ごくごくごく簡単なR入門

グラフィックス

制御構造

入出力

1．グラフィックス

plot

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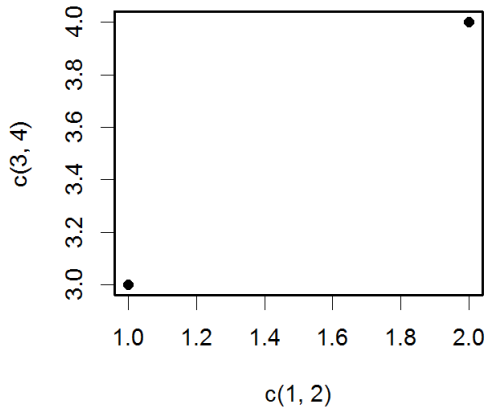
```
> par(cex=1.8, pch=16, lwd=3)
> plot(c(1,2),c(3,4))
>
```

cex:文字の拡大率

pch:マーカ種類

lwd:線の太さ



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pch:マーカ種類

PCH	0	1	2	5	6
マーカ	□	○	△	◇	▽

PCH	15	16	17	18
マーカ	■	●	▲	◆

PCH	21	22	23	24	25
マーカ	○	□	◇	△	▽

散布図

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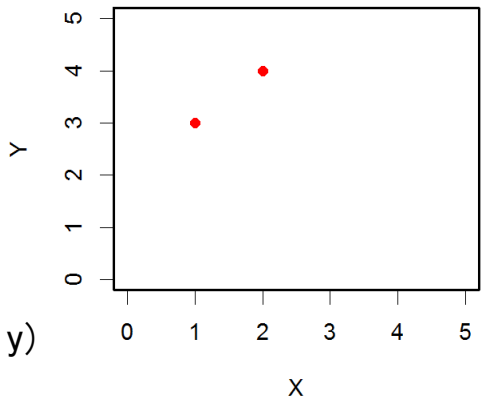
```
> x <- c(1,2)
> y <- c(3,4)
>
plot(x,y,xlim=c(0,5),ylim=c(0,5),xlab="X",
ylab="Y",col="red")
>
```




```
> xy <- data.frame(x,y)
> plot(xy)
```

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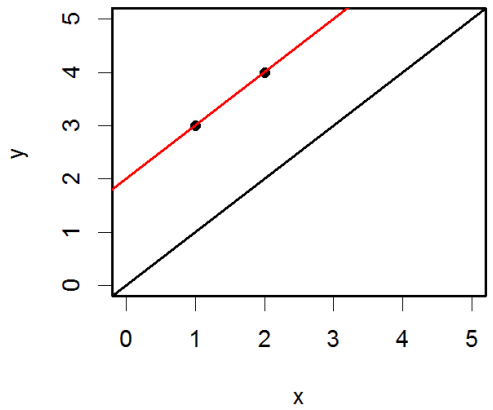
```
> m <- lm(y ~ x)
> plot(y ~ x, ylim=c(0,5),xlim=c(0,5))
> abline(m,col="red")
> abline(0,1)
```

y=ax+b



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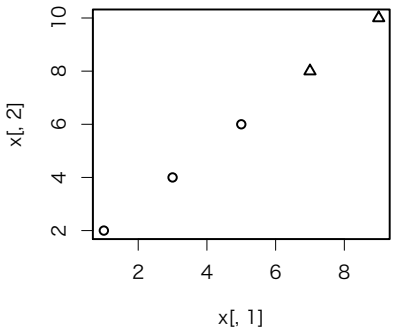
```
> a <- c(1,3,5,7,9)
> b <- c(2,4,6,8,10)
> c <- c(1,1,1,2,2)
> x <- data.frame(a,b,c)
> x
  a  b c
1 1  2 1
2 3  4 1
3 5  6 1
4 7  8 2
5 9 10 2
> plot(x[,1],x[,2],pch=x[,3])
```



棒グラフ

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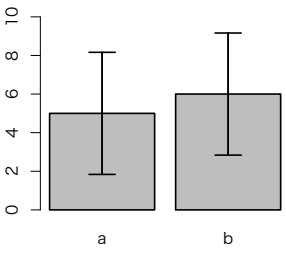
```
> c <- rbind(a,b)
> c
  [,1] [,2] [,3] [,4] [,5]
a    1    3    5    7    9
b    2    4    6    8   10
> m <- apply(c,1,mean)
> s <- apply(c,1,sd)
> x <- barplot(m,ylim=c(0,10))
> arrows(x, m, x, m+s, angle=90)
> arrows(x, m, x, m-s, angle=90)
```



apply関数（X, MARGIN, 関数, …）

MARGIN=１:行、MARGIN＝２：列

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```
> d <- array(1:80,dim=c(3,3,2))
> d
, , 1

     [,1] [,2] [,3]
[1,]    1    4    7
[2,]    2    5    8
[3,]    3    6    9

, , 2

     [,1] [,2] [,3]
[1,]   10   13   16
[2,]   11   14   17
[3,]   12   15   18
```

```
> m1 <- apply(d,c(1,2),mean)
> m1
     [,1]  [,2]  [,3]
[1,]  5.5   8.5  11.5
[2,]  6.5   9.5  12.5
[3,]  7.5  10.5  13.5
```

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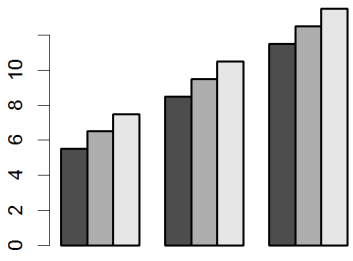
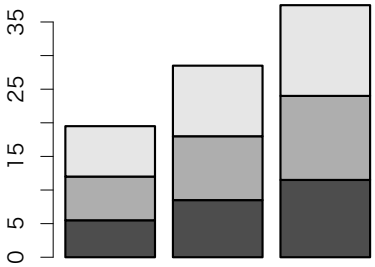
```
> barplot(m1,beside=T)
```




```
> barplot(m1)
```



折れ線グラフ

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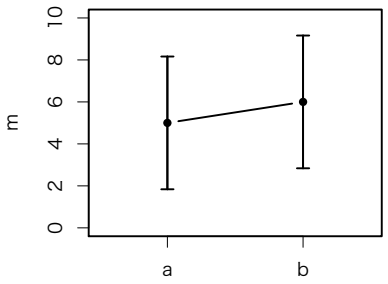
```
> x <- plot(1:2,m,
xlim=c(0.5,2.5),ylim=c(0,10),type="b",xlab="",xaxt="n")
> arrows(1:2, m-s, 1:2, m+s, angle=90,length=0.1)
> arrows(1:2, m+s, 1:2, m-s, angle=90,length=0.1)
> axis(1,1:2,c("a","b"))
```

type

type	
p	点プロット
l	線プロット
b	点と線プロット



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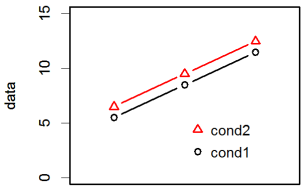
```
> plot(1:3,m1[1,],
xlim=c(0.5,3.5),ylim=c(0,15),type="b",xlab="",ylab="data",
xaxt="n",pch=1,col=1)
> legend(2,4,"cond1",pch=1,col=1,bty="n")
> par(new=T)
> plot(1:3,m1[2,],
xlim=c(0.5,3.5),ylim=c(0,15),type="b",xlab="",ylab="data",
xaxt="n",pch=2,col=2)
> legend(2,6,"cond2",pch=2,col=2, bty="n")
```



ggplot2

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```
> install.packages("ggplot2")
> library(ggplot2)
```

散布図

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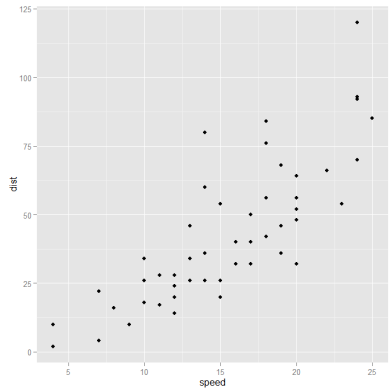
```
> qplot(cars$speed, cars$dist)

> qplot(speed, dist, data=cars)
```



折れ線グラフ

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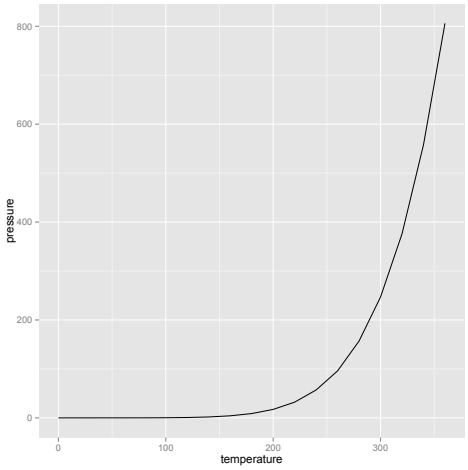
```
> qplot(temperature, pressure, data=pressure,
geom="line")
```



2．制御構造

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ループ

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```
> x <- c(1,2,3)
> for (n in x) print(n^2)
[1] 1
[1] 4
[1] 9
>
```

```
> i <- 1
> while(i<3) {
+ i <- i+1
+ print(i)
+ }
[1] 2
[1] 3
>
```

```
> i <- 1
> repeat { if (i>3) break else {print(i);i <- i+1}}
[1] 1
[1] 2
[1] 3
```

If-else

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```
> x <- 3
> if (x == 3) {
+ print("OK")
+ }else{
+ print("NO")
+ }
[1] "OK"
```

２．入出力

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キーボード入力

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```
> scan()
1: 2
2: 3
3:
Read 2 items
[1] 2 3
```

```
> readline()
2 3
[1] "2 3"
```

ファイル入出力

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```
> x <- c("1234")
> c <- file("test","w")
> writeLines(x,c)
> close(c)
>
```

```
> readLines("test")
[1] "1234 "

> scan("test")
Read 1 item
[1] 1234
```

入力

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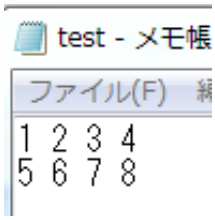
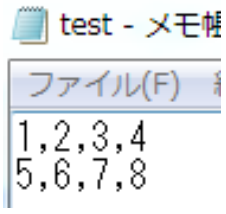
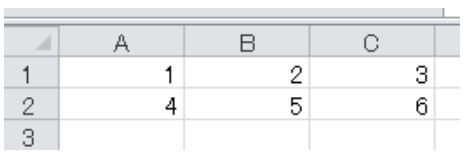
```
> read.table("test")
  V1 V2 V3 V4
1  1  2  3  4
2  5  6  7  8
> read.table("test",sep=",")
  V1 V2 V3 V4
1  1  2  3  4
2  5  6  7  8
> read.table("clipboard")
  V1 V2 V3
1  1  2  3
2  4  5  6
```







	A	B	C
1	1	2	3
2	4	5	6
3			

エクセルファイルからの入出力

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```
> read.table("test")
  V1 V2 V3 V4
1  1  2  3  4
2  5  6  7  8
> read.table("test",sep=",")
  V1 V2 V3 V4
1  1  2  3  4
2  5  6  7  8
> read.table("clipboard")
  V1 V2 V3
1  1  2  3
2  4  5  6
```

クリップボードから入力

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Windows

```
dat <- read.table("clipboard")
```

Mac

```
dat <- read.table(pipe("pbpaste"))
```