AMS597 Quiz 3 Suggested Solution

```
# Create variables for sample size and the binomial parameters
i <- 30
p <- 0.75
n <- 8

## Create a matrix of random Bernoulli observations determined from random U(0,1) observations
# First construct 30 x 8 matrix of random U(0,1) observations
Xmat <- matrix(runif(n*i), ncol=n)

# Then create matrix of random Bernoulli observations based on the U(0,1) observations
Xmat_binary <- matrix(0,ncol=n,nrow=i)
Xmat_binary[Xmat<p] <- 1

# Then, since Binomial(n,p) is the sum of n Bernoullis, take row sum for each row of
# Bernoulli matrix to obtain sample of 30 Binomial(8,0.75) observations
x <- apply(Xmat_binary,1,sum)
x
```

```
##  [1] 6 3 5 7 5 7 8 6 6 7 6 8 6 6 6 6 7 6 6 5 8 5 7 3 7 6 8 6 7 5
```

```
# As a check, can calculate the mean of the sample and observe that it should be close to n*p = 6
mean(x)
```

```
## [1] 6.133333
```