chapter\_1\_R\_exercise.R

RYU

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library(lubridate)

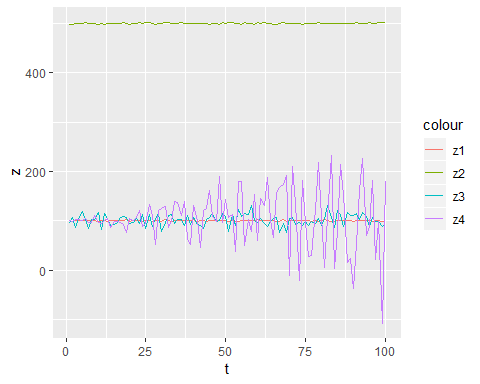
##   
## Attaching package: 'lubridate'

## The following object is masked from 'package:base':  
##   
## date

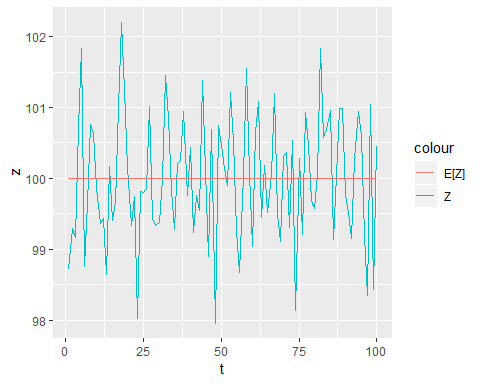
library(ggplot2)  
library(car)

## Loading required package: carData

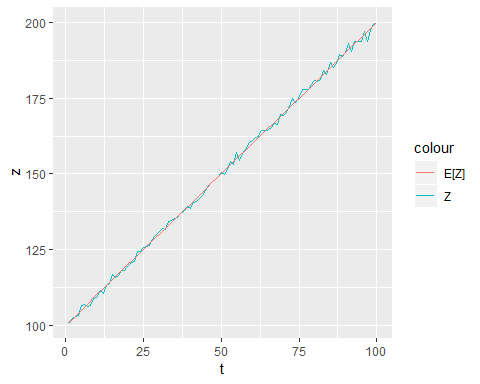
library(forecast)  
  
# ex1\_5  
t <- 1:100  
z1 <- 100 + rnorm(100)  
z2 <- 500 + rnorm(100)  
z3 <- 100 + rnorm(100, 0, 10)  
z4 <- 100 + t \* rnorm(100)  
df <- data.frame(t,z1,z2,z3,z4)  
ggplot(data=df, aes(t)) +   
 geom\_line(aes(y=z1, colour='z1')) +   
 geom\_line(aes(y=z2, colour='z2')) +   
 geom\_line(aes(y=z3, colour='z3')) +   
 geom\_line(aes(y=z4, colour='z4')) +  
 ylab('z')



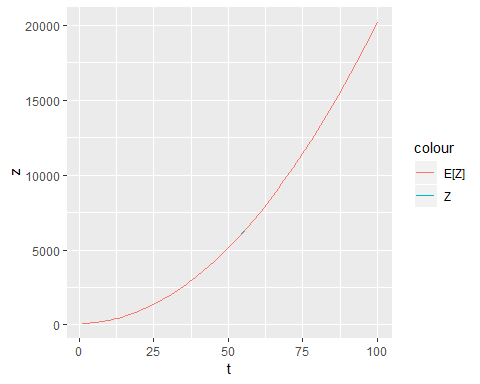
# ex1\_6\_1  
t <- 1:100  
e <- rep(100, 100)  
z <- 100 + rnorm(100)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



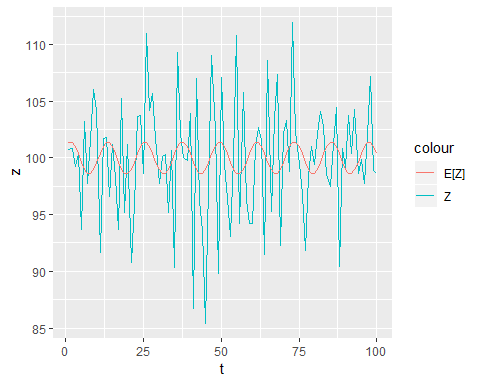
# ex1\_6\_2  
t <- 1:100  
e <- 100 + t  
z <- 100 + t + rnorm(100)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



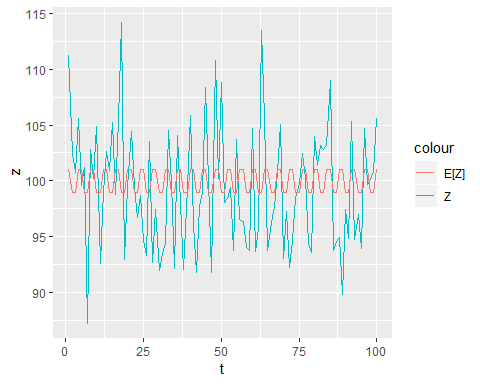
# ex1\_6\_3  
t <- 1:100  
e <- 100 + t + 2\*t\*\*2  
z <- 100 + t + 2\*t\*\*2 + rnorm(100)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



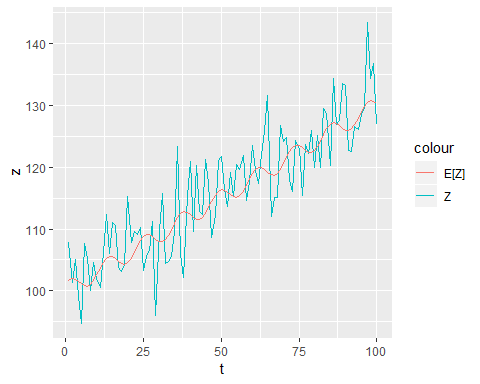
# ex1\_6\_4  
t <- 1:100  
e <- 100 + sin(2\*pi\*t/12) + cos(2\*pi\*t/12)  
z <- 100 + sin(2\*pi\*t/12) + cos(2\*pi\*t/12) + rnorm(100, 0, 5)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



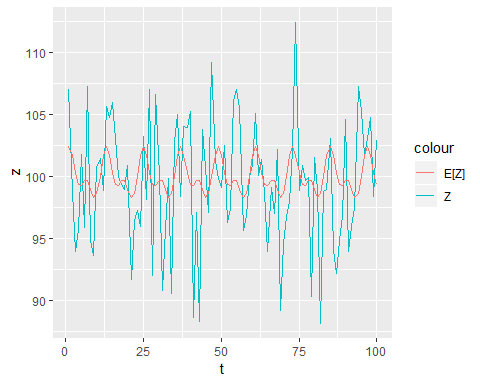
# ex1\_6\_5  
t <- 1:100  
e <- 100 + sin(2\*pi\*t/4) + cos(2\*pi\*t/4)  
z <- 100 + sin(2\*pi\*t/4) + cos(2\*pi\*t/4) + rnorm(100, 0, 5)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



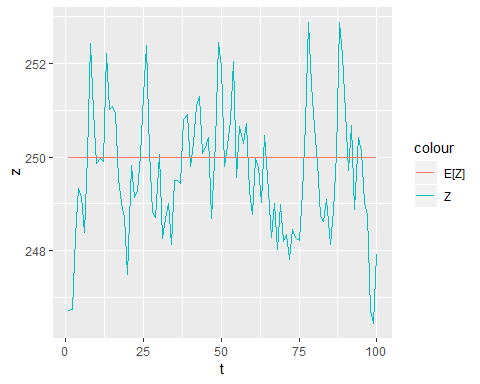
# ex1\_6\_6  
t <- 1:100  
e <- 100 + 0.3\*t + sin(2\*pi\*t/12) + cos(2\*pi\*t/12)  
z <- 100 + 0.3\*t + sin(2\*pi\*t/12) + cos(2\*pi\*t/12) + rnorm(100, 0, 5)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



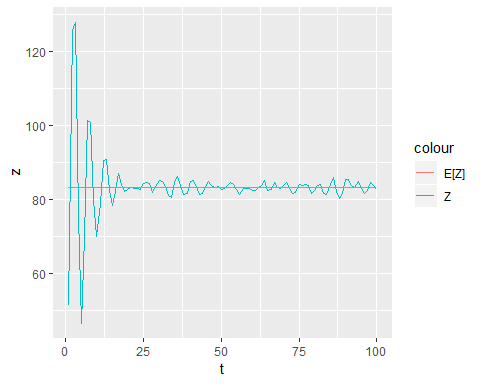
# ex1\_6\_7  
t <- 1:100  
e <- 100 + sin(2\*pi\*t/12) + cos(2\*pi\*t/12) + 0.8\*sin(2\*pi\*t/6) + 0.7\*cos(2\*pi\*t/6)  
z <- 100 + sin(2\*pi\*t/12) + cos(2\*pi\*t/12) + 0.8\*sin(2\*pi\*t/6) + 0.7\*cos(2\*pi\*t/6) + rnorm(100, 0, 5)  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



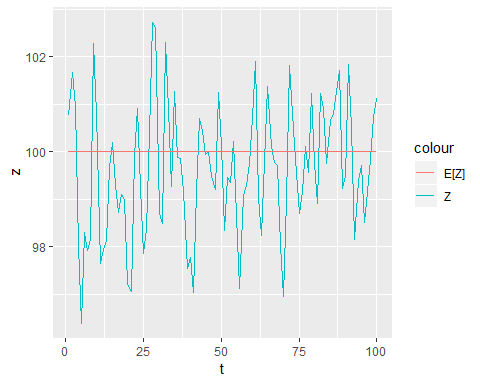
# ex1\_6\_8  
t <- 1:100  
e <- rep(250, 100)  
z <- 250 + rnorm(1)  
for(i in 2:100) {  
 z[i] <- 100 + 0.6\*z[i-1] + rnorm(1)  
}  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



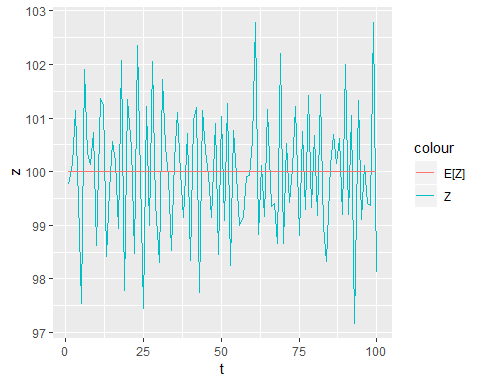
# ex1\_6\_9  
t <- 1:100  
e <- rep(100/1.2, 100)  
z <- 50 + rnorm(1)  
z[2] <- 100 + 0.5\*z[1] + rnorm(1)  
for(i in 3:100) {  
 z[i] <- 100 + 0.5\*z[i-1] - 0.7\*z[i-2] + rnorm(1)  
}  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



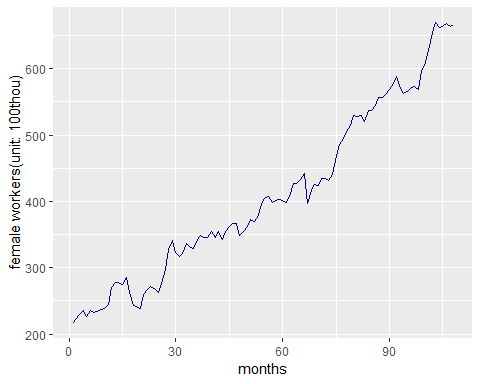
# ex1\_6\_10  
t <- 1:100  
eps <- rnorm(101)  
e <- rep(100,100)  
z <- 100 + eps[2:101] + 0.8\*eps[1:100]  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



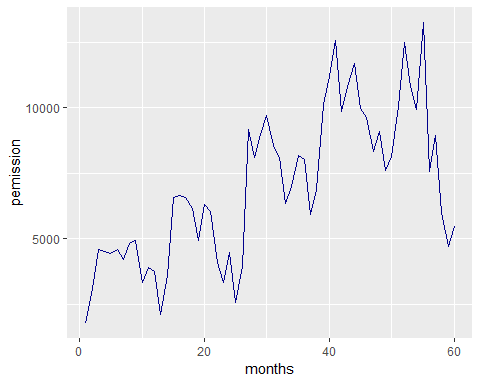
# ex1\_6\_11  
t <- 1:100  
eps <- rnorm(101)  
e <- rep(100,100)  
z <- 100 + eps[2:101] - 0.8\*eps[1:100]  
df <- data.frame(t, e, z)  
ggplot(data=df, aes(t)) + geom\_line(aes(y=z, colour="Z")) + geom\_line(aes(y=e, colour="E[Z]"))



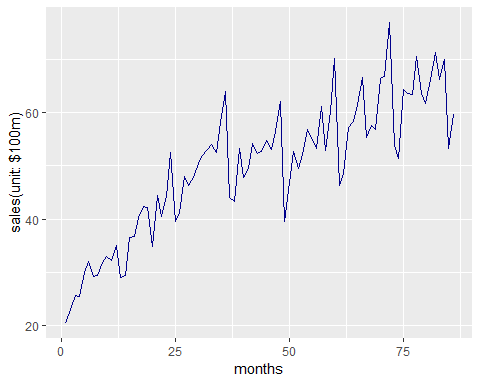
# ex1\_7\_1  
data <- read.csv('../timedata/female.txt', sep='', header=FALSE)  
z <- na.omit(c(t(data)))  
t <- 1:length(z)  
df <- data.frame(t, z)  
ggplot(data=df, aes(t, z)) +   
 geom\_line(color="darkblue") +  
 xlab("months") +  
 ylab("female workers(unit: 100thou)")



# ex1\_7\_2  
data <- read.csv('../timedata/build.txt', sep='', header=FALSE)  
z <- na.omit(c(t(data)))  
t <- 1:length(z)  
df <- data.frame(t, z)  
ggplot(data=df, aes(t, z)) +   
 geom\_line(color="darkblue") +  
 xlab("months") +  
 ylab("pemission")



# ex1\_7\_3  
data <- read.csv('../timedata/export.txt', sep='', header=FALSE)  
z <- na.omit(c(t(data)))  
t <- 1:length(z)  
df <- data.frame(t, z)  
ggplot(data=df, aes(t, z)) +   
 geom\_line(color="darkblue") +  
 xlab("months") +  
 ylab("sales(unit: $100m)")



# ex1\_7\_4  
data <- read.csv('../timedata/usapass.txt', sep='', header=FALSE)  
z <- na.omit(c(t(data)))  
t <- 1:length(z)  
df <- data.frame(t, z)  
ggplot(data=df, aes(t, z)) +   
 geom\_line(color="darkblue") +  
 xlab("months") +  
 ylab("flight customers(unit: 1thou)")

