

## implements\_protocol/2-3

### Description

```
implements_protocol(Object, Protocol)
implements_protocol(Category, Protocol)

implements_protocol(Object, Protocol, Scope)
implements_protocol(Category, Protocol, Scope)
```

Enumerates, by backtracking, all pairs of entities such that an object or a category implements a protocol. The relation scope is represented by the atoms `public`, `protected`, and `private`.

### Template and modes

```
implements_protocol(?object_identifier, ?protocol_identifier)
implements_protocol(?category_identifier, ?protocol_identifier)

implements_protocol(?object_identifier, ?protocol_identifier, ?scope)
implements_protocol(?category_identifier, ?protocol_identifier, ?scope)
```

### Errors

Object is neither a variable nor a valid object identifier:

```
type_error(object_identifier, Object)
```

Category is neither a variable nor a valid category identifier:

```
type_error(category_identifier, Category)
```

Protocol is neither a variable nor a valid protocol identifier:

```
type_error(protocol_identifier, Protocol)
```

Scope is neither a variable nor a valid entity scope:

```
type_error(scope, Scope)
```

### Examples

```
| ?- implements_protocol(List, listp).
| ?- implements_protocol(List, listp, public).
```