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#####  
#####    CREATE RANDOM VARIABLES EXERCISES    #####  
#####
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```
# Generate a binomial  $\text{Bin}(n, p)$  random variable with  
#  $n = 25$  and  $p = 0.2$ . Plot histogram for a simulated  
# sample and compare with the binomial mass function  
# using dbinom() function in R. Use the system.time()  
# function in R to compare your generator with the R  
# binomial generator.
```

```
# For  $\alpha$  in the set  $[0, 1]$  show that the following R  
# code produces a random variable  $U$  from  $U([0, \alpha])$ .
```

```
U=runif(1)  
while(u > alpha) u=runif(1)  
U=u
```

```
# Compare it with the transform  $\alpha U$ ,  $U \sim U(0, 1)$ , for  
# values of  $\alpha$  close to 0 and close to 1, and with  
# runif(1, max=alpha).
```