

# Application Programming Interface (API)

- Outward facing interface that can be used by applications
- Things that have APIs
  - Libraries and frameworks
    - Classes and their methods, functions, etc.
  - Hardware that is controllable by software
    - Robots - how to access sensors and control motors

- Web services

- A service on the internet

- Applications interact with the service via a web API

- An API can be defined separately from the application behind it

- Abstraction

- There can be multiple implementations of the same API

- An implementation can change behind the scenes without changing the API, and applications using that implementation should not break

## Web Services

- Often one computer needs to communicate with another computer
- Computer networks offer generic ways for computers to communicate at a low level
- Higher level protocols (HTTP, SSH, FTP, etc.) are built on top of networks to quickly develop ways for applications to communicate

- HTTP (Hypertext Transfer Protocol)

- Defines how a client (often a web browser) can communicate with a server to fetch and submit content (often in the form of web pages)

- A client initiates a request to a server

- Put `wooster.edu` in your browser and the browser fetches data from Wooster's servers

## - Web API

- A term for an API designed on top of HTTP
- Allow client programs to fetch and submit data from servers
- Many sites provide APIs so that apps can interact with them

## - JSON (JavaScript Object Notation)

- Text format that represents structured data using lists and key/value pairs
- Used by many web APIs
- Python has a built-in module which can convert a JSON string to nested lists and dictionaries

{

"name": "Nathan Sommer",

"courses": ["CS 230", "CS 200"],

course\_count: 2

}