

INF329 Generalized Sketches, Fall 2006

— Pensum —

You should have a look at the **talks** given by the students and the copies of the transparencies of my **lectures**. You should read the **technical report**. You do **not** need to read everything but only the things I've listed below. (The items marked with (*) are “advanced items” that do **not** count.)

You find the links to the talks and the technical report on the course page. I put there also some articles from Diskin that may be helpful for you in preparing the exam.

— Concepts and Results —

1 Diagrammatic Techniques

- **ER Diagrams**

- application domain, purpose
- entities, attributes, entity type, (primary) key (with examples)
- relationships, degree, cardinality constraints (with examples)
- **Sketching:** semantical universe, some necessary predicates

- **Statecharts**

- application domain, purpose
- states: And-states, Or-states, hierarchy, initial states
- events, transitions, triggers, actions, activities
- **Sketching:** discussion of the rôle of trees to model states

- **Ontologies**

- Idea, purpose, application domain
- components of ontologies: individuals, classes, attributes, relations
- ontology languages vs. description logics (examples)
- SHIQ: concepts, rôles, rôle hierarchy, Tbox
- **Sketching:** discussion of a possible semantic universe and some necessary predicates

- **UML class diagrams**

- purpose, application domain
- stereotypes, attributes, methods
- abstraction, associations (with multiplicities), association classes

- **Sketching:** semantical universe, some necessary predicates, sketching associations (with multiplicities) and association classes

- **XML**

- history, purpose
- XML documents, well-formedness
- DTD, namespaces, XML Schema

Generalized Sketches

- graphs and graph homomorphisms (with examples)
- diagrams (with examples),
- diagrammatic predicate signatures
 - predicate labels and arities (examples: product, cover, disjoint, ...)
 - (*) dependencies between predicate labels and their rôle
 - Slogans: diagrammatic specification technique = signature
diagram = visualization of a sketch
 - What means “sketching” of a diagrammatic specification technique?
 - signature morphisms (definition and rôle)
- generalized sketches
 - definition
 - examples: natural numbers, ER diagram, associations and association classes
 - sketch morphism (definition, example, and rôle)
 - semantical universes and models of sketches
 - (*) Why they are called “generalized”?
- sketch operations
 - definition
 - (*) general semantics
 - example natural numbers