

CMPS 3680 Homework 10

Spring 2025

jQuery

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Bootstrap

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Types Of APIs (Application Public/Programming Interface)

- **Local/System API**
Local/System APIs are operating system libraries or third party services offered to expand the functionality of an application/program. For instance, Microsoft's .NET APIs, Steamworks, and OpenGL (Vulcan).
- **Web API**
Web API is an Interface that can be easily accessed using the HTTP Protocol, generally called an API over the web. It leverages a large number of client entities, like Smartphones, Tablets, or Laptops. A Web API can be developed using various technologies like Java, Node.js, Golang, PHP, etc. providing superior performance and faster service development. However, as Web APIs are designed for distributed services, they are lightweight and have limitations in bandwidth.
- **Program API**
Program APIs are based on Remote Procedure Call (RPC) technology that makes a remote program component appear local to the rest of the software. Examples include Windows Web Services API, the client/service interface generated by Apache Thrift, or gPRC (using proto buffers)

Web API Protocols & Architecture

- [XML-RPC](#)

The XML-RPC protocol was created by Dave Winer to exchange information between two or more networks. The client performs RPC by using XML to encode its calls and HTTP requests for data transfer.

- [JSON-RPC](#)

The JSON-RPC is a lightweight RPC encoded in JSON, similar to XML-RPC, which allows notifications and multiple calls to the server, which may be asynchronously answered.

- [SOAP \(Simple Object Access Protocol\)](#)

SOAP is an established Web API protocol for exchanging structured information. It uses XML to Authenticate, Authorize, and Communicate processes running on operating systems. Since web protocols like HTTP run on most operating systems, SOAP allows clients to invoke web services and receive responses irrespective of language and platform.

- [REST](#)

REST is an architectural style to provide standards between systems on the web. REST is neither a protocol, nor library, nor a tool, so communication between systems becomes easy. REST architecture makes the implementation of Client and Server independent without affecting the operation of the other.

Program API RPC code generators

- [gRPC](#)

RPC is a modern open source high performance Remote Procedure Call (RPC) framework that can run in any environment. It can efficiently connect services across data centers with pluggable support for load balancing, tracing, health checking and authentication.

- [Apache Thrift](#)

The Apache Thrift software framework, for scalable cross-language services development, combines a software stack with a code generation engine to build services that work efficiently and seamlessly between C++, Java, Python, PHP, Ruby, Erlang, Perl, Haskell, C#, Cocoa, JavaScript, Node.js, Smalltalk, OCaml and Delphi and other languages.