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PRACTICAL 2

The file ApplianceShipments.csv contains the series of quarterly shipments (in millions of dollars) of US household appliances between 1985 and 1989.

ship<- read.csv("ApplianceShipments.csv",header=TRUE)

View(ship)

summary(ship)

```
> summary(ship)
   Quarter            Shipments
 Length:20          Min.   :3944
 Class :character   1st Qu.:4240
 Mode  :character   Median :4489
                    Mean   :4425
                    3rd Qu.:4588
                    Max.   :4900
```

Untitled1* × ship ×

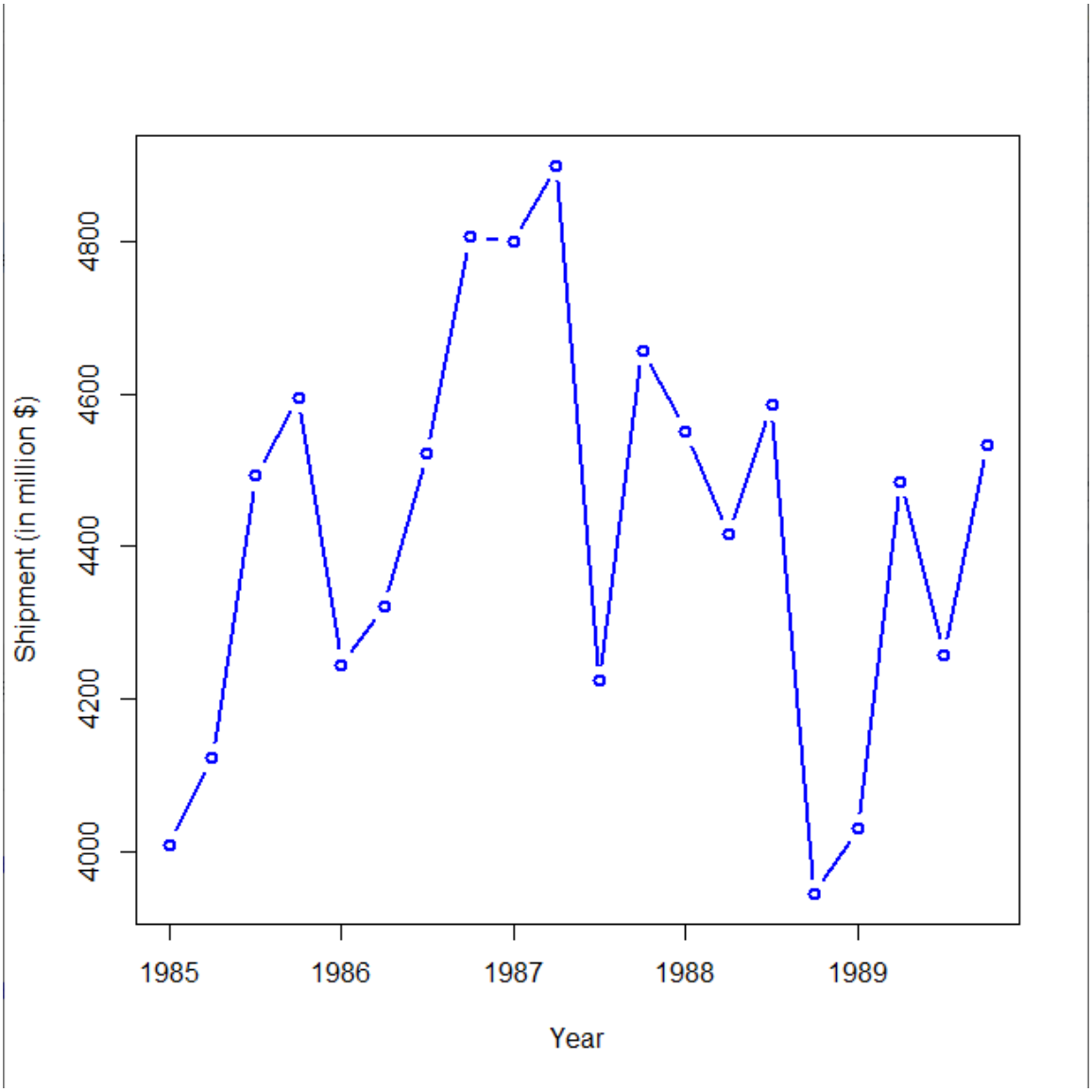
Filter

	Quarter	Shipments
1	Q1-1985	4009
2	Q1-1986	4123
3	Q1-1987	4493
4	Q1-1988	4595
5	Q1-1989	4245
6	Q2-1985	4321
7	Q2-1986	4522
8	Q2-1987	4806
9	Q2-1988	4799
10	Q2-1989	4900
11	Q3-1985	4224
12	Q3-1986	4657
13	Q3-1987	4551

Showing 1 to 13 of 20 entries, 2 total columns

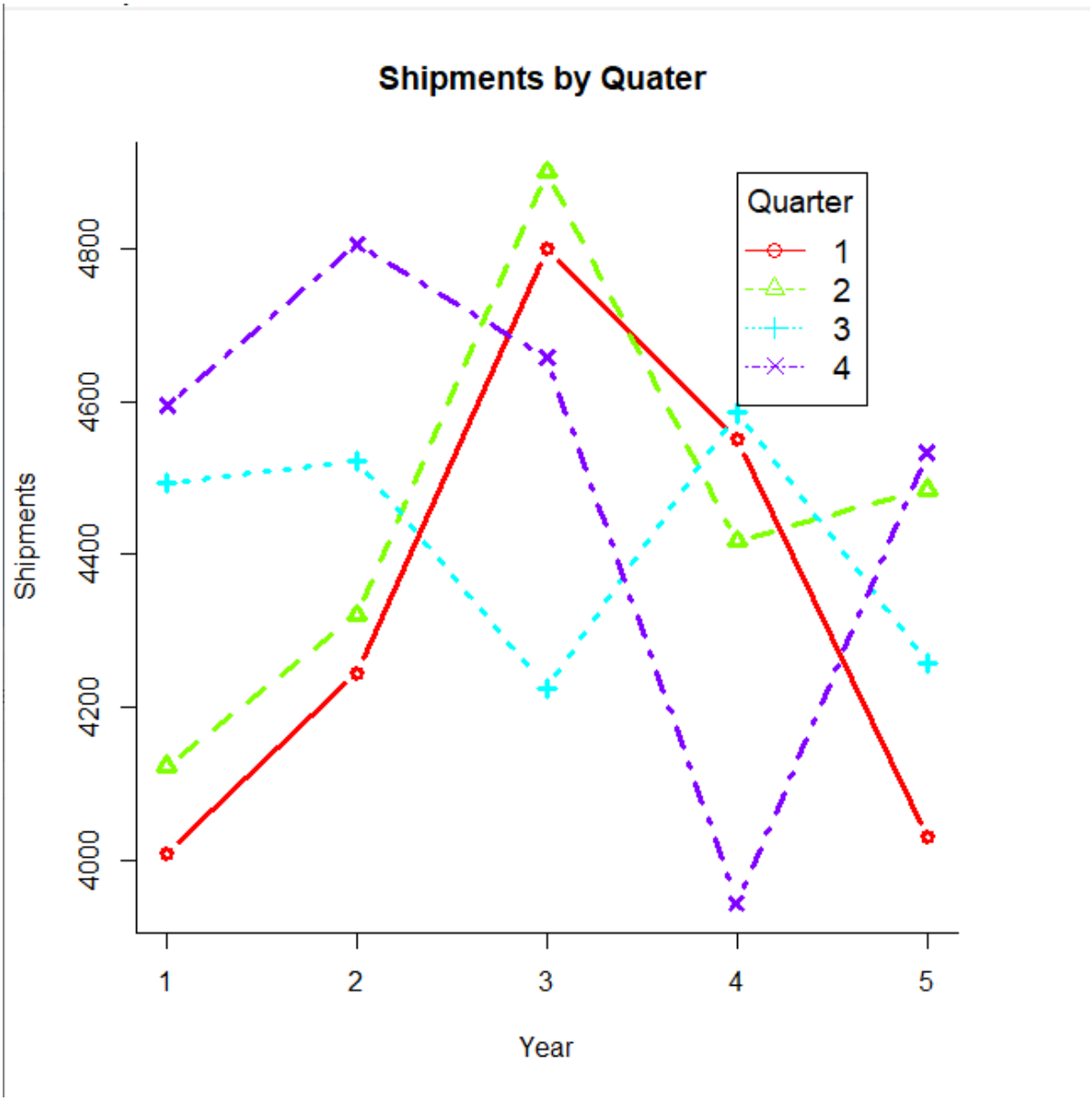
a. Create a well-formatted time plot of the data using R.

```
shipment.ts=ts(ship$shipments,start = c(1985,1),end = c(1989,4),frequency = 4)
plot(shipment.ts, xlab = "Year", ylab ="Shipment (in million
$)",col="blue",type="b",lwd=2.5)
```



b. Using R, create one chart with four separate lines, one line for each of Q1, Q2, Q3,and Q4. In R, this can be achieved by generating a data.frame for each quarter Q1,Q2, Q3, Q4, and then plotting them as separate series on the line graph.

```
library(ggplot2)
par(oma = c(0,0,0,2)) # par - parameters,oma-outer margins - c(bottom,left,top,
#right)
xrange <- c(1,5) #c() -combine valures into a vector
yrange <- range(shipment.ts) #range() - min and max value in a vector
plot(xrange, yrange, main = "Shipments by Quater ", type = "n",
    xlab = "Year",ylab = "Shipments" ,bty = "l")
colors <- rainbow(4)
linetype <- c(1:4)
plotchar <- c(1:4)
for (i in 1:4)
  #lines() is used to draw lines , type = "b"- points joined by lines
  #lwd - line width , lty= line type
{current_quater <- subset(shipment.ts, cycle(shipment.ts)==i)
lines(current_quater, type = "b",lwd = 3, lty=linetype[i], col=colors[i],
     pch=plotchar[i])}
#legend()- to draw legend in which unit is given , cex- font sizwe
legend(4,4900,1:4,cex = 1.2,col=colors,pch = plotchar,
      lty = linetype, title = "Quarter")
```


Shipments by Quater
Quarter
1
2
3
4
Shipments
4000
4200
4400
4600
4800
1
2
3
4
5
Year

c. Using R, create a line graph of the series at a yearly aggregated level (i.e., the totalshipments in each year).

```
yearly <- aggregate(shipment.ts,FUN=sum)
view(yearly)
plot(yearly,type="b",bty="l",col="red",lwd=2)
text(x=yearly,labels=yearly,pos=3,cex=0.8)
```