ECE 341 - Homework #13

t-Tests. Due Wednesday, June 10th

Please make the subject "ECE 341 HW#13" if submitting homework electronically to Jacob_Glower@yahoo.com (or on blackboard)

Test of a Single Population: 4-card poker

1) Calculate the odds of getting 3-of-a-kind in 4-card stud poker.

- You are dealt (xxx y) where x and y are different values (Ace through King)

2) Run a Monte Carlo simulation to determine the odds of getting 3-of-a-kind in 4-card stud poker:

- Each simulation deals 10,000 hands of poker
- Run the simulation 5 times

3) From the results of problem #2, use a t-Test to determine the 90% confidence interval for the odds of getting 3-of-a-kind in 4-card stud poker.

Test of a Single Population: Reflex Time

4) Go to the web site

- https://faculty.washington.edu/chudler/java/redgreen.html

Play the game and record your reaction times (5 measurements)

5) From the data from problem #4, determine the 90% confidence interval for your reaction time.

6) From the data from problem #4, determine the odds that your next reaction time will be less than 200ms.

Comparison of Means Test:

The reaction time of Glower was

{ 0.378, 0.258, 0.267, 0.276, 0.254 }

7) Determine the probability that your reaction time will be less than Glower's if there was one-more test

8) Determine the probability that your reaction time is less than Glower's (population's mean)

Type-1 / Type-2 Errors

9) Suppose you want to determine who took the test based upon their reaction time.

- Pick a thereshold such as 300ms
- If the person's reaction time is less / more than 300ms, you declare the person taking the test was yourself or Glower

9a) What theshold do you pick and why?

9b) With this threshold, what is the probability of a false positive

- Glower took the test but your test results say you took it

9c) What is the probability of a false negative?

- You took the test bur your test results say Glower took it

10) Take the test one more time. Who does your test from problem #9 say took the test?