

Quiz 1: Inhabitants of Types

EN.601.426/626 Principles of Programming Languages – SP26

Name: _____

```
type animal = Dog | Cat | Bird
```

How many inhabitants does the type `animal` have?

```
type 'a maybe = Just of 'a | Nothing
```

How many inhabitants does the type `animal maybe` have?

```
type 'a 'b pair = Pair of 'a * 'b
```

How many inhabitants does the type `(animal (animal animal pair) pair) maybe` have?

```
type animaldating = animal -> (animal maybe)
```

How many inhabitants does the function type `animaldating` have?

Imagine in an imperative programming language, you are writing functions of type `animaldating`. How many distinct imperative functions can you write?

```
type 'a maybewrapper = 'a -> ('a maybe)
```

How many inhabitants there are for the most general function type `'a maybewrapper`?