Course Project - Part 1

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Simulation

In Part 1 of the Course Project, the exponential distribution is simulated. The rate parameter, lambda,for the simulation is 0.2 The simulation investigates the distribution of 40 exponentials.

The function 'rexp' is run 10,000 times, with each simulation producing 40 exponentials and a lambda of 0.2. 2 vectors are created of these simulations: the mean of the 40 exponentials and the standard deviation of the 40 exponentionals.

```
sim_m <- vector()
sim_sd <- vector()
set.seed(5)
for (i in 1:10000) {
  sim_m[i] <- mean(rexp(40, 0.2))
  sim_sd[i] <- sd(rexp(40,0.2))
}
```

Center of Distribution

A histogram of the mean values of the simulations shows that it is centered around 5.

```
hist(sim_m, xaxt ='n')
axis(side = 1, at=seq(0,10,1), labels=seq(0,10,1))
```