

proto reference card

Creation

proto **proto**(., **expr**, **envir**, ...) embeds the components specified in **expr** and/or ... into the **proto** object or environment specified by **envir**. A new object is created if **envir** is omitted. The parent of the object is set to . . The parent object, ., defaults to the parent of **envir** or the current environment if **envir** is missing. **expr** and ... default to empty specifications. The returned object will contain **that** and **super** variables referring to the object itself and the parent of the object, respectively.

Coercion

as.proto If **x** is a **proto** object or environment then **x** is returned as a **proto** object with the values of **that** and **super** inserted in the case of an environment or refreshed in the case of a **proto** object. If **x** is a list then additional arguments are available: **as.proto**(**x**, **envir**, **parent**, **FUN**, **all.names**, ...). Each component of **x** is copied into **envir**. **envir** may be an **environment** or **proto** object. If it is missing a new **proto** object is created. If **all.names** = **FALSE** then only list components whose names do not begin with a dot are copied. If **FUN** is specified then, in addition, only list components **v** for which **FUN**(**v**) is **TRUE** are copied. If **parent** is specified then the resulting **proto** object will have that parent. Otherwise, it will have the parent of **envir** if **envir** was specified. If neither are specified the parent defaults to the current environment.

Standard methods

\$ **obj\$x** searches **proto** object **obj** for **x**. If the name **x** does not begin with two dots then ancestors are searched if the name is not found in **obj**. If **x** is a variable or if **obj** is **super** or **that** then **x** is returned. Otherwise, the call **obj\$x(...)** is equivalent to the call **get("x", obj)(obj, ...)**. If it is desired to return a method as a value rather than in the context of a call then use **get("x", obj)** (or **obj[["x"]]** **x** is known to be directly in **obj**) rather than **\$** syntax.

\$<- **obj\$x <- value** sets **x** in **proto** object **obj** to **value** creating **x** if not present. If **obj** is **super** then a side effect is to set the parent of **obj** to **value**.

is.proto(x) returns **TRUE** if **x** is a **proto** object and otherwise returns **FALSE**.

Utilities

dot.proto **dot.proto**(**e**, **file**, **control**) creates a input file which for the **GraphViz** **dot** program which generates an ancestor tree among all **proto** objects in **environment** or **proto** object **e**. **e** defaults to the current environment and **file** defaults to the standard output. **control** is an optional list of display parameters. The components are **include** and **arrow.from.child**. **include** is a string of **GraphViz** **dot** commands to be included in the output. **arrow.from.child** causes arrows to point from children to parents if **TRUE** (default) and otherwise from parents to children.