

Journal of Chelsie Wollett for Spring 2009

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1 Week One

1.1 Playing Catch-up

I am back in the determinants group for the first time in basically a year. I took last quarter off to student teach, and I had my own side project in the fall. Because of this, my current goal is to review everything that has happened with the equation. It has changed drastically since I worked with Benigno on it last spring. There is new notation and more summations, so I have to learn what everything means before I can move forward.

2 Week Two

2.1 Learning Python

After learning all the new notations in the equation, I found out that Vittal has implemented the equation into a computer program called Python. Now we can run the equation using the code to find the answer to the equation instead of doing it by hand. Dr. Mohlenkamp wants me to learn how to use Python so that I may be able to help Vittal, and possibly do this on my own in the future. So this week I must get the software for Python to run on my computer as well as learn the basics of the program.

3 Week Three

3.1 More Python

The basics of Python were not that hard to figure out. It was easy for me to understand how to input commands and get results you wanted. Vittal sent me the code he had written during the winter and I looked through it. I thought that since the basic commands looked easy to me, that I would understand his code in no time. However, it looked like a foreign language to me. There were many operations that he defined himself that I had a hard time understanding, and some built in commands that I had no idea what they meant. I think it would be immensely helpful to have a glossary of definitions. That way I could quickly look up the command and figure out what it is doing without having to talk to Vittal or Dr. Mohlenkamp.

4 Week Four

4.1 First Python Attempt

I sat down with Vittal this week to learn his code. He explained how each part of the code corresponded to part of the equation which made it very easy to understand what his commands were doing. While looking through the code, I thought I found a part where we could improve it. When we take nothing into our \mathbb{M}_{12} or \mathbb{M}_{23} matrices, then we take just the determinant of our identity matrix and we get an answer of 1. We put this into the code, but since we do a summary with \mathbb{M}_{23} , we cannot put constraints in that deal with only the matrix.

5 Week Five

5.1 Fixing the Bug

I learned a valuable lesson this week: when editing a code, save all subsequent saves separately from the last known working code. When we put in the part where we get 1 if there is nothing in our \mathbb{M}_{12} or \mathbb{M}_{23} matrices, I immediately saved the file. However, this was instead a bug. It made our answer always come out to one, because the summary depends on more than just \mathbb{M}_{23} . Since I saved over the working file, I had no way to get the working code back. I tried just deleting the part I added, but when I ran the code, I still had the same answer. It turned out that the shell did not refresh when I changed the code, so I could not tell if my fixes were being implemented. I finally gave in and emailed Vittal to send me the working file.

6 Week Six

6.1 New Formula

The formula has changed drastically since the last time I worked with it. The α 's have been split into three parts, the notation for which rows and columns we take out of each matrix has changed, and there is now a summary notation for the third matrix. The code has the formula I remember. So, our new task is to implement the new formula into Python. This is a daunting task, since we have no idea how to get nine α 's into the code as opposed to the current three.

7 Week Seven

7.1 Too Many α 's

Vittal and I are still confused on how to implement the split α 's. We talked to Dr. Mohlenkamp about this during our group meeting. He gave us an idea on how to split them. I was a little confused, but Vittal seemed to understand, so I figured he could put it in easier terms for me later. We decided to get together the next day to talk about how to proceed. We ended up deciding to try two approaches. He would try what Dr. Mohlenkamp said to do, and I would try to implement the code based strictly on how the equation splits the α 's.

8 Week Eight

8.1 My First Code

I used the newest formula we had, and set to work trying to put it into Python. I based my code entirely off of the working one that Vittal implemented last quarter. I figured, since that one worked, and all we did was split a few summations, that mine should work. However, I implemented the equation, went to run it, and bam, errors galore. And, we had no errors when Vittal explained his code to me, so I had no idea how to fix the errors. So I had the equation in there, but it did not work and I was lost from there. So much for my first ever coding attempt.

9 Week Nine

9.1 Getting the Code to Work

I met with Vittal to go over my version of the code. He found out that I had not defined a few key things. So we defined those, and after some tweaking on his part, got the code to compile. But it did not give the correct answer. The matrices are randomly generated, so the chances of us getting a whole number answer are very, very slim. And the manually calculated result showed this. However, the result using the formula was always a whole number. So we know that somewhere, there is a bug, but after looking at it all week, neither of us could find a spot that seemed to be wrong. Instead, we turned our attention on the presentation and report.

10 Week Ten

10.1 End of the Quarter

This is the week the determinants group will do their big presentation. I found out Vittal will be unable to come to the presentation, so he explained what he has done with accelerating the code to me so I can give his part of the presentation. He also sent his slides to Benigno and I, so that we could add on what we have done this quarter with implementing a new equation and Benigno changing the equation to make it, possibly, more notation friendly.