Quick-R

accessing the power of R

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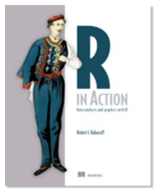
R in Action



Line Charts

Line charts are created with the function **lines(***x*, *y*, **type=)** where *x* and *y* are numeric vectors of (x,y) points to connect. **type=** can take the following values:

type	**description**
p	points
l	lines
o	overplotted points and lines
b, c	points (empty if "c") joined by lines
s, S	stair steps
h	histogram-like vertical lines
n	does not produce any points or lines

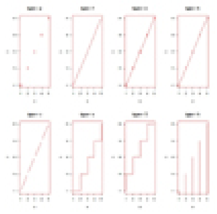
The **lines( )** function *adds* information to a graph. It can not produce a graph on its own. Usually it follows a **plot(***x*, *y***)** command that produces a graph.

By default, **plot( )** plots the (x,y) points. Use the **type="n"** option in the **plot( )** command, to create the graph with axes, titles, etc., but *without* plotting the points.

R in Action (2nd ed) significantly expands upon this material. Use promo code **ria38** for a 38% discount.

In the following code each of the **type=** options is applied to the same dataset. The **plot( )** command sets up the graph, but ***does not*** plot the points.

```
x <- c(1:5); y <- x # create some data
par(pch=22, col="red") # plotting symbol and color
par(mfrow=c(2,4)) # all plots on one page
opts = c("p","l","o","b","c","s","S","h")
for(i in 1:length(opts)){
  heading = paste("type=",opts[i])
  plot(x, y, type="n", main=heading)
  lines(x, y, type=opts[i])
}
```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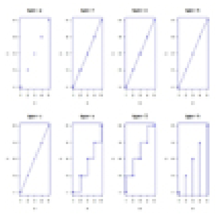
Next, we demonstrate each of the **type=** options when **plot( )** sets up the graph and ***does*** plot the points.

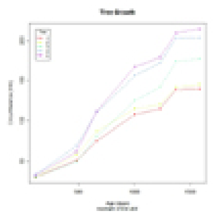
```
x <- c(1:5); y <- x # create some data
par(pch=22, col="blue") # plotting symbol and color
par(mfrow=c(2,4)) # all plots on one page
opts = c("p","l","o","b","c","s","S","h")
for(i in 1:length(opts){
  heading = paste("type=",opts[i])
  plot(x, y, main=heading)
  lines(x, y, type=opts[i])
}
```

 click to view

As you can see, the **type="c"** option only looks different from the **type="b"** option if the plotting of points is suppressed in the **plot( )** command.

To demonstrate the creation of a more complex line chart, let's plot the growth of 5 orange trees over time. Each tree will have its own distinctive line. The data come from the dataset **Orange**.

```
# Create Line Chart

# convert factor to numeric for convenience
Orange$Tree <- as.numeric(Orange$Tree)
ntrees <- max(Orange$Tree)

# get the range for the x and y axis
xrange <- range(Orange$age)
yrange <- range(Orange$circumference)

# set up the plot
plot(xrange, yrange, type="n", xlab="Age (days)",
   ylab="Circumference (mm)" )
colors <- rainbow(ntrees)
linetype <- c(1:ntrees)
plotchar <- seq(18,18+ntrees,1)

# add lines
for (i in 1:ntrees) {
  tree <- subset(Orange, Tree==i)
  lines(tree$age, tree$circumference, type="b", lwd=1.5,
    lty=linetype[i], col=colors[i], pch=plotchar[i])
}

# add a title and subtitle
title("Tree Growth", "example of line plot")

# add a legend
legend(xrange[1], yrange[2], 1:ntrees, cex=0.8, col=colors,
   pch=plotchar, lty=linetype, title="Tree")
```



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