

Discrete Math & Functional Programming— CSCI 054— Spring 2024

Instructor: Osborn

Homework 5 - groupwork (.75 point(s))

Due: 10:00PM on Friday

We're moving into the mathematical foundations part of the course. It's likely that none of you were familiar with functional programming, but it's almost certain that the members of your group will have different math backgrounds.

You will be using \LaTeX to format your problem sets for the rest of the semester. Documents written in \LaTeX look beautiful, but it does mean that there will be a bit of overhead initially as you get used to this new language. Make sure your group does Problem 2 on this group assignment, which just makes sure everyone can compile a basic `.tex` document!

1. [.25 point(s)] Sets and Functions

(a) Let the universe be the set $U = \{0, 1, 2, \dots, 10\}$, let $A = \{1, 3, 4, 5, 7, 8, 9\}$, and let $B = \{0, 4, 5, 9\}$. What are the following sets?

- i. $A \cap B$
- ii. $A \cup B$
- iii. $A - B$
- iv. $B - A$
- v. B^C

(b) Let $A = \{a, b\}$. Define a function $f : (A \times A) \rightarrow A$. Are the co-domain and the range of your function the same?

2. [.25 point(s)] \LaTeX

I recommend using Overleaf (overleaf.com) to manage your \LaTeX documents since, among other things, it will make collaborating much easier. However, it is also an option to install \LaTeX on your laptop and to ignore “the cloud” entirely.

Download the `week05-ps.tex` and `coursetemplate.sty` files from Canvas. If you think you might use overleaf, create an account, create a project, move the documents into the overleaf project, and make sure that you can generate a pdf.

3. [.25 point(s)] Group questions Does anyone in your group have a favorite study snack? If so, what is it?