Information Theory
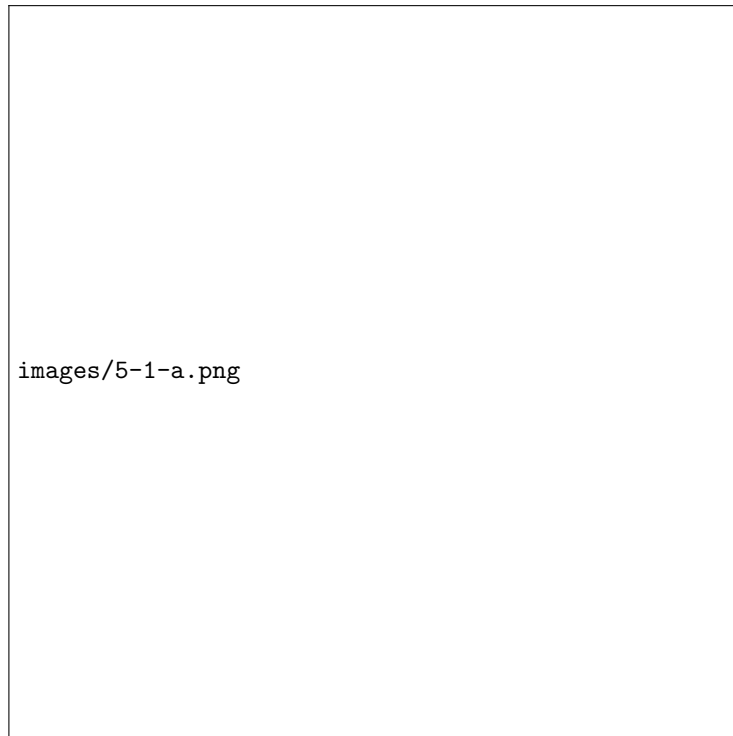## Problem Set 05 - Stream Codes
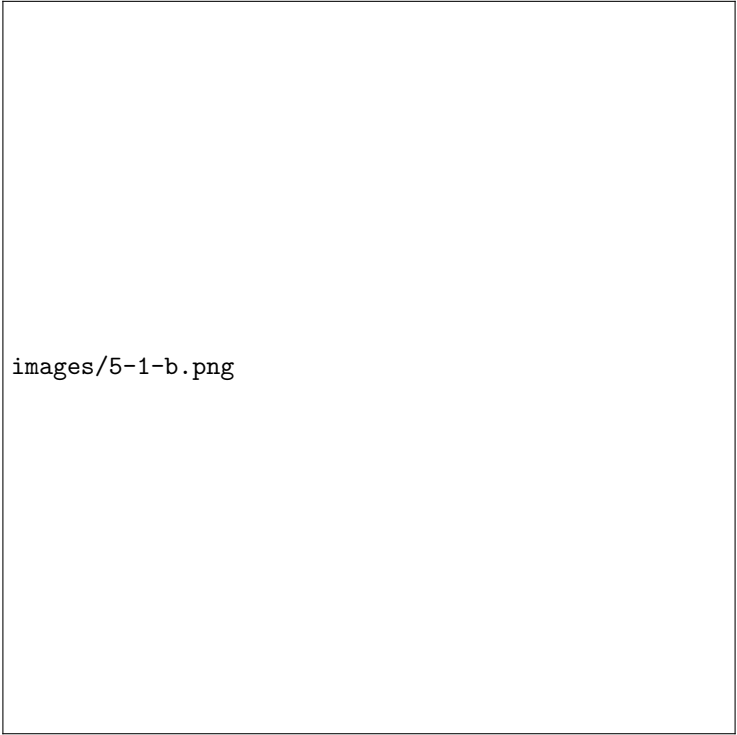
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1. (a) Handmade exercise.

images/5-1-a.png

(b) Handmade exercise.

images/5-1-b.png

2. (a) The three claims from the student are correct. Claims 1 and 2 are true because they basically follow the property stated by the Source Coding Theorem for symbol codes. Claim 3 is true because of a transitive property. Since each symbol in X is represented in Y by aproximately $H(X)$ bits and each symbol in Y is represente din Z by aproximately $H(Y)$, then each symbol in X is represented in Z by aproximately $H(X)H(Y)$ bits.

   (b) b

   (c) c

   (d) d