Chapter 1

Library imp

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Theorem imp : ∀ (a b c : Prop), ((a→b) ∧ (a→c)) → a→ (b∧c).
Proof.
  intros a b c H.
  intro Ha.
  split.
  destruct H as (H1 & H2).
  apply H1. assumption.
  destruct H as (H1 & H2).
  apply H2. assumption.
Qed.

Theorem et_refl: ∀ (a b:Prop), a∧b → b∧a .
Proof.
 intros a b H.
 split.
 destruct H as [Ha Hb].
 assumption.
 destruct H as [Ha Hb].
 assumption.
Qed.

Print et_refl.

Theorem hilbertS : ∀ (a b c:Prop), (a→b→c)->(a→b)->(a→c).
Proof.
intros a b c.
intros h1 h2 h3.

apply h1.
exact h3.
Show Proof.
apply h2.
exact h3.
```

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Show Proof.
Qed.

Print or.

Theorem or_elim: ∀ (a b c:Prop), (a→c)->(b→c)->(a∨b)->c.
Proof.
  intros a b c h1 h2 h3.
  destruct h3 as [ha | hb].
  apply h1. exact ha.
  apply h2. exact hb.
Qed.

Print or_elim.

Qed.
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