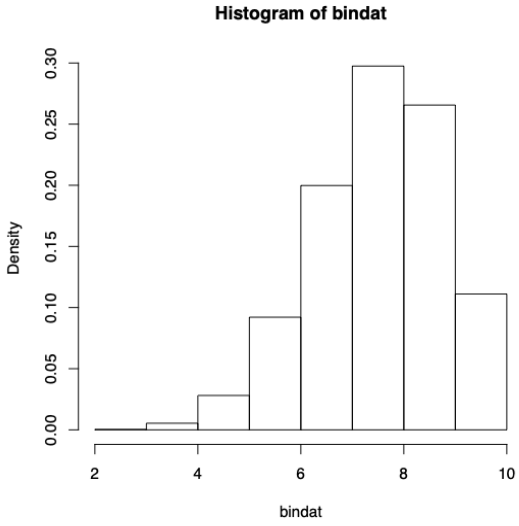
Name 1
STAT 575 Homework #0

Problem from Lab
Part A

```
> set.seed(1)
> bindat <- rbinom(n=10000, size=10, prob=0.8)
> par(mfrow=c(1,1))
> hist(bindat, breaks=seq(2, 10, 1), freq=F)
```



Part B

```
> 1-pbinom(7, 10, 0.8)
```

```
[1] 0.6777995
```

The probability that Dr. Dribble makes at least 8 out 10 free throws is 0.6778.

Part C

```
> binom.test(15, 25, 0.4, alternative="greater")

        Exact binomial test

data:  15 and 25
number of successes = 15, number of trials = 25, p-value = 0.03439
alternative hypothesis: true probability of success is greater than 0.4
95 percent confidence interval:
 0.416838 1.000000
sample estimates:
probability of success
                   0.6

> hold <- binom.test(15, 25, 0.4, alternative="greater")
> #the names command is useful!
> names(hold)

[1] "statistic"   "parameter"   "p.value"     "conf.int"    "estimate"
[6] "null.value"  "alternative" "method"      "data.name"

> hold$conf.int

[1] 0.416838 1.000000
attr(,"conf.level")
[1] 0.95
```

The hypothesis testing problem is

$H_0 : p = 0.4$ versus $H_1 : p > 0.4$

With a p-value of 0.03439 we reject the null hypothesis. We conclude that there is evidence that the first serve percentage is not 0.4 in favor of the alternative. (This is if a tennis player actually makes 15/25 free throws.)

You can also interpret the confidence interval!