1.4         0.2     setosa
## 6            5.4         3.9          1.7         0.4     setosa
## 7            4.6         3.4          1.4         0.3     setosa
## 8            5.0         3.4          1.5         0.2     setosa
## 9            4.4         2.9          1.4         0.2     setosa
## 10           4.9         3.1          1.5         0.1     setosa
## 11           5.4         3.7          1.5         0.2     setosa
## 12           4.8         3.4          1.6         0.2     setosa
## 13           4.8         3.0          1.4         0.1     setosa
## 14           4.3         3.0          1.1         0.1     setosa
## 15           5.8         4.0          1.2         0.2     setosa
## 16           5.7         4.4          1.5         0.4     setosa
## 17           5.4         3.9          1.3         0.4     setosa
## 18           5.1         3.5          1.4         0.3     setosa
## 19           5.7         3.8          1.7         0.3     setosa
## 20           5.1         3.8          1.5         0.3     setosa
## 21           5.4         3.4          1.7         0.2     setosa
```

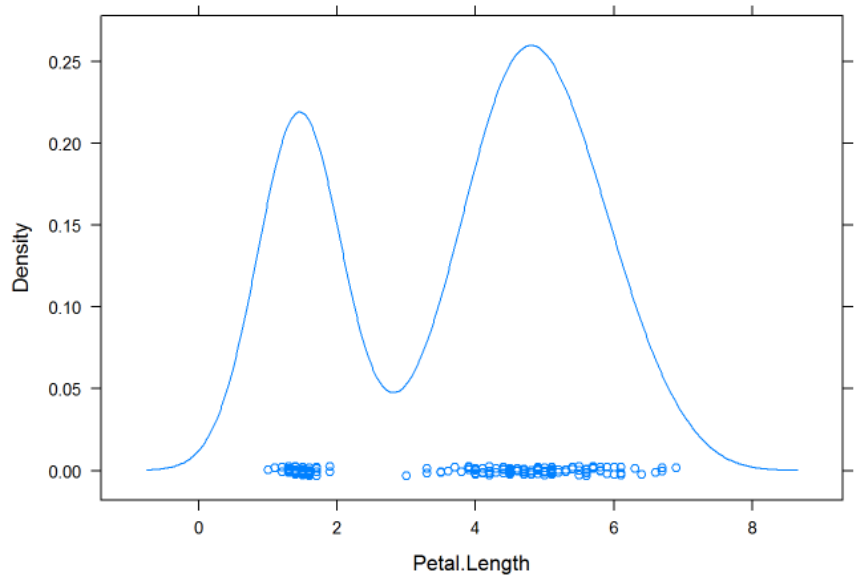
```
library(lattice)
#defining ses.f to be a factor variable
iris$Species.f = factor(iris$Species, labels=c("setosa", "versicolor", "virginica"))
#histograms
histogram(~Petal.Width, iris)
```



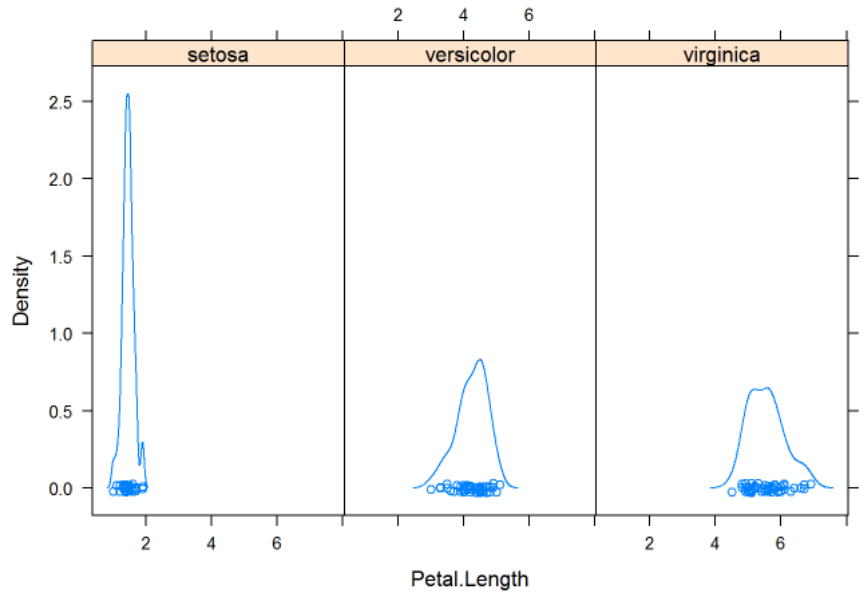

```
histogram(~Petal.Width | Species.f, iris)
```



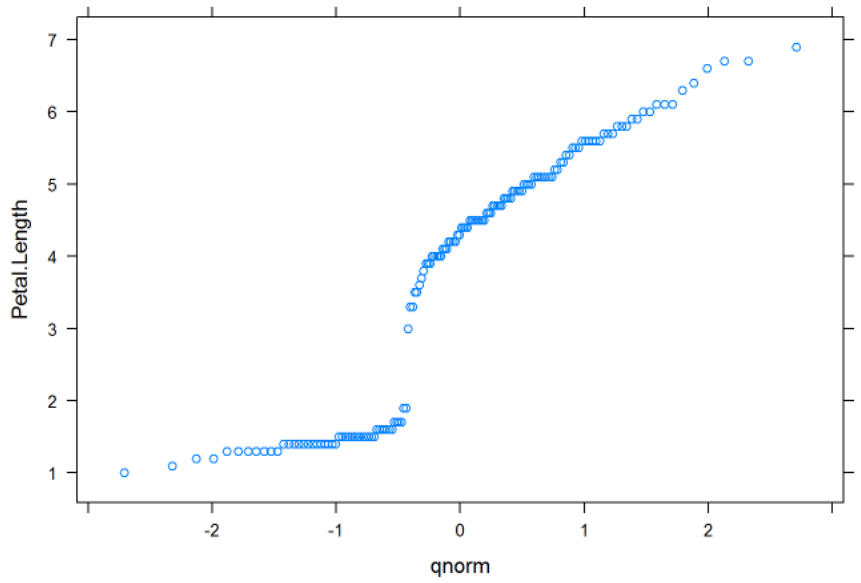
```
densityplot(~Petal.Length, iris)
```



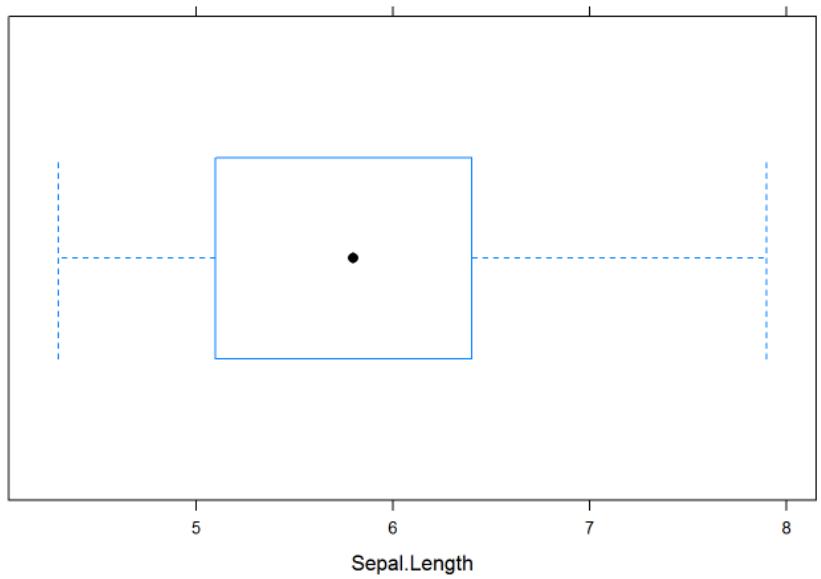
```
densityplot(~Petal.Length | Species.f, iris)
```



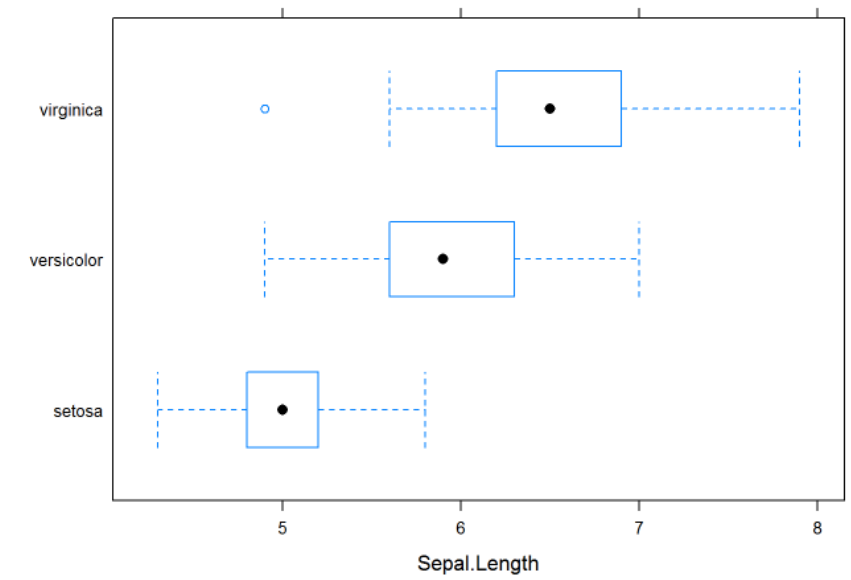
```
qqmath(~Petal.Length, iris)
```



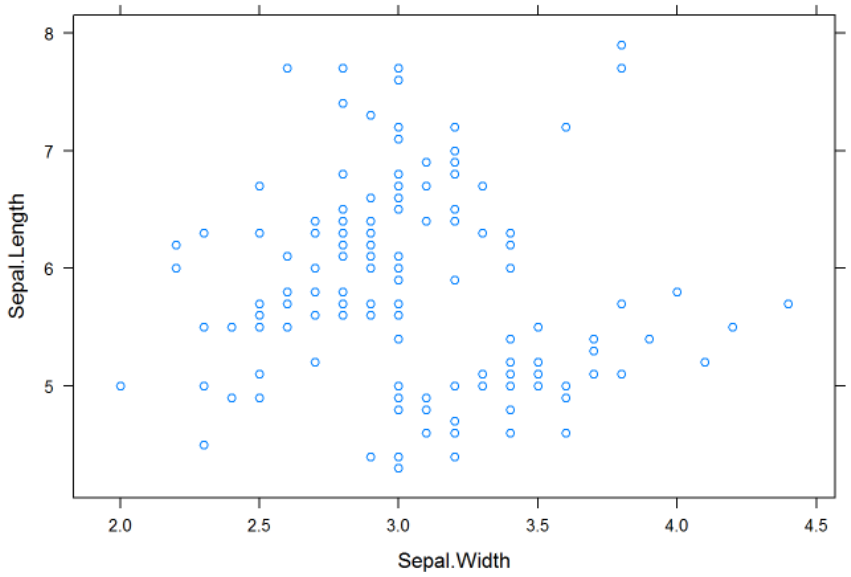

```
bwplot(~Sepal.Length, iris)
```



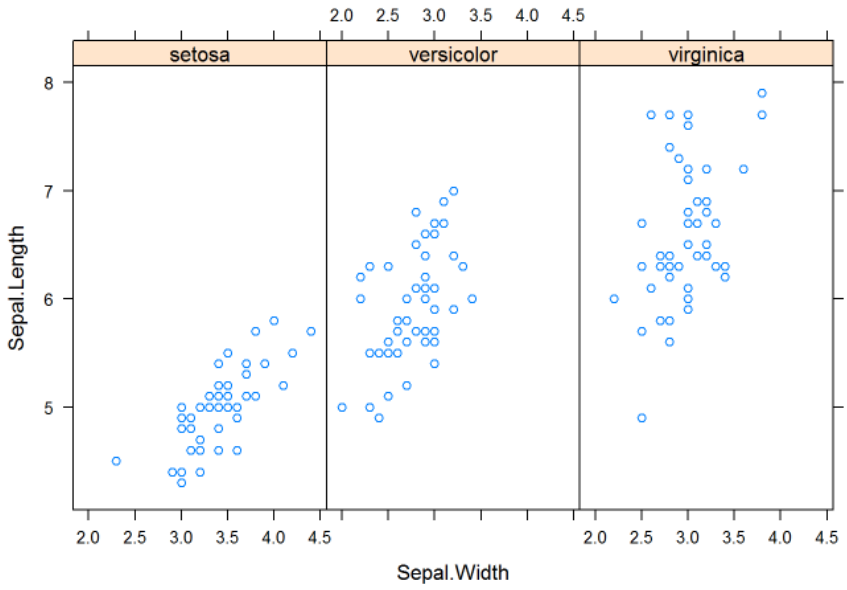
```
bwplot(Species.f~Sepal.Length, iris)
```



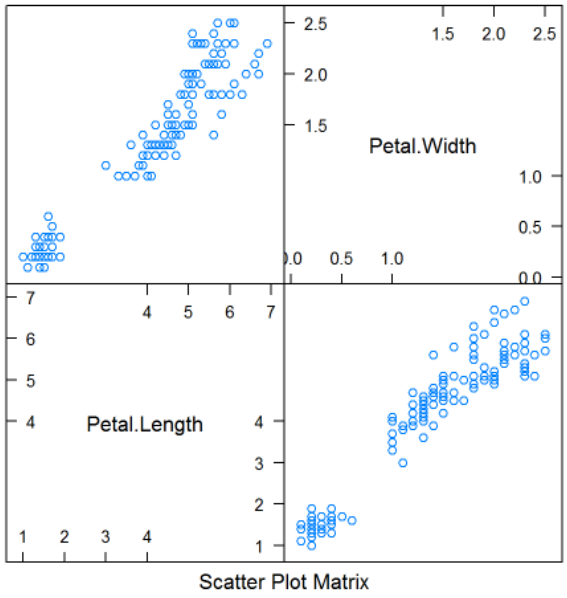
```
xyplot(Sepal.Length~Sepal.Width, iris)
```



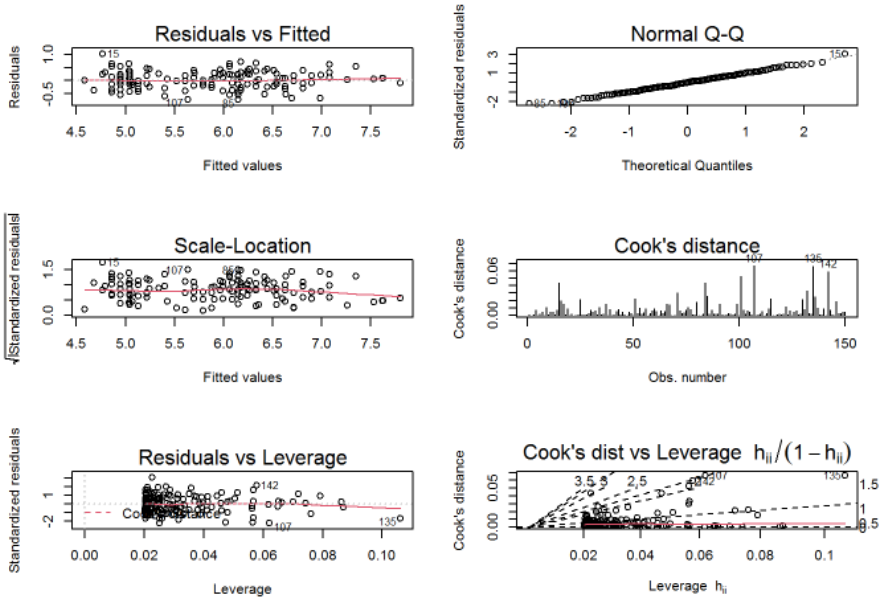
```
xyplot(Sepal.Length~Sepal.Width | Species.f, iris)
```



```
subset <- iris[ , 3:4]
splom(~subset[ , 1:2])
```



```
reg <- lm(Sepal.Length~Petal.Length+Petal.Width+Species.f, iris)
par(mfrow=c(3,2))
plot(reg, which=1:2)
plot(reg, which=3:4)
plot(reg, which=5:6)
```



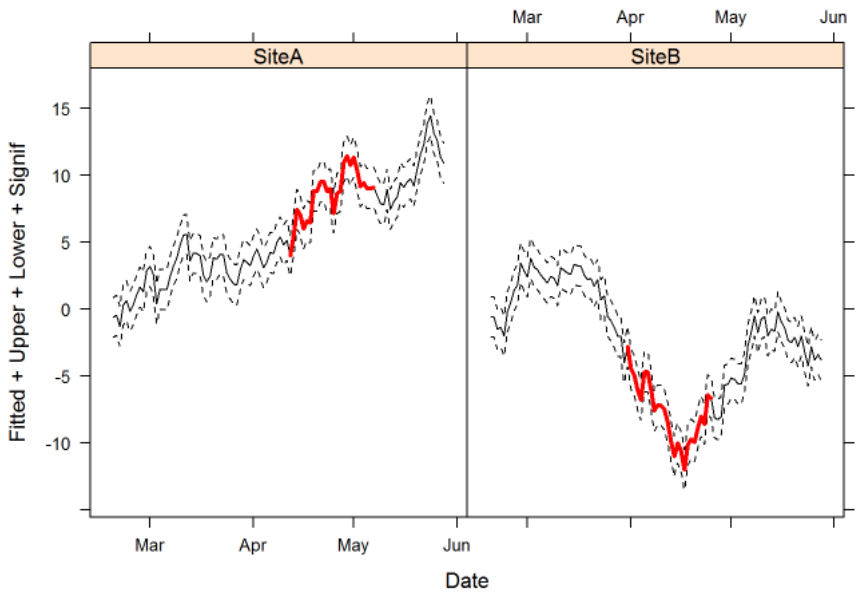
Task:

2. Time series plots with lattice.

```
set.seed(1)
tdat <- data.frame(Site = rep(paste0("Site", c("A","B")),
                              each = 100),
                   Date = rep(seq(Sys.Date(), by = "1 day", length = 100), 2),
                   Fitted = c(cumsum(rnorm(100)), cumsum(rnorm(100))),
                   Signif = rep(NA, 200))
tdat <- transform(tdat, Upper = Fitted + 1.5, Lower = Fitted - 1.5)
## select 1 region per Site as signif
take <- sample(10:70, 2)
take[2] <- take[2] + 100
tdat$Signif[take[1]:(take[1]+25)] <- tdat$Fitted[take[1]:(take[1]+25)]
tdat$Signif[take[2]:(take[2]+25)] <- tdat$Fitted[take[2]:(take[2]+25)]
head(tdat)
```

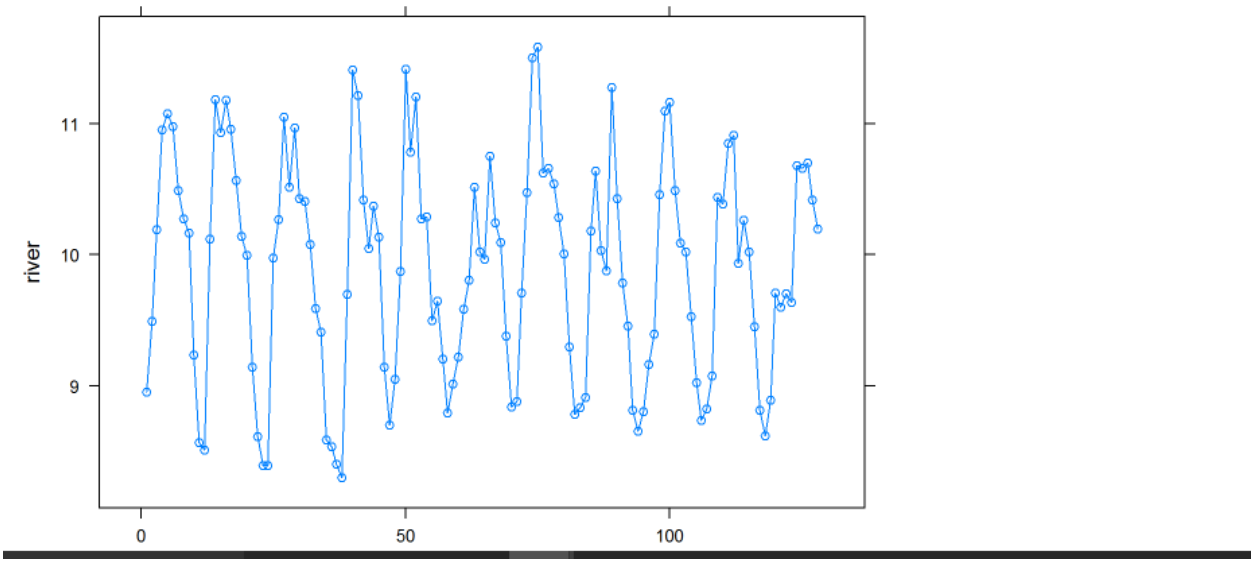
```
##    Site       Date     Fitted Signif     Upper      Lower
## 1 SiteA 2021-02-18 -0.6264538     NA 0.8735462 -2.1264538
## 2 SiteA 2021-02-19 -0.4428105     NA 1.0571895 -1.9428105
## 3 SiteA 2021-02-20 -1.2784391     NA 0.2215609 -2.7784391
## 4 SiteA 2021-02-21  0.3168417     NA 1.8168417 -1.1831583
## 5 SiteA 2021-02-22  0.6463495     NA 2.1463495 -0.8536505
## 6 SiteA 2021-02-23 -0.1741189     NA 1.3258811 -1.6741189
```

```
library("lattice")
xyplot(Fitted + Upper + Lower + Signif ~ Date | Site,
       data = tdat,
       type = "l",
       lty = c(1, 2, 2, 1),
       lwd = c(1, 1, 1, 3),
       col.line = c(rep("black",3), "red"))
```

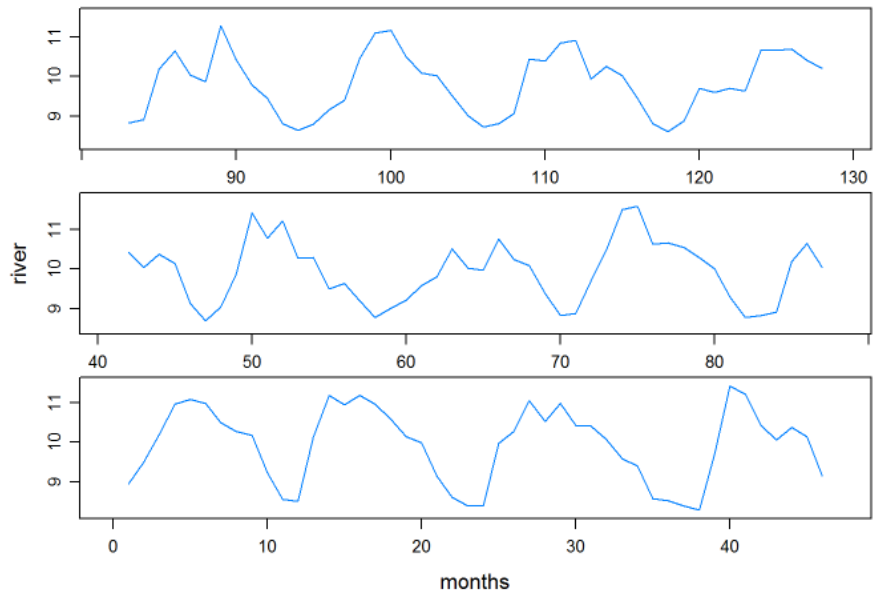


Time series plot with another data:

```
river <- scan("https://www.stat.uiowa.edu/~luke/data/river.dat")
library(lattice)
xyplot(river ~ seq_along(river), type = c("l", "p"))
```




```
xyplot(river ~ seq_along(river) | equal.count(seq_along(river), 3, overlap=0.1),
       type="l", aspect="xy", strip=FALSE,
       scales=list(relation = "sliced"),
       xlab="months")
```



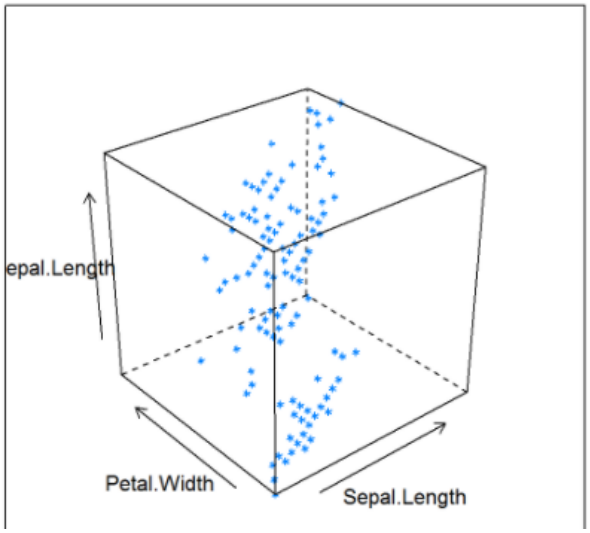
Task 3:

3 D plots with lattice:

```
library(lattice)
my_data <- iris
head(my_data)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species
## 1          5.1         3.5          1.4         0.2  setosa
## 2          4.9         3.0          1.4         0.2  setosa
## 3          4.7         3.2          1.3         0.2  setosa
## 4          4.6         3.1          1.5         0.2  setosa
## 5          5.0         3.6          1.4         0.2  setosa
## 6          5.4         3.9          1.7         0.4  setosa
```

```
cloud(Sepal.Length ~ Sepal.Length * Petal.Width,
      data = iris)
```



```
cloud(Sepal.Length ~ Sepal.Length * Petal.Width,
      group = Species, data = iris,
      auto.key = TRUE)
```