All Essays for CS3377.0W1

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Introduction

This paper is the summation of all essays I have written over the 2022 Spring Semester for CS3377.0W1. The essays are an overview of the topics that the class covered and are ordered in when they were written, with the oldest being first.

Client-Server Model Essay

Centralized computing was the main model used in the 1970s. This model was used by companies that needed computers to function. Instead of every employee having their own personal computer like today’s current standard, employees would have their own terminals, each accessing the same massive processing computer called a mainframe. These mainframes would split the tasks given to it by the different terminals and after processing the tasks would return some value to the terminal for the employee that was using it.

With the decrease in cost and increase of power for microcomputers, mainframes became obsolete in the 1980s and 1990s. Instead, many companies moved from having mainframes to having a dedicated storage room that these microcomputers would get access to when needed. This change led to “rich clients” which means instead of low resource computers or terminals asking one large computer to do all the processing, powerful smaller computers would do the processing and share the data with the main storage computer for other small and powerful computers to use.

Service-oriented architecture, or SAO, is a type of architecture scales better compared to older architecture types. This is because SAO removes tasks from the program who previously had to remake existing functions or had to know how to connect to existing functions. Instead, each service has the code and storage required to run a complete function (such as processing a payment). These services are loosely coupled with the interfaces, which means they do not care how the interface gets them their data if it is in the same format as the program is expecting.

With microcomputers becoming normalized, the development of web applications increased enough to compete with application software that was originally developed for a specific microarchitecture. This increase of web development and the increase of Service-oriented architecture are two large factors that helped drive the increase of cloud computing in the 2010s.

Cloud Computing Essay

Cloud computing is a concept where a user can use the internet to get accesses to several different machines to create a “virtual machine.” This virtual machine then can process given data at a rate faster than the user’s machine could process it. This can allow massive amounts of data to be processed at a faster and cheaper rate than a single or small network of machines could process it.

There are several services currently that offer this as a product, one of the more popular and well-known ones is AWS (Amazon Web Services). Users can purchase an AWS licenses and gain access to Amazon’s vast amount of computing power to process their code or data. This allows people or small groups to process more information than they normally could.

One of the reasons why cloud computing is extremely popular currently is because it allows users to higher levels of computing power when needed. This allows groups to getter their applications running faster and allows them to have better management of their application.

One use for cloud computing is the ability to have a Cloud platform. A cloud platform is the capability provided to a user to deploy their application onto the cloud infrastructure without having them manage the underlying cloud infrastructure. This is commonly used for websites and databases. The user has access to change how their application works on the cloud without being able to alter the cloud itself.

Another service provided by cloud computing is Software as a service (SaaS). SaaS provides the capability to give a consumer to use the provider’s applications that are running on the cloud infrastructure. The applications can be accessed from several client devices through a interfere. A few examples of this are web-based emails group chats, or online video games. This method can be used to outsource hardware and software maintenance and support to the cloud provider (like Amazon).

Version Control Essay

Version control is a method of keeping track of when edits to a source are made and who made them. As coding becomes more important and complex, version control has become a bigger issue because keeping track of who wrote what when is getting more complex. Early on companies would just save each version of the code which can allow a lot of different users to gain access to it. In the modern times, version control is done by software behind the scenes. The software keeps track of who made what changes and when those changes were made, allowing the developers to have more time to focus on the code itself instead of having to keep track of who made what changes.

Having different versions of the same code allows different teams to work on various parts of the project, an example would be one team working on finding and fixing bugs while another team works on adding new features to the project. With both teams being composed of several people, it is important to have all those people work on the same code at once without over writing each other’s work. Version control allows this be possible by giving each coder their own copy of the version they are working on and once the coder submits their changes, the version control software will compare the two codes and see what changes were made and someone, a manager for example, would approve of the changes and “push” the changes into the original copy of the code so now whenever a coder gets a copy they get the changes made as well.

GitHub Essay

GitHub provides a software development and version control using Git. GitHub offers Git functionality such as distributed version control and source code management while also offering their own features like bug tracking and continuous integration.

In GitHub’s first few years of release, it became highly successful. It quickly grew to over three million users in three years of being released. It was also hit with the third largest distributed denial-of-service attack in history, the incoming traffic reached a peak of 1.35 terabits per second.

In 2012 Microsoft started becoming a big user of GitHub, using it to host their projects and development tools as well as the bulk of Microsoft’s product documentation. In 2018 Microsoft announced its intent to acquire the company for $7.5 billion. Once the deal was closed GitHub continued to operate independently from Microsoft.

GitHub offers several services ranging from allowing users to have access to the standard Git command-line interface to allowing users to browse public repositories on the website. On the website there is a social networking functions such as feeds, followers, and wikis. Anyone who wants to have the ability to browse and download public repositories which makes any public repository open source.

One major benefit that GitHub has provided to companies and workers is a place to show off someone’s work. When applying for a coding job, a lot of job applications ask the applicant if they have a GitHub account that shows some of their past work. This is helpful for people who are trying to break into the industry by allowing them to prove that they know what they are doing to a certain extent. GitHub also allows users to store their code on the cloud so if something happens to their hard drives and they end up losing the data, their code is not lost as well.

Summary

The contents covered in this essay scratches the surface of several interesting avenues in computer science. They are all connected to each other in several ways but maintain enough distance that for someone to master them all would take time but would not be unheard of. This class has shown there are different ways of doing the same thing and has introduced me to how interesting topics in computer science as Cloud Computing or multi-core processing works without going so far in-depth that I get lost in the learning.