

# Networks and System Design

## Overview of Networks and System Design

Network and system design refers to the structural layout of communication between various devices and how they transmit data to one another. An API (application programming interface) is a program that is compiled and run on the server and then made available to the public on a network to receive requests. The API allows end-users to access the database on the server through get and post requests. A get request allows an end-user to retrieve data from the server and may include parameters to specify which pieces of data the user wishes to receive. A post request allows for an end-user to add data to the database and this data is inputted as parameters to the post request. An HTTP status code of 200 indicates a successful request. A status code in the 400s means the end-user made a mistake, for example, if it was a bad request (400), the page you are trying to reach does not exist (404), or if you were trying to use an unspecified get or post request (405). A 500 error means something went wrong on the server itself. In order to ensure that these errors do not cause unhandled exceptions, you can use exception handling to handle these faulty requests, giving the end-user useful information about what went wrong without crashing the API. Some topics that we did not cover in this course that feel important is the difference between LAN and WAN networks. This topic is important because it provides the basis for how communication with web servers over the internet works. This is something that people do daily, and it is important to understand the framework underlying it all.

## How I could fit this into my anticipated teaching context

This topic aligns most with the standard 9-12.NSD.4. This standard requires that students understand how information can be moved, stored, and referenced over the Internet. It is important for students to understand this concept and how they access information on the internet in their daily lives. I think that the topic of network and system design would fit nicely into the curriculum later in the year. I can introduce students to the idea of get and post requests and also introduce them to the idea of servers, databases, and APIs.

## How I might teach Networks and System Design

I would first introduce students to the idea of get and post requests through a pre-made program that they can use to explore the concept. Then, as a final project, I think it would be fun to allow students to decide upon their own application and help program their own get and post requests with my guidance. I would require materials to help simplify the process for students. Something like banjo was a great way to introduce us to the idea of get and post requests without overwhelming us, and I think something similar would work well in a high school setting.