

lean-architect-example

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Definition 1. Natural numbers.

Definition 2. Natural number addition.

Theorem 3. For any natural number a , $0 + a = a$, where $+$ is theorem 2.

Proof. The proof follows by induction. □

Theorem 4. For any natural numbers a, b , $(a + 1) + b = (a + b) + 1$.

Proof. Proof by induction on b . □

Theorem 5. For any natural numbers a, b , $a + b = b + a$.

Proof. The base case follows from theorem 3.

The inductive case follows from theorem 4. □

Definition 6. Natural number multiplication.

Theorem 7. For any natural numbers a, b , $a * b = b * a$.

Proof. □

Theorem 8 (Taylor-Wiles). Fermat's last theorem.

Proof. See [?, ?]. □