

Exercise #8 in its entirety located on Page 418 in Chapter 9

Outline the differences between the Simple Object Access Protocol (SOAP) and the Representational State Transfer (REST) principle as they are used in the creation of Web services. Include the advantages and disadvantages of each.

SOAP Advantages

- Is a Protocol
- Strict Protocol, but can use different software stacks (Java, HTML, Mail SMTP)
- Messages have a strict structure required
- Highly structured works better for legacy systems and high integrity code
- Can be used on network protocols other than TCP/IP
- Error handling built-in
- Security built-in
- Highly structured communications protocol allows for run-time configuration

SOAP Disadvantages

- XML Only
- Messages have a strict structure which makes it less flexible to use
- Considered to have higher complexity
- XML is wordy and slower than JSON

REST Advantages

- Able to use XML, JSON, and text format (typically uses JSON in modern apps)
- Lightweight, Fast, Flexible
- Easy to Adopt
- Better for high performance and Mobile Apps due to JSON
- Uses standard HTTP status codes and message types (GET, POST, 200, 404)

REST Disadvantages

- Not a Protocol, but instead a set of guiding principles
- Flexibility means the developer must do the error handling
- Only uses HTTP Protocol
- Restricted to TCP/IP because of dependencies on HTTP
- Security up to the developer to implement

The History of SOAP (Simple Object Access Protocol) is that it was developed by Microsoft and is considered older. It is a strict protocol which has built in rule sets to send and receive data between different applications which may be running on different machines with different networks and architectures. Since SOAP is a rigid protocol, applications on these different systems can communicate with each other. SOAP uses XML only and contains specifications which are typically used in addition to the SOAP data. These additional specifications are typically WSDL (Web Service Description Language) and UDDI (Universal Description, Discovery, and Integration) specifications. These provide a public address book for locations where these services exist and the applications listening to ports at those locations. SOAP has built in security and error handling as part of the protocol. This makes SOAP more trustworthy for legacy applications and financial institutions.

REST (Representational State Transfer) is a set of guiding principles which were laid out by Roy Fielding in the year 2000. REST is not a protocol but utilizes HTTP and TCP/IP for communications. This restricts REST to only functioning on modern networks. REST is simple, fast and flexible and is allowed to use JSON, text, and/or XML for information transfer. JSON is typically used in modern development for fast and minimalist information transfer necessary. Applications are said to be using RESTful design language for information transfer when REST is used (which it is used for most modern applications – Twitter (X), Stripe, Uber and so on). RESTful applications have become very popular with the deployment of Web APIs and Mobile Apps. Debugging and Test-Driven-Design (TDD) is easy and well supported with the tools used to develop RESTful applications using Postman, Curl and other web development tools.

Sources: “Electronic Commerce Twelfth Edition”. Gary P Schneider. Cengage. 2015. Chapter 9 Page 406.

YouTube video: <https://www.youtube.com/watch?v=P-AICoywG5Q>