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| My Intern Project |

Creating a class which could scale threads to do tasks and reduce the delay to do the tasks. Creating monitors for CPU, delay, and thread saturation to dynamically scale the threads, to increase if there was a delay in tasks and decrease if not needed.

| Technical Skills |

Needed: C++, MySQL, EC2, Git, Multi-threading, Asynchronous IO

Challenge: Make the auto scaling and probing feature run continuously

Problem 1: How to have a separate thread that runs continuously to collect the data, or to make the decisions on scaling

Solution 1: Not many places in the code that had a similar function, but I used a standard thread to do these tasks. I figured out how to call and keep the thread running.

Problem 2: The next challenge was figuring out how to stop the threads and scaling. The overall service being stopped was in a different file than the threads.

Solution 2: I added a member variable to my class and have it changed with a function when the overall service was stopped and rejoin the threads. I figured out how to turn on and off the scaling ability, which I did through an API, adding an enable and disable feature.

| Professional Growth |

Be specific:

When asking others questions try to be as specific as you can, so they know best how to help you. Provide context, what you are doing, what's not working, and what you are trying to do. When I was having a crash happen with my service I had asked someone for help and they asked me what crashed, but I just told them it crashed. They explained I needed to check and specify what was crashing, the system, or some other component, and where I saw errors so they could better help me. When you are specific people have a better idea of what the problem is and how they can help, so always be specific.

Don't be Afraid to Ask Questions, but try to solve them on your own first

This is something a lot of people can feel afraid of, asking questions. Although people are busy, they have time to answer your questions. But don't immediately jump to asking questions when something goes wrong. Try to figure out the issue for some time on your own before asking for help. This can also lead to more context and understanding for the person you are asking, and not waste their time if you can solve an issue in a few minutes. I got this feedback from my mentor and it helped me learn a lot, by trying things for myself for longer I was able to solve them and gain more confidence in solving my own problems.

Build Connections

Another important lesson I learned was to build connections with your team. I think I had a much more positive experience by building connections with those on my team inside and outside of the office through work events. We had a great time together when we went rock climbing or go kart racing, and they provided me more support. Others on my team knew me and cared about my project and issues, which helped me have a great internship and build more connections for the future.

| Positive Impact |

- **Improving customer satisfaction** through providing a faster product and less wait time. There are millions of customers who use the service we have, so it impacts all of those customers and improves their experience.
- **Improving my team's experience** as they have my documentation and system to be able to expand to more facets of the product and improve the ease of use for them. Also with the added monitors they are able to more easily monitor aspects of the service and help see what could be causing issues and better assist customers.
- **Providing services:** Many large services use AWS and our service to manage their business needs so we provide a positive impact by helping those businesses to be able to function by providing this service, and allowing more people to enjoy those services.

| My Internship and UCSD |

Techniques from Coursework I used:

- **Git and Version Control**
 - Used git for making and pulling code changes
- **Data Structures**
 - Understanding the code base and influencing what structures to use for my code
- **AWS + EC2 instances**
 - Used to run tests, set them up, fix errors

What I will take back to UCSD from Internship:

- Be specific and get the whole picture before asking questions
- Try to truly understand the material, rather than just focusing on the grade
- Don't be afraid to ask questions and have a positive attitude