Dependent Types and Theorem Proving: Proving is programming in disguise

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1. Constructive propositional logic : you already know it
   - The logic
   - Propositions are types, proofs are programs
     - Function types are implications
     - Sum (tagged union) is disjunction
     - Product is conjunction
     - Unit is True
     - Falsity and negation
2. First-order logic: you know it too
   - Predicates and relations
   - Universal quantifier is the dependent function type
   - Existential quantifier is the dependent pair type
3. Inductive predicates and relations
4. Proof relevance
5. Equality
   - How to define equality
   - Undecidability
   - Difference between propositions and booleans
6. Intrinsic vs extrinsic style