CSCI 4617  XML

Credit Hours:  3
Contact Hours:  3

Course Coordinator:  Phil Pfeiffer

Text(s):

*XSLT 2.0 and XPath 2.0 Programmer's Reference*, Michael Kay, 2008 (Recommended)

Catalog Description:

An introduction to developing data models, datasets, and reports using XML family technologies. Topics include the modeling, querying, and transformation of content using XML family standards, including XML proper, XML namespaces, XML schemas, XPath, XSLT, and XQuery.

Prerequisite(s):  CSCI 2020 and (CSCI 2210 or CSCI 2910)

CS:  MAJOR ELECTIVE

IS:  MAJOR ELECTIVE

IT:  SELECTED ELECTIVE EITHER CSCI 3110 OR CSCI 4617

Course Outcomes:

- Characterize the roles of mainstream XML standards in information management - ETSU Outcomes 3a, 4b, 5c, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, i, IS-j, IT-l, IT-m

- State the key differences between XML- and RDBMS-based formalisms for modeling content - ETSU Outcomes 3a, 4b, 5, 5c, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, f, i, IT-j, IT-l, IT-m

- Use a self-generated analysis of a small problem domain to create a moderately complex XML document and a supporting schema that defines appropriate constraints on the content of that and similar documents - ETSU Outcomes 3a, 4b, 5c, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, i, ITj, IT-l, IT-m

- Analyze the benefits and limitations of different XML document and schema designs - ETSU Outcomes 3a, 4b, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, IT-j, IT-l, IT-m
Construct XPath expressions that name sections of an XML document - ETSU Outcomes 3a, 4b, CS2, IS-1b, IT-1; ABET Outcomes c, IT-j, IT-l, IT-m

Construct simple XSLT programs that use XML documents to generate XHTML web pages and reports - ETSU Outcomes 3a, 4b, 5c, CS-2, IS-1b, IT-1, IT-1b; ABET Outcomes c, CS-k, i, IT-j, IT-l, IT-m

Store schema-based XML documents in and retrieve XML content from a mainstream relational database - ETSU Outcomes 3a, 4b, 5c, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, i, IT-k, IT-l, IT-m

Construct simple XQuery queries that produce reports from individual XML documents and sets of XML documents, and that involve the use of where clauses, ordering constraints, joins (i.e., nested for loops), and group-by constructs (i.e., for loops within return clauses). - ETSU Outcomes 3a, 4b, 5c, CS-2, IS-1b, IT-1; ABET Outcomes b, c, CS-k, i, IT-k, IT-l, IT-m

Major Topics:

Overview: the XML standards family and data management

XML and document creation: document-centric vs. data-centric documents; syntax; well-formedness and its limitations

XML schemas and document validity: simple and complex types; regular expressions; subtyping by extension and restriction; model groups; limitations

Best practices for XML document design: style guidelines, document design patterns

Document transformation using XSLT: web page creation; basic language elements; push and pull processing

XML in databases: database initialization, XQuery, and FLWOR (for, let, where, order by, return) queries

(Time permitting) Other XML family technologies: e.g., XForms, Schematron