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############################################################
# History for lecture 3 -- Data conversions in R
#
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# 2014-02-18
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# load the reshape library
library(reshape2)

# the Orange dataset is in long form
View(Orange)

# convert it to wide form using dcast
o2 <- dcast(Orange, Tree ~ age, value.var="circumference")
View(o2)

# convert the wide form back to the long form using melt
melt(o2, id.vars="Tree", measure.vars=c("118","484","664","1004","1231","1372","1582"),
 variable.name="age", value.name="circumference")

# an alternate form that extracts the columns for the meaurement variables
melt(o2, id.vars="Tree", measure.vars=names(o2)[2:8], variable.name="age", value.name="
circumference")

# another storage technique in R is the time series
View(Nile)

# we can extract the data out as a numeric list
as.numeric(Nile)

# the time() function gives us the times of the time series
time(Nile)

# we can convert that to a numeric vector as well
as.numeric(time(Nile))

# and we can then glue these two together into a data frame
nileFrame <- data.frame(year=as.numeric(time(Nile)), flow=as.numeric(Nile))
View(nileFrame)
```