Exam Modeling and Verification 2017

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Based on the two selected questions, you should coherently present the theory behind the concepts, when these concepts can be applied and illustrate them through well chosen examples. You are encouraged to pick up other concepts around your questions and use them to support your presentation and make connections to other topics of the course.

1 AADT : Syntax and Semantics

Q 1 : 1.1 Definition of S-sorted set

Q 2 : 1.2 Definition of AADT Signature
— Role of the operations
— Definition of terms (with variables)

Q 3 : 1.3 Equations and conditional axioms definition

Q 4 : 1.4 Examples (Set, Tables, Lists)

Q 5 : 1.5 How to use Graceful presentations

2 AADT : Equational Proofs

Q 6 : 2.1 What are Equational theories ?
— Equational theories : Validity and completeness, properties in correct implementations.

Q 7 : 2.2 What are Inductive theories ?
— Validity and completeness in inductive theories.

Q 8 : 2.3 Hierarchies in Algebraic Abstract Data Types
— Sufficient completeness
— Hierarchical consistency

Q 9 : 2.4 How to specify non determinism in implementation ?

3 AADT : Rewriting

Q 10 : 3.1 Rewrite Systems, rewriting of terms, definition.

4 CTL

5 CTL model checking

6 Decision Diagrams