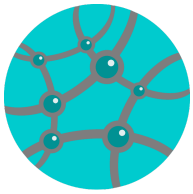

MeshFS

Project Description

For the 2017 TSA Colorado Conference Software Development competition, myself and two other students developed a computer application known as MeshFS. MeshFS is a distributed system that uses existing computers to create a raid-like file server. File distribution is decided by a master server using JSON objects that represent nodes' capacity information. The stored files are presented to the user as a file hierarchy. The application is cross-platform and developed in Java requiring only a single executable. We were required to present our work by submitting a portfolio and by conducting an in-person demonstration and interview in front of a panel of judges.

Project Requirements

- Develop a software development project in a team of 2-6 students.
- Create a portfolio including research, the project's purpose and the problem it solves, and documentation of the software development process used.
- Conduct an in-person presentation of the software in 10 minutes.
- Conduct an additional in-person interview about the project's development.

Social Value

We came up with the idea for this project when our school launched its Broadcast Video Production class. In that class, students learn how to record, stream, and produce many types of media. Because of the large amount of data that had to be stored, shared, and frequently accessed, we realized we needed to build a central, easily-accessible solution. Since the school was unable to afford an expensive file server, we decided to capitalize on the existing and unused resources in the school computer labs. Our application is designed to break up large files into small parts, then use some of the free space on multiple computers to store the file. Since all of this is done using existing resources, the school saves thousands of dollars that would have previously been used for expensive hardware.

Educational Value

While creating this project, we encountered many unique challenges that were different from those that I had seen in class. We decided to create this application in a programming language called Java, which the team had never used. This language was more complex and powerful than languages we had used before. We made this decision because we wanted to challenge ourselves and because we wanted to make this program in a language often used in industry. In addition to learning Java, we learned to use professional Integrated Development Environments to help us develop and test our software, as well as the "git" version control system to track our changes. In order to be able to work more effectively, we broke up the project into parts that each of us were responsible for developing. We found that constant communication was imperative during this time so that the pieces would work together after they had been finished. Overall, we not only learned about many tools and technologies that are used in industry, but we also learned how to coordinate a small team to work on a large project spanning many months.

Awards

1st Place - TSA Colorado Conference Software Development (2017)

Graphics