Categorical Data Analysis
Simulate Coverage Probability of 95% Wald Confidence Interval
when n=12, pi=0.41

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> #generate binomial rv's and divide by 12 to get sample proportion:
> p=rbinom(100000, size=12, prob=0.41)/12
> head(p)
[1] 0.4166667 0.5000000 0.2500000 0.6666667 0.7500000 0.5833333
> #For each generated sample proportion, get Wald confidence interval
> CI = sapply(p,function(x) x + cbind(-1,1)*qnorm(0.975)*sqrt(x*(1-x)/12))
> head(t(CI))
            [,1]       [,2]
[1,] 0.137727021 0.6956063
[2,] 0.217103566 0.7828964
[3,] 0.005004502 0.4949955
[4,] 0.399949351 0.9333840
[5,] 0.505004502 0.9949955
[6,] 0.304393688 0.8622730
> #Find out whether each interval covers or not:
> coverage.sim = apply(t(CI),1,function(x) (x[1]<=0.41)*(0.41 <= x[2]))
> head(coverage.sim)
[1] 1 1 1 1 0 1
> mean(coverage.sim)
[1] 0.90812
```