

Test1 Topics CS220

Propositional & Predicate Logic

- Definition of a proposition

- Definition of a predicate

- Logic connectors such as: negation, and, inclusive or, exclusive or, conditional, bi-conditional

- How to prove equivalence using truth tables

- Definition of a tautology, contingency, & contradiction and how to show in a truth table

- Universal quantifier, Existential quantifier

- Equivalences involving negation of universal and existential quantifiers

Rules of Inferences

- Definition of rules of inference

- Use truth tables to determine if a rule of inference is valid or not valid

- Be able to derive a conclusion by applying rules of inferences to the premises

Proof techniques

- Direct Proofs

 - Definition of a direct proof

 - Be able to prove statement using direct proof technique

- Indirect Proofs

 - Contraposition

 - Know the principles behind a contraposition proof

 - Be able to prove statement using contraposition proof

 - Contradiction

 - Know the principles behind a contradiction proof

 - Be able to prove statement using contradiction proof

- Proof by cases

 - Know the principle behind proof by cases

 - Be able to prove statement using proof by cases

Program Correctness

- Pre and post conditions

- Loop invariants

 - Proof rule for while loops

Sets & Functions

- N, Z, Q, R

- Sets: equivalence, union, intersection, difference, universal set

- Cardinality

- Subsets and Proper Subsets

- Tuples

- Cartesian product

- Power set