CS 241 Homework 3

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Instructions

- The learning objective for this assignment is to ensure that you understand the underlying material, and to provide you with practice in solving problems of this kind.
- Only a few of these problems will be graded. You do not know beforehand which ones these are; hence, you should provide solutions to all the problems.
- Make your solutions concise and formal.
- Please type the assignment if your handwriting is difficult to read. Otherwise scan to pdf
- You are encouraged to work on problems in groups. List the people you worked in groups with please. If you used an online resource i.e. Math-Stack Exchange, link the question asked or resource such that I can check you understand rather then brain-off copying
- Note that you must write your solutions by yourself, in your own words. Individual submissions
- **Remember that proving a statement is false counts as proving the statement. To prove a statement you do not need to prove it true**

Problems

Extra Credit: All assignments must be uploaded to Canvas as a pdf. Should you type up your homework in Latex, I will give you +2 extra credit points (equivalent to 10%). Template file will be provided if you want

Remember, in order to show that two sets are equal, you must show they are subsets of each other

Theorem 2.1. *Let A, B be sets. $A \triangle B = \phi$ iff $A = B$*

Theorem 2.2. *Let $S_n = \left\{x \in \mathbb{R} | 0 \leq x \leq \frac{n-1}{n}\right\}$. Then*

$$\bigcup_{n=1}^{\infty} S_n = [0, 1)$$

Note: $[0, 1) = \{x \in \mathbb{R} | 0 \leq x < 1\}$ and the big union symbol is the same as the big sigma for summations, but with unions instead