CPSC-354 Report

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Abstract

This document outlines what has been learned week by week through this class. For now, it only contains the information learned for week one.

Contents

1 Introduction

Welcome to my class report! As the class progresses, I will add my learning from each week. For now, it only has week one.

2 Week by Week

2.1 Week 1

Notes

This week we discussed the foundation of what the class is about. The main idea was that this class is largely about the intersection of math and programming, beginning with revisiting the principles we learned in discrete mathematics. We also learned about LaTeX, which we will be using throughout the semester to edit documents like this one. The general idea of the week was setting all of us students up for what to expect throughout the semester.

Homework

The reading that we had to cover for homework discussed the MUI problem, which helps us break down what a formal system is, and how these attributes can be seen in mathematics like discrete math.

We also had to complete the tutorial world of the natural number game. Here are the solutions for levels 5-8.

Level 5

Goal: a+(b+0)+(c+0)=a+b+c

Solution:

```
rw[add_zero]
rfl
```

Level 6

Goal: a+(b+0)+(c+0)=a+b+c

Solution:

```
rw[add_zero c]
rw[add_zero]
rfl
```

Level 7

Goal: succ n = n + 1

Solution:

```
rw[one_eq_succ_zero]
rw[add_succ]
rw[add_zero]
rfl
```

Level 8

Goal: 2 + 2 = 4

Solution:

```
nth_rewrite 2[two_eq_succ_one]
rw[one_eq_succ_zero]
rw[four_eq_succ_three]
rw[three_eq_succ_two]
nth_rewrite 2[two_eq_succ_one]
rw[one_eq_succ_zero]
rw[two_eq_succ_one]
rw[one_eq_succ_zero]
rw[add_succ]
rw[add_succ]
rw[add_zero]
rfl
```

I learned a lot from this homework. It basically acted as a refresher for discrete mathematics, and how what seems like such a simple solution is much more complicated than you think it is. It also shows the various ways that you can derive the same solutions.

Comments and Questions

This week provided me with a good refresher of the discrete mathematics class that I took a while ago. It brought to my attention how much there is a crossover between math and code, and I am so excited to explore that in this class.

I always wonder who decided to start defining these mathematical relations? They have evolved so far and it is amazing to see the foundation that exists in discrete and how complicated it really is to have built up that foundation to all of the mathematical relations that we analyze now. I wonder if math will continue to get more and more complicated from the foundation that is laid by discrete.

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