

Week 1 exercises

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November 18th, 2020

Exercise 1

Simulating 100 trajectories of length $n = 1000$ for X and Y .

```
Traj_X = c()
Traj_Y = c()
X = c(0)
Y = c(0)
for (k in 1:100) {
  for (i in 1:1000) {
    if (i > 1) {
      X = c(X, 0.5*X[i-1]+rnorm(1))
      Y = c(Y, 2*Y[i-1]+rnorm(1))
    }
  }
  Traj_X = c(Traj_X, X)
  Traj_Y = c(Traj_Y, Y)
}
```