

Where does Coq define booleans and numbers?

In the standard library.

What's a "type" in Coq?

A set of data values.

Define the boolean type

```
Inductive bool : Type :=  
  | true  : bool  
  | false : bool.
```

Define a boolean negation function.

```
Definition negb (b : bool) : bool :=  
  match b with  
  | true => false  
  | false => true  
end.
```



Define a function for boolean conjunction.

```
Definition andb (b1 : bool) (b2 : bool) : bool :=  
  match b1 with  
  | true => b2  
  | false => false  
end.
```

Coq can infer which parts of a function  
prototype?

Argument and result types.

Make a named assertion that  $\sim \text{true}$  is  
false, then prove it.

Example test\_negation:

(negb true) = false.

Proof. simpl. reflexivity. Qed.

Name three ways to check that a function works

- Use `Eval` on a test case and observe the result.
- Use `Example` to record expected result, then as `Coq` to verify.
- "extract" function `Definition` to OCaml, Scheme, or Haskell.



Apply negation to the boolean `true`.

Eval simpl in (negb true).

How do you delimit Coq fragments in comments for the benefit of `coqdoc`?

Surround the fragments with square brackets.

Define and explain the purpose of the `admit` value.

Definition admit {T : Type} : T. Admitted.

It fills in the hole in an incomplete Definitions.

How do you fill in a hole in a `Definition`? In  
an `Example`?

admit **fills in holes** in Definitions.

Admitted **fills in holes** in Examples.



How does Coq write the type of a boolean conjunction function?

bool->bool->bool

What does the `Check` command do?

It causes Coq to print the type of an expression.