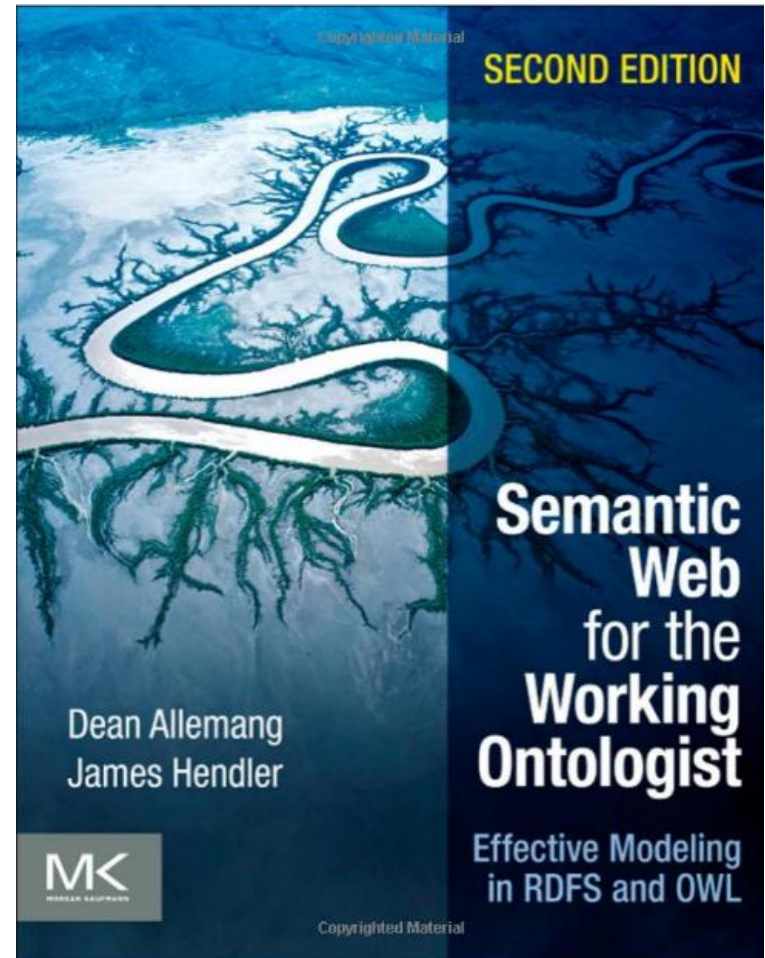


2015 Fall: Object Oriented System

- 강사: 김형주교수, 02-880-1826, 010-5213-1992, hjk@snu.ac.kr, (연구실: 301동 406호)
- 강의실: 301-101, 강의시간: 월수 2:00 – 3:15
- Office Hours: 월 (오후 3시30분 -- 5시: Email appointment is needed)
- 조교(TA): Internet Database Lab (880-1830) 박사수료생
전희국, 임혜원 (oota@idb.snu.ac.kr, 880-1830)
- Text book: 1. Ontology (노상규, 박진수 저),
2. Semantic Web for Working Ontologist 2nd ed (Allemang, Hendler 저)
- Evaluation: 2 Exams (50%), 5 Assignment (30%), 1 Presentation (20%)
- Class Materials: Internet Database Lab Website: <http://idb.snu.ac.kr>
- 카카오톡 방을 만들어서 운영할 예정!

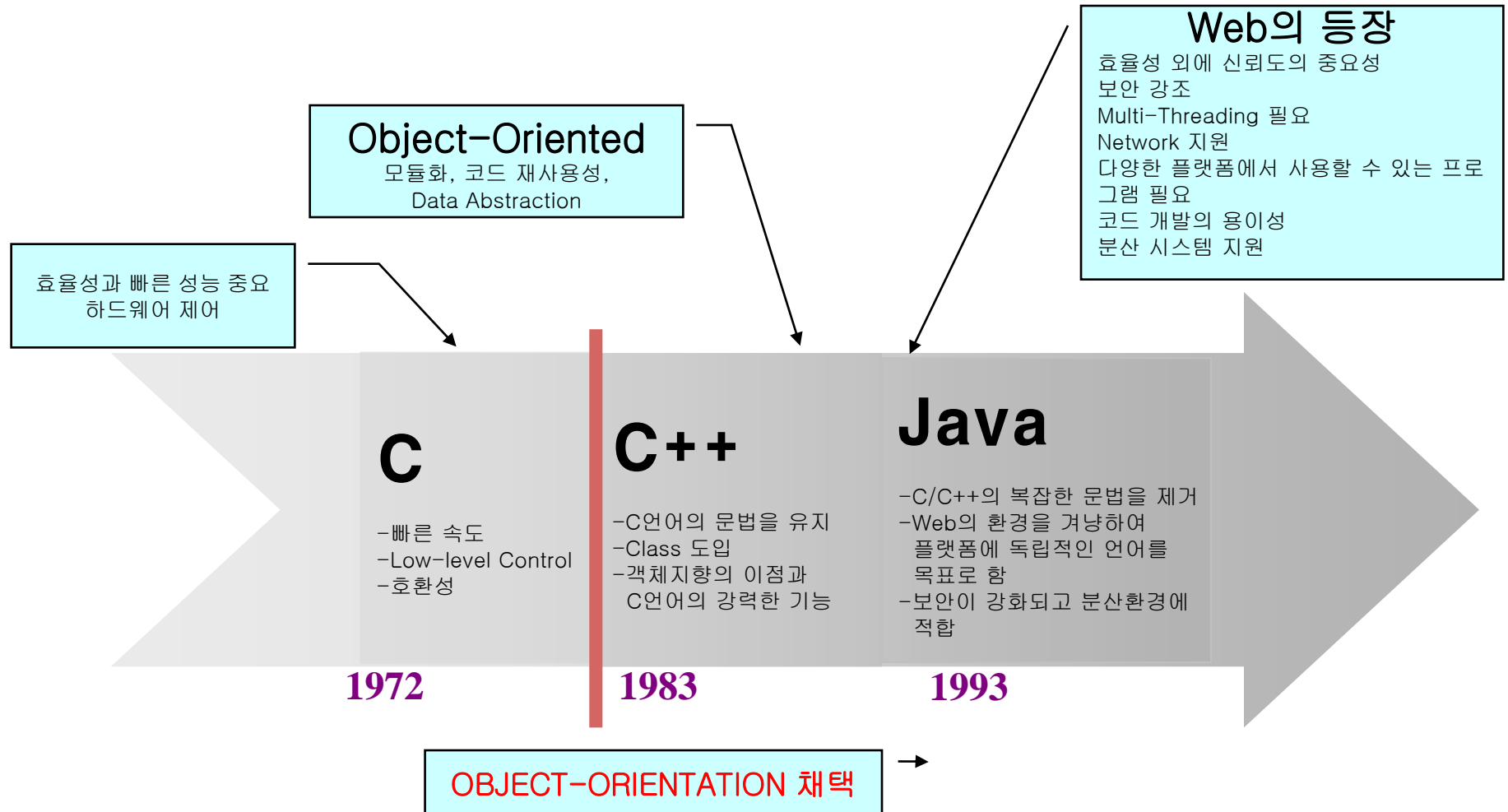
Textbooks



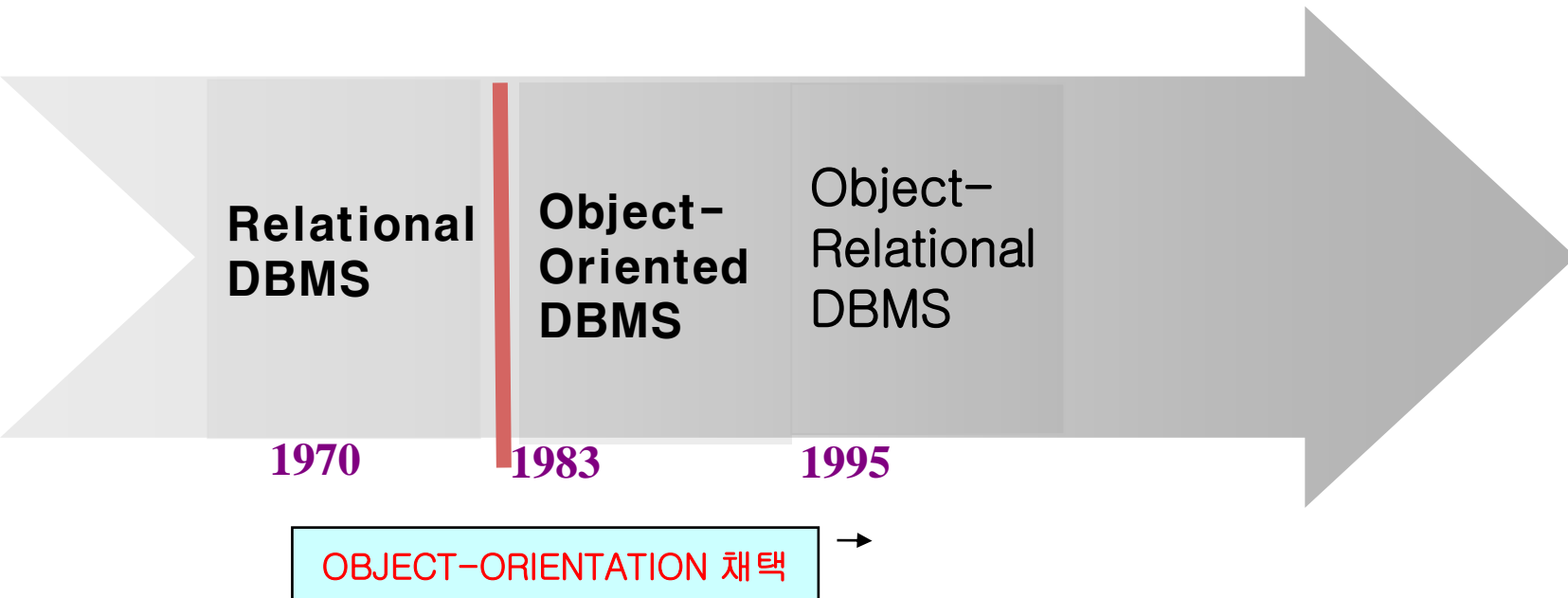
Knowledge & Semantics in Artificial Intelligence!

- **지식표현 패러다임 이론 (1970– 1980)**
 - 시맨틱 네트워크(Semantic Network)
 - 프레임(Frame)
 - 규칙(Rules)
 - 일차논리(FOL : First Order Logic)
- **Semantics을 채택 ➔ AI이외 분야에서는 Object-Orientation으로 표현**

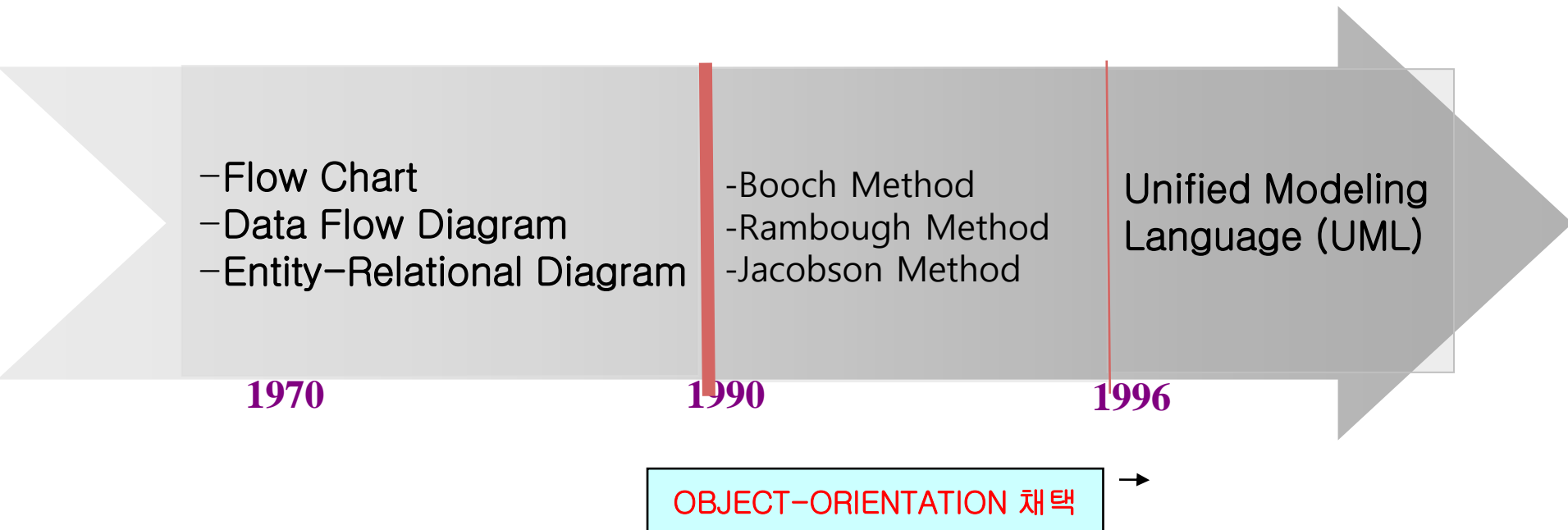
Paradigm Shift in Programming Languages!



Paradigm Shift in Database!



Paradigm Shift in Software Design!

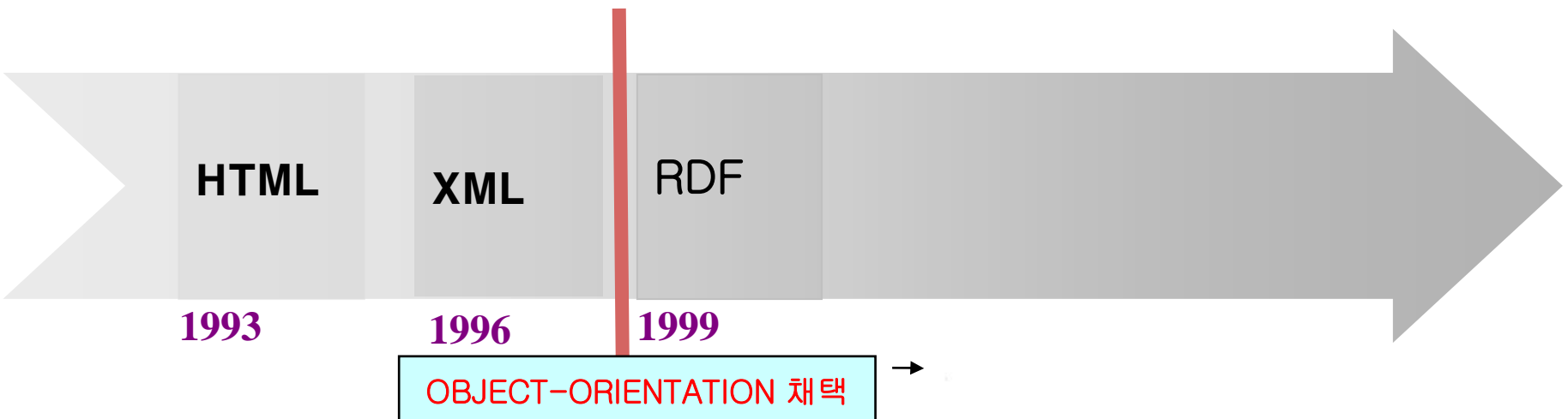


Paradigm Shift in WWW!

■ Semantic Web 의 등장 (2000년 전후?)

- WWW의 확장
- 잘 정의된 의미를 저장&제공하는 Web
- 사람과 컴퓨터가 좀더 협력을 잘 할 수 있는 웹 (by Tim Burners Lee)
- 정보이해력을 높여서 자동화 처리가 향상되는 웹 (Web Intelligence)

■ Mark-Up Language의 진화

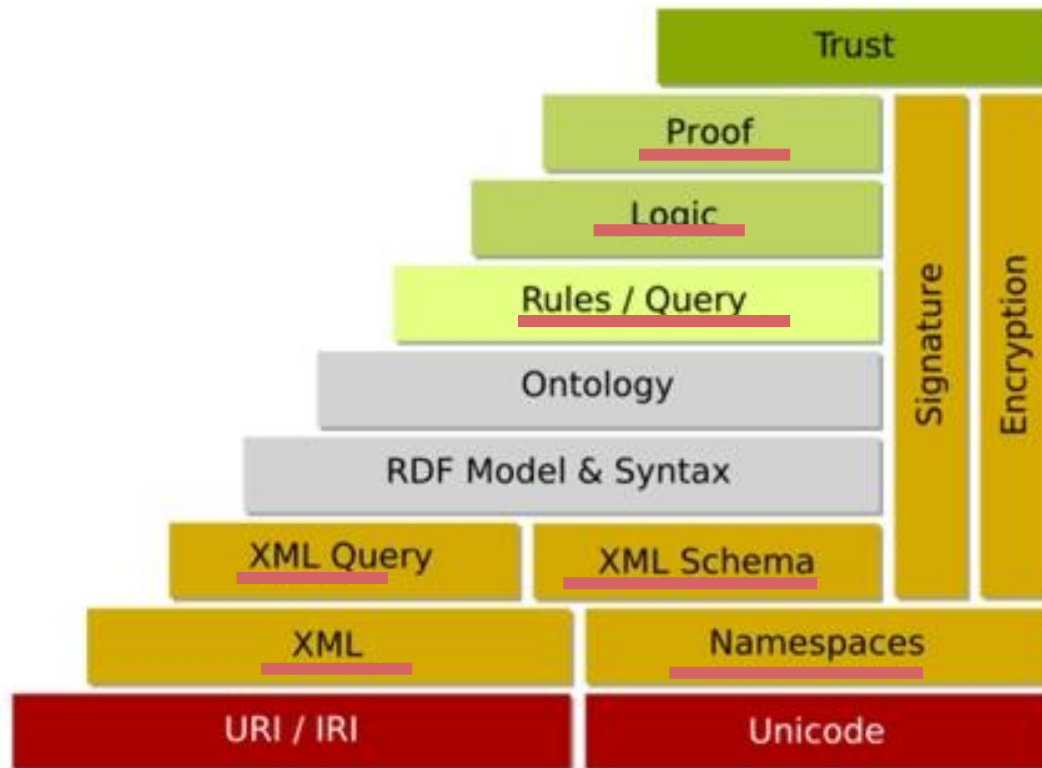


Semantics는 좋은것이어 !!!!

- 아! AI를 제외한 Computer Science의 분야에서는 Semantics를 이용하는 틀이 Object-Oriented Paradigm을 채택을 하고 있구나!
- 그런데 그 좋은 Semantics를 왜 진짜 semantics를 많이 이용하지 못했을까?
- Semantics를 representation하고 capture하는것에 가장 basic은 Logic!
- 그동안 왜 Logic을 여기저기에 팍팍써서 Semantics를 표현하고 문제해결을 하지 못했을까?
- Semantics, Logic, Object-Orientation들의 연관성은 어떻게 되는 것일까?
- Semantic Web에서 semantics을 표현하는 Theoretical Background?
- RDF는 semantics를 표현하는 수준이 어느 정도 인가?

Hierarchical Structure of Semantic Web

- 웹 데이터의 semantics와 knowledge를 표현하는 계층 구조



강의 계획

- The Object-Orientation Paradigm
- Theoretical Base for Knowledge & Semantic Representation (optional ?)
 - Set theory, Mathematical Proof, Propositional Logic, First Order Logic
- XML (optional?)
 - XML DTD, XML Schema, XSL , Xpath,
- 초록색 Ontology Book (by 노상규)
- Working Ontologist Book (by Allemang)
- Relational DataBase to RDF transformation (RDB2RDF)

Object-Oriented Programming Paradigm



Design Patterns: Elements of Reusable Object-Oriented Software Nov 10, 1994
by Erich Gamma and Richard Helm

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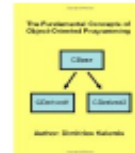
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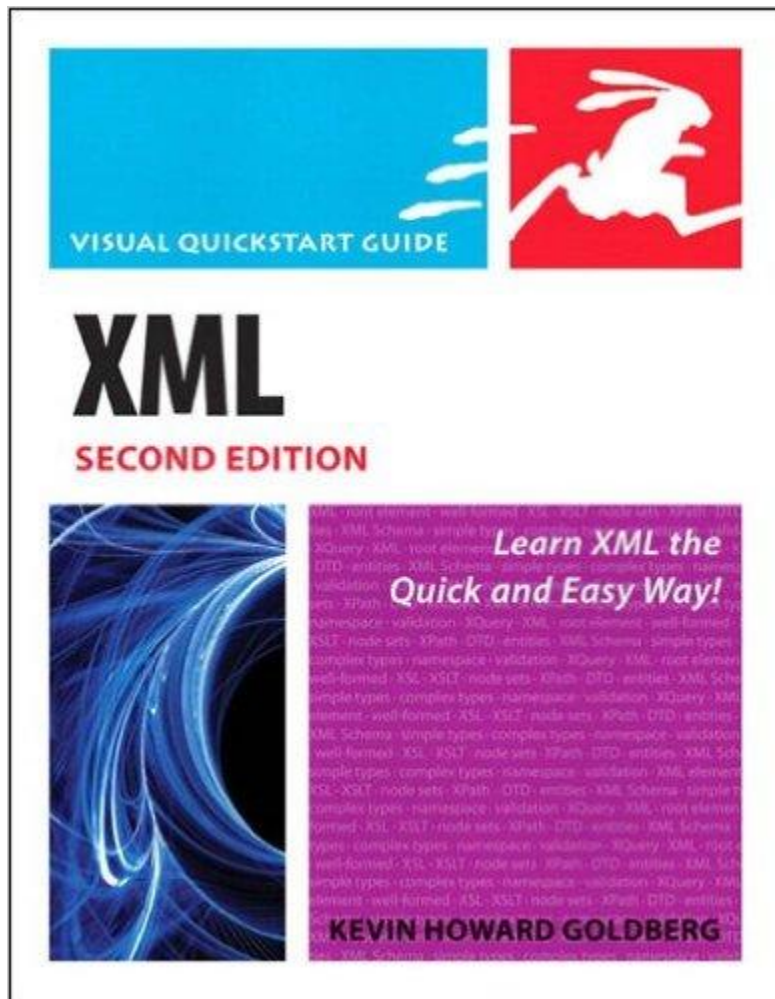
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XML



Textbook A

MODULE 1 온톨로지의 개념 및 응용

■ Chapter 1 온톨로지 개요

- 1. 온톨로지의 유래
- 2. 분류와 개념화 과정
- 3. 컴퓨터 온톨로지

■ Chapter 2 온톨로지의 분류와 용도

- 1. 온톨로지의 분류
- 2. 온톨로지의 사용 목적과 중요성
- 3. 온톨로지와 시맨틱 웹

■ Chapter 3 온톨로지 구축 프로젝트

- 1. 사이크(Cyc)
- 2. 워드넷(WordNet)
- 3. 전자거래문서
- 4. 통합의학언어시스템
- 5. 오픈 디렉터리 프로젝트
- 6. 국제상품분류코드(UNSPSC)

■ Chapter 4 온톨로지 적용 분야

- 1. 전자상거래 분야
- 2. 의료 분야
- 3. 법률 분야
- 4. 검색 서비스 분야
- 5. 문화컨텐츠 분야

MODULE 2 온톨로지 언어

■ Chapter 5 온톨로지 언어

- 1. 온톨로지 언어의 발전
- 2. 인공지능 기반의 온톨로지
- 3. 온톨로지 마크업 언어

■ Chapter 6 RDF(S): RDF와

- 1. XML과 RDF
- 2. RDF
- 3. RDF Schema
- 4. RDF(S)의 한계점

■ Chapter 7 OWL(Web Ontology Language)

- 1. OWL의 기본 요소: 클래스와 속성
- 2. OWL의 새로운 기능
- 3. 세 종류의 OWL
- 4. OWL 예제

■ Chapter 8 토픽맵(Topic Maps)과 XTM(XML Topic Maps)

- 1. 토픽맵(Topic Maps) 개념
- 2. 토픽맵 구성요소
- 3. XTM 예제

■ Chapter 9 온톨로지 틀

- 1. 온톨로지 틀의 분류
- 2. 온톨로지 개발 틀
- 3. 주요 온톨로지 틀 요약 정보



Textbook B

- Chapter 1 What is the Semantic Web?
- Chapter 2 Semantic Modeling
- Chapter 3 RDF-The Basis of the semantic Web
- Chapter 4 Semantic Web Application Architecture
- Chapter 5 Querying the Semantic Web-SPARQL
- Chapter 6 RDF and Inferencing
- Chapter 7 RDF Schema
- Chapter 8 RDFS-Plus
- Chapter 9 Using RDFS-Plus in the Wild
- Chapter 10 SKOS-managing vocabularies with RDFS-Pluse
- Chapter 11 Basic OWL
- Chapter 12 Counting and Sets in OWL
- Chapter 13 Ontologies on the Web-putting it all together
- Chapter 14 Good and Bad Modeling Practices
- Chapter 15 Expert modeling in OWL
- Chapter 16 Conclusions

