Homework 4: Due at start of class on 16-Feb.

Please complete all eleven problems.

1. Consider a sequence of i.i.d. binary random variables $X_1, X_2, \ldots, X_n$ where $X_i \sim Bernoulli(\frac{1}{2})$. With $n = 10$ and $\epsilon = 0.01$, describe exactly the sequences which fall in the typical set, and give the size of the set.

2. C&T 3.13. (Note that the third column in the table on pg. 69 is incorrect. You will need to generate it yourself; alternatively, you may wish to generate the cumulative distribution function rather than the pmf.)

3. C&T 5.2. Don't worry about the title.

4. C&T 5.8

5. C&T 5.18

6. C&T 5.24ab

7. C&T 5.30

8. C&T 5.31a

9. C&T 5.32. Note that the second a,b should be c,d.

10. C&T 5.37

11. C&T 5.39. You may want to review problem 2.4.