Notes 4/8/19

Lecture: Reactive Conductors & Shiny

* Reactive()
* Simulations & Random Number Generators
* Ex: Investing in an Index Fund
  + Rate of return is random: annually ~ normal(16% mean, 11% sd)

Initial <- 100

Years <- 10

Balance <- c(initial, rep(0, years))

Rates <- rep(0, years)

for (y in 1:years) {

rates[y] <- rnorm(1, 0.16, 0.11)

# rnorm is a random number generator based on a normal distribution

balance[y+1] <- balance[y]\*(1+rates[y])

}

Dat <- data.frame(

Year = 0:years,

Rate = c(0, rates),

Balance = balance

)

Savings Simulation

Initial

[--o----------] slider

Years

[----o--------] slider

Mean

[\_\_\_\_\_\_\_\_] numeric

SD

[\_\_\_\_\_\_\_\_] numeric

Balance

Rate of Return

Putting it all together to get the above shiny output:

sliderInput(“years”, “number of years”, min =1, max =50,

server(input,output) {

reactive({

balance <- c(input$initial, rep(0, input$years)

rates <- rep(0, input$years)

for(y in 1:input$years) {

rates[y] <- rnorm(1, input$mean, input$sd)

balance[y+1] <- balance[y] \* (1+ rates[y])

}

dat <- data.frame(

Year = 0:years,

Rate = c(0, rates),

Balance = balance

)

return(dat)

})

output$distPlot <- renderPlot({

Gplot(**data=dat(),** aes(x = year, balance)) + geom\_line() **# ggplot will run a reactive object if you add the parenthese to dat 🡪 dat()**

})

Output$returns <-renderPlot({

Ggplot(data=dat(), aes(x = year, y = rate )) + geom\_line() + geom\_hline(yintercept=0)

})

}

mainOutput