Names:

## CMPSCI 240

## Reasoning Under Uncertainty Discussion 6

1. You are having a party and have created a playlist on your iPod, consisting of 100 (different) songs. Unfortunately, your iPod is stuck on shuffle and the next song to be played is always chosen uniformly at random from the entire playlist. Using the Markov bound, what can you say about the probability that it will take at least 1,000 plays to hear all 100 songs?

2. Using the Markov bound, what can you say about the probability that it will take less than 5,000 plays to hear each of the 100 different songs on your playlist at least once?

| 3. | You want to be at least 95% sure that you'll play all 100 songs. Use the Markov bound to determine the smallest number of songs you can play and be 95% sure you played all 100. |
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| 4. | Now use the Chebyshev bound to determine the smallest number of songs you can play and be 95% sure your guests will hear all 100 songs on your playlist.                         |
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