

# An Introduction to Programming and Proving in Agda (incomplete draft)

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## 1 A first Agda module

Your first Agda-file is called `BoolModule.agda`. Its contents are

```
module BoolModule where
```

```
data Bool : Set where
  true  : Bool
  false : Bool
```

```
not : Bool -> Bool
not true  = false
not false = true
```

It declares a module `BoolModule` which contains

- the definition of the data type `Bool` with the two constructors `true` and `false`
- the definition of the function `not` by case analysis (or pattern matching) on the constructors for `Bool`.

Note the following:

- Each Agda file `file.agda` is a module with the same name `file`. It is nevertheless compulsory to explicitly declare it by writing

```
module file where
```

- The data type `Bool` is an element of the type `Set`. We call `Set` a "large" type (since it is a type of types) and its elements "small" types.
- We must first declare the type of the function `not` before writing the pattern matching equations.