

File created: 4-Dec-91 12:16:19 {DSK}<usr>local>users>welch>lisp>clos>browser>NEW-CLOS-BROWSER.;22

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Read Table: XCL

Package: USER

Format: XCCS

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(IL:RPAQQ IL:NEW-CLOS-BROWSECOMS

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;; Print out a copyright notice when loading

;;

(IL:P (FORMAT T "~&;CLOS-BROWSER Copyright (c) 1991 VENUE Corporation. All rights reserved.~%"))

;; LOAD DEPENDENT MODULES

;; Note: before compiling clos-browser:

;; (load 'web-editor.dfasl)

;; (load 'clos-browser.dfasl)

;; (load 'clos-browser'prop)

;;

;; PACKAGE STUFF

(IL:PROPS (IL:NEW-CLOS-BROWSER IL:MAKEFILE-ENVIRONMENT)  
(IL:NEW-CLOS-BROWSER IL:FILETYPE))

;; (IL:P IL:\* USER::CLOS-BROWSER-PACKAGE-COMMANDS)

;;

;; SYSTEM PATCHES

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;; CLOS-ICON CLASS & INSTANCE INITIALIZATION

(CLOS::CLASSES CLOS-BROWSER:CLOS-ICON)

(IL:VARIABLES CLOS-BROWSER:CLOS-ICON)

;;

;; CLOS-BROWSER CLASS

(IL:FUNCTIONS CLOS-BROWSER:BROWSE-CLASS CLOS-BROWSER::COLLECT-FAMILY CLOS-BROWSER::MAKE-NODES  
CLOS-BROWSER::CLOS-BROWSER-CLOSE-FN CLOS-BROWSER::BROWSER-CONTAINS-P)

(CLOS::CLASSES CLOS-BROWSER:CLOS-BROWSER)

(CLOS::METHODS (CLOS-BROWSER::ADD-ROOT (CLOS-BROWSER:CLOS-BROWSER))

(CLOS-BROWSER::ADD-ROOTS (CLOS-BROWSER:CLOS-BROWSER))

(WEB:BOX-NODE (CLOS-BROWSER:CLOS-BROWSER))

(WEB:BROWSE (CLOS-BROWSER:CLOS-BROWSER))

(CLOS-BROWSER::CLEAR-METHOD-MENU-CACHES (CLOS-BROWSER:CLOS-BROWSER))

(WEB:ICON-TITLE (CLOS-BROWSER:CLOS-BROWSER))

(WEB:INITIALIZE-EDITOR (CLOS-BROWSER:CLOS-BROWSER))

(CLOS-BROWSER::NEW-ITEM (CLOS-BROWSER:CLOS-BROWSER))

(WEB:RECOMPUTE (CLOS-BROWSER:CLOS-BROWSER))

(CLOS-BROWSER::REAL-ADD-ROOT (CLOS-BROWSER:CLOS-BROWSER))

(WEB:SHAPE-TO-HOLD (CLOS-BROWSER:CLOS-BROWSER))

; multi-method

(CLOS-BROWSER::SUBCLASSES-OF NIL)

(CLOS-BROWSER::CONTAINS-P (T CLOS-BROWSER:CLOS-BROWSER)))

;;

::: CLOS-BROWSER-NODE CLASS

```
(CLOS::CLASSES CLOS-BROWSER::CLOS-BROWSER-NODE)
(CLOS::METHODS (CLOS-BROWSER::OBJECT-NAME (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::OVERRIDE (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::CACHE (T CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::UNCACHE (CLOS-BROWSER::CLOS-BROWSER-NODE)))
(IL:VARS (CLOS-BROWSER::*METHOD-PROMPT-STRING* (CONCATENATE 'STRING "Left button to edit the
method." "
"Middle button provides a menu of
operations.")))
(IL:FUNCTIONS CLOS-BROWSER::EDIT CLOS-BROWSER::MAKE-METHOD-MENU-ITEMS
CLOS-BROWSER::MAKE-TOP-LEVEL-METHOD-MENU-ITEMS CLOS-BROWSER::MAKE-MULTI-METHOD-SUB-MENU)
```

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::: OPERATORS (via CLOS-BROWSER-NODE) ON CLOS::STANDARD-CLASS

```
(CLOS::METHODS (CLOS-BROWSER::ADD-BROWSER-METHOD (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::BROWSE-SUBS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::EDIT-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::INSPECT-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::MENU-METHODS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::MAKE-WHENSELECTEDFN (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::DESCRIBE-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::DOCUMENTATION-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::PRINT-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE))
 (CLOS-BROWSER::SPECIALIZE-CLASS (CLOS-BROWSER::CLOS-BROWSER-NODE)))
(IL:FUNCTIONS CLOS-BROWSER::COMPLETE-ADD-METHOD CLOS-BROWSER::COMPLETE-SPECIALIZE
CLOS-BROWSER::LYRIC-COMPLETE-SPECIALIZE CLOS-BROWSER::THIS-CLASS-NODE-P
CLOS::CLASS-DIRECT-METHODS)
```

::

::: OPERATORS ON CLOS::STANDARD-CLASS (directly)

```
(CLOS::METHODS (CLOS::COMPUTE-INHERITED-METHODS (STANDARD-CLASS))
 (CLOS-BROWSER::SPECIALIZE (STANDARD-CLASS))
 (CLOS-BROWSER::SUBCLASSES-OF (STANDARD-CLASS)))
```

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::: OPERATORS ON CLOS::STANDARD-METHOD

```
(CLOS::METHODS (CLOS-BROWSER::DELETE-METHOD (STANDARD-METHOD))
 (CLOS-BROWSER::COPY (STANDARD-METHOD STANDARD-CLASS))
 (CLOS-BROWSER::MOVE (STANDARD-METHOD STANDARD-CLASS))
 ; web.move is shadowed above
 (CLOS-BROWSER::PRINT-DEFINITION (STANDARD-METHOD))
 (CLOS-BROWSER::DESCRIBE-METHOD (CLOS::METHOD))
 (CLOS-BROWSER::RENAME (STANDARD-METHOD))
 (CLOS-BROWSER::UPDATE-CACHED-MENUES (STANDARD-METHOD))
 (CLOS-BROWSER::WHO-OWNS (STANDARD-METHOD))
 ; update-cached-menus must appear before add-method :after in the coms
 (ADD-METHOD :AFTER (STANDARD-GENERIC-FUNCTION STANDARD-METHOD)))
(IL:FUNCTIONS CLOS-BROWSER::REPLACE-SPECIALIZERS)
```

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::: SETUP RELEASE INFO

```
(IL:VARS (CLOS-BROWSER::RELEASE-ID "0.02")
 (CLOS-BROWSER::SYSTEM-DATE (CAAR (IL:GETPROP 'IL:CLOS-BROWSER 'IL:FILEDATES))))
```

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::: SETUP BACKGROUND MENU

```
(IL:FUNCTIONS CLOS-BROWSER::IN-SELECT-PACKAGE CLOS-BROWSER::CLASSES-IN-PACKAGE)
(IL:P ;: pushnew should eliminate this
 (SETQ IL:|BackgroundMenuCommands| (REMOVE 'IL:|BrowseClass| IL:|BackgroundMenuCommands| :KEY
#' CAR))
 (PUSH ' (IL:|BrowseClass| (CLOS-BROWSER:BROWSE-CLASS)
"Bring up a class browser."
(IL:SUBITEMS (IL:|all in a package| (CLOS-BROWSER:BROWSE-CLASS (
CLOS-BROWSER::CLASSES-IN-PACKAGE
(
CLOS-BROWSER::IN-SELECT-PACKAGE
)))
"Select a package and browse all the classes defined in that
package.")))
IL:|BackgroundMenuCommands|)
 (SETQ IL:|BackgroundMenu| NIL))))
```

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;; Print out a copyright notice when loading

;;

(FORMAT T "~&;CLOS-BROWSER Copyright (c) 1991 VENUE Corporation. All rights reserved.~%")

;; LOAD DEPENDENT MODULES

;; Note: before compiling clos-browser:

;; (load 'web-editor.dfasl)
;; (load 'clos-browser.dfasl)
;; (load 'clos-browser 'prop)
;;

;; PACKAGE STUFF

(IL:PUTPROPS IL:NEW-CLOS-BROWSER IL:MAKEFILE-ENVIRONMENT (:PACKAGE (LET ((\*PACKAGE\*))
(IN-PACKAGE "CLOS-BROWSER")
(USE-PACKAGE "CLOS")
(FIND-PACKAGE "USER")))
:READTABLE "XCL" :BASE 10))

(IL:PUTPROPS IL:NEW-CLOS-BROWSER IL:FILETYPE :COMPILE-FILE)

;; (IL:P IL:\* USER::CLOS-BROWSER-PACKAGE-COMMANDS)

;;

;; SYSTEM PATCHES

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;; CLOS-ICON CLASS & INSTANCE INITIALIZATION

(DEFCLASS CLOS-BROWSER:CLOS-ICON (STANDARD-OBJECT)
((CLOS-BROWSER::CLASS-BROWSERS :ALLOCATION :CLASS :INITFORM NIL)
; list of all open browsers
(CLOS-BROWSER::DESTINATION-BROWSER :ALLOCATION :CLASS :INITFORM NIL)
; browser containing boxed node
(CLOS-BROWSER::MENU-CACHE-SWITCH :ALLOCATION :CLASS :INITFORM :LAZY)
;; valid values:
;; :none for never use cache
;; :lazy for invalidate cache at method create or remove time causing re-compute and cache at menu request time.
;; :eager (not implemented) for re-compute and cache menu whenever a method is created or removed
)))

(XCL:DEFGLOBALPARAMETER CLOS-BROWSER:CLOS-ICON (MAKE-INSTANCE 'CLOS-BROWSER:CLOS-ICON))

;;

;; CLOS-BROWSER CLASS

(DEFUN CLOS-BROWSER:BROWSE-CLASS (&OPTIONAL CLOS-BROWSER::CLASS-NAME-OR-LIST &KEY (
CLOS-BROWSER::DIRECTION
:SUB)
(CLOS-BROWSER::WINDOW-OR-TITLE "CLOS-browser")
CLOS-BROWSER::GOOD-CLASSES POSITION)
(LET\* ((CLOS-BROWSER::ROOT-CLASSES (WHEN CLOS-BROWSER::CLASS-NAME-OR-LIST
(IF (LISTP CLOS-BROWSER::CLASS-NAME-OR-LIST)
(MAPCAR #'FIND-CLASS CLOS-BROWSER::CLASS-NAME-OR-LIST)
(CONS (FIND-CLASS CLOS-BROWSER::CLASS-NAME-OR-LIST))))))
(CLOS-BROWSER::NODES (CLOS-BROWSER::MAKE-NODES (CLOS-BROWSER::COLLECT-FAMILY NIL
CLOS-BROWSER::ROOT-CLASSES)))
(CLOS-BROWSER:CLOS-BROWSER (MAKE-INSTANCE 'CLOS-BROWSER:CLOS-BROWSER)))
(WEB:INITIALIZE-EDITOR CLOS-BROWSER:CLOS-BROWSER)
(SETF (SLOT-VALUE CLOS-BROWSER:CLOS-BROWSER 'CLOS-BROWSER::ROOT-CLASSES)
CLOS-BROWSER::ROOT-CLASSES)
(SETF (SLOT-VALUE CLOS-BROWSER:CLOS-BROWSER 'CLOS-BROWSER::TITLE)
CLOS-BROWSER::CLASS-NAME-OR-LIST)
(WEB:BROWSE CLOS-BROWSER:CLOS-BROWSER CLOS-BROWSER::NODES CLOS-BROWSER::WINDOW-OR-TITLE
CLOS-BROWSER::GOOD-CLASSES POSITION)
(UNLESS CLOS-BROWSER::NODES (CLOS-BROWSER::ADD-ROOT CLOS-BROWSER:CLOS-BROWSER))
CLOS-BROWSER:CLOS-BROWSER))



```

"Recompute keeping
current view in
window")
("Clear caches"
CLOS-BROWSER::CLEAR-METHOD-MENU-CACHES
"Clear cached
menus of
methods.)))
("Browser looks" NIL "" (IL:SUBITEMS ("Shape to hold" WEB:SHAPE-TO-HOLD "Make window large or
small enough to just hold graph")
("Change font size" WEB:CHANGE-FONT-SIZE "Choose a new size Font")
("Change format" WEB:CHANGE-FORMAT "Change format between lattice
and tree")))
("Add root " CLOS-BROWSER::ADD-ROOT "Add named item to startingList for browser."
(IL:SUBITEMS ("all in a package" CLOS-BROWSER::ADD-ROOTS "Add all the classes in a package
to this browser.)))
;; ("Unhide class" remove-from-bad-list "Restore item previously deleted from browser")
))
(WEB:LEFT-BUTTON-ITEMS :ALLOCATION :CLASS
;; Menu items for LeftButton selection -- Value sent as message to object or browser -- see local-commands
:INITFORM
'WEB:BOX-NODE)
(WEB:MIDDLE-BUTTON-ITEMS :ALLOCATION :INSTANCE
;; Menu items for MiddleButton selection -- Value sent as message to object or browser -- see local-commands
:INITFORM
'(("Edit" CLOS-BROWSER::EDIT-CLASS "Edit the class." (IL:SUBITEMS ("Edit" CLOS-BROWSER::EDIT-CLASS
"Edit the class.")
("Inspect" CLOS-BROWSER::INSPECT-CLASS
"Bring up an inspector on the
class.)))
("Add method" CLOS-BROWSER::ADD-BROWSER-METHOD "Add a method to the class.")
("Browse" CLOS-BROWSER::BROWSE-SUBS "Bring up a browser on this class."
(WHEN NIL ;superclasses not implemented
(IL:SUBITEMS ("sub classes" CLOS-BROWSER::BROWSE-SUBS "Bring up a browser on this
class.")
("super classes" CLOS-BROWSER::BROWSE-SUPERS "Not Implemented"))))
("Print" CLOS-BROWSER::PRINT-CLASS "Print the form defining the class." (IL:SUBITEMS ("Print"
CLOS-BROWSER::PRINT-CLASS
"Print the
form
defining the
class.")
("Describe"
CLOS-BROWSER::DESCRIBE-CLASS
"Print a
description
of the
class.")
("Documentation"
CLOS-BROWSER::DOCUMENTATION-CLASS
"Display the
documentation for
the class.)))
("Specialize" CLOS-BROWSER::SPECIALIZE-CLASS "Create a new sub-class of this class.")
("-----" CLOS-BROWSER::EDIT-CLASS "Above this line operates on the class.
Below this line operates on individual slots and methods.")
("slots" CLOS-BROWSER::EDIT-CLASS "Edit the defclass definition.")
("methods" (CLOS-BROWSER::MENU-METHODS)
"Build a menu of methods local to this class."
(IL:SUBITEMS ("local" (CLOS-BROWSER::MENU-METHODS)
"Show a menu of methods specialized on this class.."
(IL:SUBITEMS ("Use cached menu" (CLOS-BROWSER::MENU-METHODS)
"Do not recompute the menu of methods")
("Recompute menu" (CLOS-BROWSER::MENU-METHODS NIL NIL NIL T)
"Recompute the menu of methods")))
("inherited" (CLOS-BROWSER::MENU-METHODS :INHERITED)
"Show only methods inherited by this class."
(IL:SUBITEMS ("Use cached menu" (CLOS-BROWSER::MENU-METHODS :INHERITED)
"Do not recompute the menu of methods")
("Recompute menu" (CLOS-BROWSER::MENU-METHODS :INHERITED NIL NIL T)
"Recompute the menu of methods")))
("all" (CLOS-BROWSER::MENU-METHODS :ALL)
"Show all methods understood by this class."
(IL:SUBITEMS ("Use cached menu" (CLOS-BROWSER::MENU-METHODS :ALL)
"Do not recompute the menu of methods")
("Recompute menu" (CLOS-BROWSER::MENU-METHODS :ALL NIL NIL T)
"Recompute the menu of methods"))))
(CLOS-BROWSER::TITLE :INITFORM "CLOS Browser" ; Title passed to GRAPHER package
)))

```

```

(DEFMETHOD CLOS-BROWSER::ADD-ROOT ((CLOS-BROWSER::BROWSER CLOS-BROWSER:CLOS-BROWSER)

```



```
(WHEN (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::DESTINATION-BROWSER)
;; Node has been invalidated, so get rid of this pointer to it.
  (SETF (SLOT-VALUE (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::DESTINATION-BROWSER)
                    'WEB:BOXED-NODE)
        NIL)
  (SETF (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::DESTINATION-BROWSER)
        NIL)))
```

```
(DEFMETHOD CLOS-BROWSER::REAL-ADD-ROOT ((CLOS-BROWSER::BROWSER CLOS-BROWSER:CLOS-BROWSER)
                                       CLOS-BROWSER::CLASS)
  "Add a class to the starting list of the browser"
  (WHEN CLOS-BROWSER::CLASS
    (LET* ((CLOS-BROWSER::CLASS (IF (TYPEP CLOS-BROWSER::CLASS 'STANDARD-CLASS)
                                    CLOS-BROWSER::CLASS
                                    (FIND-CLASS CLOS-BROWSER::CLASS)))
          (CLOS-BROWSER::NEW-NODE (CAR (CLOS-BROWSER::MAKE-NODES (LIST CLOS-BROWSER::CLASS))))
          (IF CLOS-BROWSER::NEW-NODE
              (PROGN (PUSHNEW CLOS-BROWSER::NEW-NODE (SLOT-VALUE CLOS-BROWSER::BROWSER 'WEB::STARTING-LIST))
                    (IF (SLOT-VALUE CLOS-BROWSER::BROWSER 'WEB::GOOD-LIST)
                        (PUSHNEW CLOS-BROWSER::NEW-NODE (SLOT-VALUE CLOS-BROWSER::BROWSER 'WEB::GOOD-LIST))
                        (SETF (SLOT-VALUE CLOS-BROWSER::BROWSER 'WEB::BAD-LIST)
                            (IL:DREMOVE CLOS-BROWSER::NEW-NODE (SLOT-VALUE CLOS-BROWSER::BROWSER
                                                                    'WEB::BAD-LIST))))
                    CLOS-BROWSER::BROWSER)
              ;; otherwise return nil
              NIL))))))
```

```
(DEFMETHOD WEB-SHAPE-TO-HOLD ((WEB::SELF CLOS-BROWSER:CLOS-BROWSER))
  "give a larger width for empty browsers so add-node will have room"
  (LET* ((WEB::WINDOW (SLOT-VALUE WEB::SELF 'WEB::WINDOW))
        (WEB::NODES (IL:|fetch| IL:|GRAPHNODES| IL:|of| (IL:WINDOWPROP WEB::WINDOW 'IL:|GRAPH|))))
    (IF WEB::NODES
        (CALL-NEXT-METHOD)
        (LET ((WEB::REGION (IL:WINDOWPROP WEB::WINDOW 'IL:|REGION|))
              (WEB::MIN-HEIGHT (IL:|FONTHEIGHT| (IL:|DSPFONT| NIL WEB::WINDOW)))
              (WEB::MIN-WIDTH (MAX 250 (IL:|IPLUS| 5 (IL:|STRINGWIDTH| (SLOT-VALUE WEB::SELF 'WEB::TITLE)
                                                                    (IL:|DSPFONT| NIL IL:|WindowTitleDisplayStream|))))
              ))
          (WEB::SET-REGION WEB::SELF (IL:|CREATEREGION| (IL:|fetch| IL:|LEFT| IL:|of| WEB::REGION)
                                                       (IL:|fetch| IL:|BOTTOM| IL:|of| WEB::REGION)
                                                       WEB::MIN-WIDTH WEB::MIN-HEIGHT))))))
```

```
(DEFMETHOD CLOS-BROWSER::SUBCLASSES-OF ((CLOS-BROWSER::CLASS T))
  (APPEND (LIST CLOS-BROWSER::CLASS)
          (IL:|FOR| CLOS-BROWSER::SUBCLASS IL:|IN| (SLOT-VALUE CLOS-BROWSER::CLASS 'CLOS::DIRECT-SUBCLASSES)
              IL:|JOIN| (IF (SLOT-VALUE CLOS-BROWSER::SUBCLASS 'CLOS::DIRECT-SUBCLASSES)
                          (CLOS-BROWSER::SUBCLASSES-OF CLOS-BROWSER::SUBCLASS)
                          (LIST CLOS-BROWSER::SUBCLASS))))))
```

```
(DEFMETHOD CLOS-BROWSER::CONTAINS-P ((CLOS-BROWSER::CLASS T)
                                     (CLOS-BROWSER::BROWSER CLOS-BROWSER:CLOS-BROWSER))
  (LET ((CLOS-BROWSER::NODE (CAR (MEMBER CLOS-BROWSER::CLASS (SLOT-VALUE CLOS-BROWSER::BROWSER
                                                                    'WEB::STARTING-LIST)
                                                                    :TEST
                                                                    #'CLOS-BROWSER::THIS-CLASS-NODE-P))))
    (WHEN (AND CLOS-BROWSER::NODE (NOT (MEMBER CLOS-BROWSER::CLASS (SLOT-VALUE CLOS-BROWSER::BROWSER
                                                                    'WEB::BAD-LIST)
                                                                    :TEST
                                                                    #'CLOS-BROWSER::THIS-CLASS-NODE-P))))
      CLOS-BROWSER::NODE)))
```

```
;;
;;; CLOS-BROWSER-NODE CLASS
```

```
(DEFCLASS CLOS-BROWSER::CLOS-BROWSER-NODE (WEB:WEB-NODE)
  ((CLOS-BROWSER::CLASS
    )
   (CLOS-BROWSER::MENU-CACHE :INITFORM NIL)
   (CLOS-BROWSER::LARGE-MENU-SIZE :ALLOCATION :CLASS :INITFORM 22)
   (CLOS-BROWSER::LARGE-MENU-FONT :ALLOCATION :INSTANCE :INITFORM (IL:|FONTCREATE| '(IL:|HELVETICA| 8)))
   (CLOS-BROWSER::LOCAL-METHOD-OPERATIONS :ALLOCATION :INSTANCE :INITFORM
     '(("Edit" 'CLOS-BROWSER::EDIT "Bring up the editor on this method's definition."
      (IL:|SUBITEMS| ("Inspect" 'INSPECT "Inspect this method")))
      ("Print" 'CLOS-BROWSER::PRINT-DEFINITION "Pretty Print this method's definition."
      (IL:|SUBITEMS| ("Print" 'PRINT "Print this method's definition."
        ("Describe" 'CLOS-BROWSER::DESCRIBE-METHOD "Describe this method."
        ("Documentation" 'DOCUMENTATION "Print this method's documentation."))))
      ("Delete" 'CLOS-BROWSER::DELETE-METHOD "Remove this method."))
  )
  ; The class represented by this node
  ; Menus of methods and slots. See clos-icon for the switch that
  ; controls when this gets updated.
```

```

("Copy" 'CLOS-BROWSER::COPY "Copy this method to boxed class.")
("Move" 'CLOS-BROWSER::MOVE "Move this method to boxed class.")
("Rename" 'CLOS-BROWSER::RENAME "Change the name of this method to new name you specify")
("Break" 'CLOS::BREAK-METHOD "Cause a break window whenever this method is invoked.")
("Trace" 'CLOS::TRACE-METHOD "Trace this method.")
("UnBreak" 'CLOS::UNBREAK-METHOD "Unbreak this method.")
("Who owns" 'CLOS-BROWSER::WHO-OWNS "Show the classes on which this method is specialized.)))
(CLOS-BROWSER::INHERITED-METHOD-OPERATIONS :ALLOCATION :INSTANCE :INITFORM
'(("Edit" 'CLOS-BROWSER::EDIT "Bring up the editor on this method's definition."
(IL:SUBITEMS ("Inspect" 'INSPECT "Inspect this method"))
("Print" 'CLOS-BROWSER::PRINT-DEFINITION "Pretty Print this method's definition."
(IL:SUBITEMS ("Print" 'PRINT "Print this method's definition."
("Describe" 'CLOS-BROWSER::DESCRIBE-METHOD "Describe this method."
("Documentation" 'DOCUMENTATION "Print this method's documentation.))))
("Override" 'CLOS-BROWSER::OVERRIDE "Create a local method with this name.")
("Break" 'CLOS::BREAK-METHOD "Cause a break window whenever this method is invoked.")
("Trace" 'CLOS::TRACE-METHOD "Trace this method.")
("UnBreak" 'CLOS::UNBREAK-METHOD "Unbreak this method.")
("Who owns" 'CLOS-BROWSER::WHO-OWNS "Show the classes on which this method is specialized.)))
(CLOS-BROWSER::ALL-METHOD-OPERATIONS :ALLOCATION :INSTANCE :INITFORM
'(("Edit" 'CLOS-BROWSER::EDIT "Bring up the editor on this method's definition."
(IL:SUBITEMS ("Inspect" 'INSPECT "Inspect this method"))
("Print" 'CLOS-BROWSER::PRINT-DEFINITION "Pretty Print this method's definition."
(IL:SUBITEMS ("Print" 'PRINT "Print this method's definition."
("Describe" 'CLOS-BROWSER::DESCRIBE-METHOD "Describe this method."
("Documentation" 'DOCUMENTATION "Print this method's documentation.))))
("Delete" 'DELETE "Remove this method.")
("Copy" 'CLOS-BROWSER::COPY "Copy this method to boxed class.")
("Move" 'CLOS-BROWSER::MOVE "Move this method to boxed class.")
("Rename" 'CLOS-BROWSER::RENAME "Change the name of this method to new name you specify")
("Override" 'CLOS-BROWSER::OVERRIDE "Create a local method with this name.")
("Break" 'CLOS::BREAK-METHOD "Cause a break window whenever this method is invoked.")
("Trace" 'CLOS::TRACE-METHOD "Trace this method.")
("UnBreak" 'CLOS::UNBREAK-METHOD "Unbreak this method.")
("Who owns" 'CLOS-BROWSER::WHO-OWNS "Show the classes on which this method is specialized.))))))

```

```

(DEFMETHOD CLOS-BROWSER::OBJECT-NAME ((CLOS-BROWSER::SELF CLOS-BROWSER::CLOS-BROWSER-NODE)
(WEB:NODE-NAME CLOS-BROWSER::SELF))

```

```

(DEFMETHOD CLOS-BROWSER::OVERRIDE ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
CLOS-BROWSER::METHOD)
"Create a method specialized on the class."
(ADD-METHOD CLOS-BROWSER::NODE NIL (SLOT-VALUE (CLOS::METHOD-GENERIC-FUNCTION CLOS-BROWSER::METHOD)
'CLOS::NAME)))

```

```

(DEFMETHOD CLOS-BROWSER::CACHE (CLOS-BROWSER::MENU (CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
&OPTIONAL CLOS-BROWSER::INHERITED-OR-ALL)
(LET ((CLOS-BROWSER::MENU-TYPE (CASE CLOS-BROWSER::INHERITED-OR-ALL
((NIL :LOCAL) 'CLOS-BROWSER::LOCAL-METHODS-MENU)
(:INHERITED 'CLOS-BROWSER::IHHERITED-METHODS-MENU)
(:ALL 'CLOS-BROWSER::ALL-METHODS-MENU))))
(IF (NOT (ASSOC CLOS-BROWSER::MENU-TYPE (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::MENU-CACHE)))
;; then initialize alist
(SETF (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::MENU-CACHE)
(ACONS CLOS-BROWSER::MENU-TYPE CLOS-BROWSER::MENU (SLOT-VALUE CLOS-BROWSER::NODE
'CLOS-BROWSER::MENU-CACHE)))
;; otherwise replace what is already there
(RPLACD (ASSOC CLOS-BROWSER::MENU-TYPE (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::MENU-CACHE))
CLOS-BROWSER::MENU)))

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(DEFMETHOD CLOS-BROWSER::UNCACHE ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
&OPTIONAL CLOS-BROWSER::INHERITED-OR-ALL)
(RPLACD (ASSOC (CASE CLOS-BROWSER::INHERITED-OR-ALL
((NIL :LOCAL) 'CLOS-BROWSER::LOCAL-METHODS-MENU)
(:INHERITED 'CLOS-BROWSER::IHHERITED-METHODS-MENU)
(:ALL 'CLOS-BROWSER::ALL-METHODS-MENU)
(SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::MENU-CACHE))
NIL))

```

```

(IL:RPAQ CLOS-BROWSER::*METHOD-PROMPT-STRING* (CONCATENATE 'STRING "Left button to edit the method." "
" "Middle button provides a menu of operations.")

```

```

(DEFUN CLOS-BROWSER::EDIT (CLOS-BROWSER::METHOD)
(LET ((*PACKAGE* (SYMBOL-PACKAGE (CLOS::METHOD-GENERIC-FUNCTION
CLOS-BROWSER::METHOD))))
(ED (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD)
':DONTWAIT)))

```

```

(DEFUN CLOS-BROWSER::MAKE-METHOD-MENU-ITEMS (CLOS::METHODS CLOS-BROWSER::CLASS &OPTIONAL

```



```

                                CLOS-BROWSER::INHERITED-OR-ALL)
"gather method-list into menu items list"
(LET ((CLOS-BROWSER::METHOD-MENU-ITEMS (CLOS-BROWSER::MAKE-TOP-LEVEL-METHOD-MENU-ITEMS CLOS::METHODS
                                CLOS-BROWSER::INHERITED-OR-ALL))
      (CLOS-BROWSER::EXTRA-MENU-ITEM-POSITIONS))
  (LET ((CLOS-BROWSER::PREVIOUS-ITEM NIL)
        (CLOS-BROWSER::THIS-POSITION 0)
        (CLOS-BROWSER::GF-NAME))
    (DOLIST (CLOS-BROWSER::THIS-ITEM CLOS-BROWSER::METHOD-MENU-ITEMS)
      (SETQ CLOS-BROWSER::GF-NAME (CAR CLOS-BROWSER::THIS-ITEM))
      (INCF CLOS-BROWSER::THIS-POSITION)
      (IF (NOT (AND CLOS-BROWSER::PREVIOUS-ITEM (IF (NOT (FIRST CLOS-BROWSER::THIS-ITEM))
;; then look for different gf objects with nil name
                                (EQ (CLOS::METHOD-GENERIC-FUNCTION (SECOND
                                CLOS-BROWSER::PREVIOUS-ITEM
                                ))
                                (CLOS::METHOD-GENERIC-FUNCTION (SECOND
                                CLOS-BROWSER::THIS-ITEM
                                ))))
;; otherwise use slightly more efficient test for same gf
                                (EQ (FIRST CLOS-BROWSER::PREVIOUS-ITEM)
                                (FIRST CLOS-BROWSER::THIS-ITEM))))))

;; then go on to the next
(SETQ CLOS-BROWSER::PREVIOUS-ITEM CLOS-BROWSER::THIS-ITEM)
;; otherwise we have multi-methods
(PROGN ;; build a sub-menu of all the multi-methods
      (IF (NOT (FOURTH CLOS-BROWSER::PREVIOUS-ITEM))
;; then create the sub-menu
          (NCONC CLOS-BROWSER::PREVIOUS-ITEM (LIST (LIST 'IL:SUBITEMS (
                                CLOS-BROWSER::MAKE-MULTI-METHOD-SUB-MENU
                                (SECOND
                                CLOS-BROWSER::PREVIOUS-ITEM
                                )
                                CLOS-BROWSER::CLASS
                                )
                                )
                                (
                                CLOS-BROWSER::MAKE-MULTI-METHOD-SUB-MENU
                                (SECOND CLOS-BROWSER::THIS-ITEM)
                                CLOS-BROWSER::CLASS)))
;; otherwise add another item to the sub-menu
          (NCONC (FOURTH CLOS-BROWSER::PREVIOUS-ITEM)
          (LIST (CLOS-BROWSER::MAKE-MULTI-METHOD-SUB-MENU (SECOND
                                CLOS-BROWSER::THIS-ITEM
                                )
                                CLOS-BROWSER::CLASS))))
;; collect the position of the extra multi-method menu item
          (PUSH CLOS-BROWSER::THIS-POSITION CLOS-BROWSER::EXTRA-MENU-ITEM-POSITIONS))))))
;; remove extra multi-method menu items last first.
(DOLIST (CLOS-BROWSER::EACH-POSITION CLOS-BROWSER::EXTRA-MENU-ITEM-POSITIONS)
  (SETQ CLOS-BROWSER::METHOD-MENU-ITEMS (DELETE-IF #'XCL:TRUE CLOS-BROWSER::METHOD-MENU-ITEMS :START
          (- CLOS-BROWSER::EACH-POSITION 1)
          :END CLOS-BROWSER::EACH-POSITION)))
;; prepend the Add method item
(APPEND '(("Add method" NIL "Bring up an editor containing a template for a new method on this class.")
        CLOS-BROWSER::METHOD-MENU-ITEMS))

(DEFUN CLOS-BROWSER::MAKE-TOP-LEVEL-METHOD-MENU-ITEMS (CLOS::METHODS &OPTIONAL
                                CLOS-BROWSER::INHERITED-OR-ALL)
"gather local-methods into menu items list"
(DECLARE (SPECIAL CLOS-BROWSER::*METHOD-PROMPT-STRING*))
(SORT (IL:FOR CLOS-BROWSER::EACH-METHOD IL:IN CLOS::METHODS IL:BIND CLOS-BROWSER::METHOD-NAME
          IL:UNLESS (AND (NOT (EQL CLOS-BROWSER::INHERITED-OR-ALL :ALL))
          (CLOS::*TYPEP CLOS-BROWSER::EACH-METHOD 'CLOS::STANDARD-ACCESSOR-METHOD))
;; weed out auto-generated slot access methods

          IL:|eachtime| (SETQ CLOS-BROWSER::METHOD-NAME (CAR (CLOS::FULL-METHOD-NAME CLOS-BROWSER::EACH-METHOD
          NIL)))
          IL:|collect| (LIST CLOS-BROWSER::METHOD-NAME CLOS-BROWSER::EACH-METHOD
          CLOS-BROWSER::*METHOD-PROMPT-STRING*))
          #'IL:ALPHORDER :KEY #'CAR))

(DEFUN CLOS-BROWSER::MAKE-MULTI-METHOD-SUB-MENU (CLOS-BROWSER::METHOD CLOS-BROWSER::CLASS)
"make a menu item to distinguish methods on the same gf"
(LET (CLOS-BROWSER::SUB-ITEM-NAME)

```

```

(DECLARE (SPECIAL CLOS-BROWSER::*METHOD-PROMPT-STRING*))
;; first put out the qualifiers if any
(DOLIST (CLOS-BROWSER::QUALIFIER (SLOT-VALUE CLOS-BROWSER::METHOD 'CLOS::SPECIALIZERS))
  (SETQ CLOS-BROWSER::SUB-ITEM-NAME (CONCATENATE 'STRING CLOS-BROWSER::SUB-ITEM-NAME (WHEN
    CLOS-BROWSER::SUB-ITEM-NAME
    " ")
    (PRIN1-TO-STRING CLOS-BROWSER::QUALIFIER))))
;; then do the specializers
;; (DOLIST (TYPE-SPECIFIER (SLOT-VALUE METHOD 'CLOS::TYPE-SPECIFIERS)) (SETQ SUB-ITEM-NAME (CONCATENATE 'STRING
;; SUB-ITEM-NAME (WHEN SUB-ITEM-NAME " ") (IF (EQ CLASS TYPE-SPECIFIER) ;; then lets just do a plus sign "+" ;; else print the name
;; (PRIN1-TO-STRING ;; test until class-name works properly (IF (TYPEP TYPE-SPECIFIER 'STANDARD-CLASS) (CLASS-NAME
;; TYPE-SPECIFIER) TYPE-SPECIFIER))))))
  (LIST CLOS-BROWSER::SUB-ITEM-NAME CLOS-BROWSER::METHOD CLOS-BROWSER::*METHOD-PROMPT-STRING*))
;;
;; OPERATORS (via CLOS-BROWSER-NODE) ON CLOS::STANDARD-CLASS

(DEFMETHOD CLOS-BROWSER::ADD-BROWSER-METHOD ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
  &OPTIONAL CLOS-BROWSER::FORM CLOS-BROWSER::METHOD-NAME)
  "bring up sedit on a template to add a method to this class"
  (DECLARE (SPECIAL SEDIT::BASIC-GAP SEDIT::BODY-GAP SEDIT::ARGS-GAP))
  (LET* ((CLASS-NAME (CLASS-NAME (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)))
    CLOS-BROWSER::CONTEXT
    (CLOS-BROWSER::NAME (FORMAT NIL "New method on ~A" CLASS-NAME))
    (*PACKAGE* (SYMBOL-PACKAGE CLASS-NAME)))
    (UNLESS CLOS-BROWSER::FORM
      (SETQ CLOS-BROWSER::FORM (LIST 'DEFMETHOD (OR CLOS-BROWSER::METHOD-NAME SEDIT::BASIC-GAP)
        (LIST (LIST (INTERN "SELF")
          CLASS-NAME)
          SEDIT::ARGS-GAP)
          SEDIT::BODY-GAP)))
      (SEDIT:SEDIT CLOS-BROWSER::FORM (LIST :NAME CLOS-BROWSER::NAME :COMPLETION-FN
        #'CLOS-BROWSER::COMPLETE-ADD-METHOD)
        :DONTWAIT)))

(DEFMETHOD CLOS-BROWSER::BROWSE-SUBS ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE))
  (CLOS-BROWSER::BROWSE-CLASS (SLOT-VALUE (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)
    'CLOS::NAME)))

(DEFMETHOD CLOS-BROWSER::EDIT-CLASS ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE))
  (LET* ((CLOS-BROWSER::CLASS (CLASS-NAME (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)))
    (*PACKAGE* (SYMBOL-PACKAGE CLOS-BROWSER::CLASS)))
    (ED CLOS-BROWSER::CLASS ' (CLOS-BROWSER::CLASSES :DONTWAIT))))

(DEFMETHOD CLOS-BROWSER::INSPECT-CLASS ((CLOS::OBJECT CLOS-BROWSER::CLOS-BROWSER-NODE))
  (INSPECT (SLOT-VALUE CLOS::OBJECT 'CLOS-BROWSER::CLASS)))

(DEFMETHOD CLOS-BROWSER::MENU-METHODS ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
  &OPTIONAL CLOS-BROWSER::INHERITED-OR-ALL CLOS-BROWSER::ITEMS
  CLOS-BROWSER::FIX-FLAG CLOS-BROWSER::RECOMPUTE-FLAG)
  "pops up a menu of the methods for the class representing the node."
  ;; If INHERITED-OR-ALL is NIL or :local only local methods are menued.
  ;; If INHERITED-OR-ALL is :inherited only inherited methods are menued.
  ;; If INHERITED-OR-ALL is :all all methods are menued.
  ;; If items are present, the list of methods is not re-generated.
  ;; If the fix-flag is t, the user is asked to position the menu and no "Fix menu" item appears.
  ;; The whenselectedfn can call this again to generate a fixed menu.
  (LET* ((CLOS-BROWSER::CLASS (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS))
    (*PACKAGE* (SYMBOL-PACKAGE (SLOT-VALUE CLOS-BROWSER::CLASS 'CLOS::NAME)))
    (CLOS-BROWSER::MENU (UNLESS (OR CLOS-BROWSER::RECOMPUTE-FLAG (EQ (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
      ,
      CLOS-BROWSER::MENU-CACHE-SWITCH
      )
      :NONE))
      (REST ; use the cached menu
        (ASSOC (CASE CLOS-BROWSER::INHERITED-OR-ALL
          ((NIL :LOCAL) 'CLOS-BROWSER::LOCAL-METHODS-MENU)
          (:INHERITED 'CLOS-BROWSER::IHHERITED-METHODS-MENU)
          (:ALL 'CLOS-BROWSER::ALL-METHODS-MENU))
          (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::MENU-CACHE))))))
    ;; unless it was cached, make the menu
    (UNLESS (AND CLOS-BROWSER::MENU (IL:TYPE? IL:MENU CLOS-BROWSER::MENU))
      ;; unless the menu items were passed in, compute them

```

```

(UNLESS CLOS-BROWSER::ITEMS
  (SETQ CLOS-BROWSER::ITEMS (CLOS-BROWSER::MAKE-METHOD-MENU-ITEMS
    (CASE CLOS-BROWSER::INHERITED-OR-ALL
      ((NIL :LOCAL) (CAR (SLOT-VALUE CLOS-BROWSER::CLASS
        'CLOS::DIRECT-METHODS)))
      (:INHERITED (CLOS::COMPUTE-INHERITED-METHODS CLOS-BROWSER::CLASS
        ))
      (:ALL (CLOS::COMPUTE-INHERITED-METHODS CLOS-BROWSER::CLASS :ALL)
        ))
    CLOS-BROWSER::CLASS)))
))

```

;; create the menu using whenselectedfn

```

(SETQ CLOS-BROWSER::MENU (IL:CREATE IL:MENU
  IL:TITLE IL:_ (IF CLOS-BROWSER::FIX-FLAG
    (CLASS-NAME CLOS-BROWSER::CLASS
      "methods")
    (LENGTH CLOS-BROWSER::ITEMS))
  IL:MENUFONT IL:_ (WHEN (> (SLOT-VALUE CLOS-BROWSER::NODE
    'CLOS-BROWSER::LARGE-MENU-SIZE))
    (SLOT-VALUE CLOS-BROWSER::NODE
      'CLOS-BROWSER::LARGE-MENU-FONT))
  IL:MENUSERDATA IL:_ '(:ESCAPE T)
    ; cause symbols to print in mouse process's read-table &
    ; package
  IL:WHENSELECTEDFN IL:_ (CLOS-BROWSER::MAKE-WHENSELECTEDFN
    CLOS-BROWSER::NODE
    CLOS-BROWSER::INHERITED-OR-ALL
    CLOS-BROWSER::ITEMS)
  IL:ITEMS IL:_ (APPEND CLOS-BROWSER::ITEMS
    (UNLESS CLOS-BROWSER::FIX-FLAG
      '("Fix menu" NIL "Place this menu on the
        screen. WARNING: cached menus
        are not kept up-to-date")))))

```

;; cache the menu on the node

```

(CLOS-BROWSER::CACHE CLOS-BROWSER::MENU CLOS-BROWSER::NODE CLOS-BROWSER::INHERITED-OR-ALL)
(IF CLOS-BROWSER::FIX-FLAG

```

;; ask user to position menu

```

(IL:MOVEW (IL:ADDMENU CLOS-BROWSER::MENU))

```

;; otherwise just pop it up

```

(IL:MENU CLOS-BROWSER::MENU)))

```

```

(DEFMETHOD CLOS-BROWSER::MAKE-WHENSELECTEDFN ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
  &OPTIONAL CLOS-BROWSER::INHERITED-OR-ALL
  CLOS-BROWSER::ITEMS)

```

`(LAMBDA

```

  (CLOS-BROWSER::MENU-ITEM IGNORE CLOS-BROWSER::MOUSE-KEY)
  (LET ((CLOS-BROWSER::METHOD-NAME (FIRST CLOS-BROWSER::MENU-ITEM))
    (CLOS-BROWSER::METHOD (SECOND CLOS-BROWSER::MENU-ITEM)))
    (IF (NULL CLOS-BROWSER::METHOD)

```

;; do the non-method items

```

  (COND
    ((STRING= CLOS-BROWSER::METHOD-NAME "Add method")
      (CLOS-BROWSER::ADD-BROWSER-METHOD ',CLOS-BROWSER::NODE NIL))
    ((STRING= CLOS-BROWSER::METHOD-NAME "Fix menu")
      ; call MENU-LOCAL-METHODS again to create fixed menu
      (CLOS-BROWSER::MENU-METHODS ',CLOS-BROWSER::NODE ',CLOS-BROWSER::INHERITED-OR-ALL
        ',CLOS-BROWSER::ITEMS T))
    (T CLOS-BROWSER::OPERATION))

```

;; got a method, lets get an operation

```

  (LET ((CLOS-BROWSER::OPERATION
    (CASE CLOS-BROWSER::MOUSE-KEY
      (IL:LEFT 'CLOS-BROWSER::EDIT)
      (IL:MIDDLE (IL:MENU (IL:CREATE IL:MENU
        IL:TITLE IL:_ CLOS-BROWSER::METHOD-NAME
        IL:ITEMS IL:_
        (SLOT-VALUE ',CLOS-BROWSER::NODE
          ',(CASE CLOS-BROWSER::INHERITED-OR-ALL
            ((NIL :LOCAL)
              CLOS-BROWSER::LOCAL-METHOD-OPERATIONS
            (:INHERITED
              CLOS-BROWSER::INHERITED-METHOD-OPERATIONS
            (:ALL 'CLOS-BROWSER::ALL-METHOD-OPERATIONS))))))

```

;; got an operation, lets use it on the method

```

  (CASE CLOS-BROWSER::OPERATION

```

```

((NIL) NIL)
((CLOS-BROWSER::COPY CLOS-BROWSER::MOVE) ; need to supply destination
 (FUNCALL CLOS-BROWSER::OPERATION CLOS-BROWSER::METHOD
  ;; to class
  (PROGN (UNLESS (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
    'CLOS-BROWSER::DESTINATION-BROWSER)
    (ERROR "Please box a destination class, then say OK."))
   (SLOT-VALUE (SLOT-VALUE (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
    'CLOS-BROWSER::DESTINATION-BROWSER)
    'WEB:BOXED-NODE)
    'CLOS-BROWSER::CLASS))
  ;; from class
  (SLOT-VALUE ' ,CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)))
(DELETE) ; need to supply extra confirm
(WHEN (IL:MOUSECONFIRM (FORMAT NIL "Are you sure you wish to delete the ~A method?"
  (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD)))
 (FUNCALL CLOS-BROWSER::OPERATION CLOS-BROWSER::METHOD)))
((CLOS-BROWSER::OVERRIDE) ; use add-method
 (FUNCALL CLOS-BROWSER::OPERATION ' ,CLOS-BROWSER::NODE CLOS-BROWSER::METHOD))
(OTHERWISE (FUNCALL CLOS-BROWSER::OPERATION CLOS-BROWSER::METHOD))))))

```

```

(DEFMETHOD CLOS-BROWSER::DESCRIBE-CLASS ((CLOS-BROWSER::SELF CLOS-BROWSER::CLOS-BROWSER-NODE)
 (CLOS::DESCRIBE-OBJECT (SLOT-VALUE CLOS-BROWSER::SELF 'CLOS-BROWSER::CLASS)
 *TRACE-OUTPUT*))

```

```

(DEFMETHOD CLOS-BROWSER::DOCUMENTATION-CLASS ((CLOS-BROWSER::SELF CLOS-BROWSER::CLOS-BROWSER-NODE)
 (DOCUMENTATION (SLOT-VALUE CLOS-BROWSER::SELF 'CLOS-BROWSER::CLASS)))

```

```

(DEFMETHOD CLOS-BROWSER::PRINT-CLASS ((CLOS-BROWSER::SELF CLOS-BROWSER::CLOS-BROWSER-NODE)
 (PPRINT (IL:GETDEF (SLOT-VALUE (SLOT-VALUE CLOS-BROWSER::SELF 'CLOS-BROWSER::CLASS)
 'CLOS::NAME)
 'CLOS-BROWSER::CLASSES)))

```

```

(DEFMETHOD CLOS-BROWSER::SPECIALIZE-CLASS ((CLOS-BROWSER::NODE CLOS-BROWSER::CLOS-BROWSER-NODE)
 &OPTIONAL CLOS-BROWSER::FORM CLOS-BROWSER::NEW-CLASS-NAME)
 (CLOS-BROWSER::SPECIALIZE (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)
 CLOS-BROWSER::FORM CLOS-BROWSER::NEW-CLASS-NAME))

```

```

(DEFUN CLOS-BROWSER::COMPLETE-ADD-METHOD (CLOS-BROWSER::CONTEXT STRUCTURE &OPTIONAL (
 CLOS-BROWSER::CHANGED?
 T))
 (DECLARE (IGNORE CLOS-BROWSER::CONTEXT))
 (CASE CLOS-BROWSER::CHANGED?
 ((:ABORT NIL) NIL)
 (OTHERWISE (EVAL (COPY-TREE
 STRUCTURE)))))) ; to ensure the original list does not get destructively clobbered

```

```

(DEFUN CLOS-BROWSER::COMPLETE-SPECIALIZE (IGNORE STRUCTURE CLOS-BROWSER::CHANGED?)
 (DECLARE (IGNORE CLOS-BROWSER::CONTEXT))
 (CASE CLOS-BROWSER::CHANGED?
 ((:ABORT NIL) NIL)
 (T (LET ((CLOS-BROWSER::ORIGINALCURSOR (IL:CURSOR)))
 (UNWIND-PROTECT
 (PROGN (IL:SETCURSOR IL:WAITINGCURSOR)
 (LET ((CLOS-BROWSER::SUB-CLASS (EVAL (COPY-TREE
 ; so original list does not get clobbered if this class's name
 ; changes
 STRUCTURE))))
 CLOS-BROWSER::SUPER-CLASS)
 ;; check for bug
 (WHEN (SYMBOLP CLOS-BROWSER::SUB-CLASS)
 (SETQ CLOS-BROWSER::SUB-CLASS (FIND-CLASS CLOS-BROWSER::SUB-CLASS)))
 (DOLIST (CLOS-BROWSER::BROWSER (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
 'CLOS-BROWSER::CLASS-BROWSERS))
 (DOLIST (CLOS-BROWSER::SUPER-CLASS (SLOT-VALUE CLOS-BROWSER::SUB-CLASS
 'CLOS::DIRECT-SUPERCLASSES))
 (WHEN (CLOS-BROWSER::CONTAINS-P CLOS-BROWSER::SUPER-CLASS
 CLOS-BROWSER::BROWSER)
 (CLOS-BROWSER::ADD-ROOT CLOS-BROWSER::BROWSER CLOS-BROWSER::SUB-CLASS
 )
 (RETURN))))))
 (IL:SETCURSOR CLOS-BROWSER::ORIGINALCURSOR))))))

```

```

(DEFUN CLOS-BROWSER::LYRIC-COMPLETE-SPECIALIZE (IGNORE STRUCTURE)
 (LET ((CLOS-BROWSER::ORIGINALCURSOR (IL:CURSOR)))
 (UNWIND-PROTECT
 (PROGN (IL:SETCURSOR IL:WAITINGCURSOR)

```

```
(LET ((CLOS-BROWSER::SUB-CLASS (EVAL (COPY-TREE
                                     ; so original list does not get clobbered if this class's name
                                     ; changes
                                     STRUCTURE)))
      CLOS-BROWSER::SUPER-CLASS)
  ;; check for bug
  (WHEN (SYMBOLP CLOS-BROWSER::SUB-CLASS)
    (SETQ CLOS-BROWSER::SUB-CLASS (CLOS::SYMBOL-CLASS CLOS-BROWSER::SUB-CLASS)))
  (DOLIST (CLOS-BROWSER::BROWSER (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
                                             'CLOS-BROWSER::CLASS-BROWSERS))
    (DOLIST (CLOS-BROWSER::SUPER-CLASS (SLOT-VALUE CLOS-BROWSER::SUB-CLASS
                                                  'CLOS::LOCAL-SUPERS))
      (WHEN (CLOS-BROWSER::CONTAINS-P CLOS-BROWSER::SUPER-CLASS CLOS-BROWSER::BROWSER)
        (CLOS-BROWSER::ADD-ROOT CLOS-BROWSER::BROWSER CLOS-BROWSER::SUB-CLASS)
        (RETURN))))))
  (IL:SETCURSOR CLOS-BROWSER::ORIGINALCURSOR))))
```

```
(DEFUN CLOS-BROWSER::THIS-CLASS-NODE-P (CLOS-BROWSER::CLASS CLOS-BROWSER::NODE)
  (EQ CLOS-BROWSER::CLASS (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS)))
```

```
(DEFUN CLOS::CLASS-DIRECT-METHODS (CLOS::CLASS)
  (SLOT-VALUE CLOS::CLASS 'CLOS::DIRECT-METHODS))
```

```
;;
;; OPERATORS ON CLOS::STANDARD-CLASS (directly)
```

```
(DEFMETHOD CLOS::COMPUTE-INHERITED-METHODS ((CLOS::SELF STANDARD-CLASS)
                                              &OPTIONAL CLOS::ALL-FLAG)
  "Compute and return all inherited methods of a class. If all-flag eq :all then methods on t and the passed
  class are included."
  ;; The following does not use generic function dispatch-orders, discriminating-functions, or classical-method-tables.
  ;; For each method in the direct-methods of each inherited class in the class-precedence-list for the class of interest, in class precedence order
  ;; check to see if we have already analyzed its generic function.
  ;; If it is a new gf then if there is exactly one type specifier then add the direct method to the list of inherited methods.
  ;; If there is more than one type specifier then for every method in the gf for each specializer if the specializing class is equal to or later than the
  ;; current class in the class precedence list, ignoring t, pushnew the method on the list of inherited methods.
```

```
(LET ((CLOS::FILTERED-CLASSES NIL)
      (CLOS::MY-GFS NIL)
      (CLOS::CLASS-PRECEDENCE-LIST (SLOT-VALUE CLOS::SELF 'CLOS::CLASS-PRECEDENCE-LIST))
      (CLOS::INHERITED-METHODS NIL)
      (CLOS::DIRECT-METHODS (CAR (SLOT-VALUE CLOS::SELF 'CLOS::DIRECT-METHODS)))
      (CLOS::T-CLASS (FIND-CLASS 'T)))
  (UNLESS (EQ CLOS::ALL-FLAG :ALL) ; ignore t and the bottom class
    (PUSH CLOS::T-CLASS CLOS::FILTERED-CLASSES)
    (PUSH CLOS::SELF CLOS::FILTERED-CLASSES)
    (SETQ CLOS::MY-GFS (MAPCAR #'CLOS::METHOD-GENERIC-FUNCTION CLOS::DIRECT-METHODS)))
  (DOLIST (CLOS::CLASS CLOS::CLASS-PRECEDENCE-LIST)
    (UNLESS (MEMBER CLOS::CLASS CLOS::FILTERED-CLASSES)
      (DOLIST (CLOS::DIRECT-METHOD (CAR (CLOS::CLASS-DIRECT-METHODS CLOS::CLASS)))
        (LET ((CLOS::GF (CLOS::METHOD-GENERIC-FUNCTION CLOS::DIRECT-METHOD))
              (UNLESS (MEMBER CLOS::GF CLOS::MY-GFS :TEST #'EQ)
                (IF (= 1 (LENGTH (SLOT-VALUE CLOS::DIRECT-METHOD 'CLOS::SPECIALIZERS))
                    ; Note: this check relies on guaranteed congruent lambda lists.
                    ; There should be some way to query the gf directly.
                    )
                  )
              ))
          ;; then only one specializer so this method must be inherited.
          (PUSH CLOS::DIRECT-METHOD CLOS::INHERITED-METHODS)
          ;; otherwise more than one so must look at specializers
          (DOLIST (CLOS::GF-METHOD (SLOT-VALUE CLOS::GF 'CLOS::METHODS))
            (DOLIST (CLOS::SPECIFIER (SLOT-VALUE CLOS::GF-METHOD 'CLOS::SPECIALIZERS))
              (UNLESS (OR (EQ CLOS::T-CLASS CLOS::SPECIFIER)
                          (NOT (MEMBER CLOS::SPECIFIER CLOS::CLASS-PRECEDENCE-LIST
                                         :TEST #'EQ)))
                (PUSHNEW CLOS::GF-METHOD CLOS::INHERITED-METHODS)
                (RETURN))))))
            (PUSH CLOS::GF CLOS::MY-GFS))))
    (PUSH CLOS::INHERITED-METHODS))
```

```
(DEFMETHOD CLOS-BROWSER::SPECIALIZE ((CLOS-BROWSER::CLASS STANDARD-CLASS)
                                     &OPTIONAL CLOS-BROWSER::FORM CLOS-BROWSER::NEW-CLASS-NAME)
  (DECLARE (SPECIAL SEDIT::BASIC-GAP))
  (LET* ((CLASS-NAME (CLASS-NAME CLOS-BROWSER::CLASS))
         (CLOS-BROWSER::CONTEXT
          (CLOS-BROWSER::NAME (FORMAT NIL "New sub-class of ~A" CLASS-NAME))
          (*PACKAGE* (SYMBOL-PACKAGE CLASS-NAME)))
        (UNLESS CLOS-BROWSER::FORM
```

```
(SETQ CLOS-BROWSER::FORM (LIST 'DEFCLASS (OR CLOS-BROWSER::NEW-CLASS-NAME SEDIT::BASIC-GAP)
                                (LIST CLASS-NAME)
                                (LIST SEDIT::BODY-GAP))))
```

;; call sedit

```
(SEdit:SEdit CLOS-BROWSER::FORM (LIST :NAME CLOS-BROWSER::NAME :COMPLETION-FN
                                       #'CLOS-BROWSER::COMPLETE-SPECIALIZE)
          :DONTWAIT))
```

```
(DEFMETHOD CLOS-BROWSER::SUBCLASSES-OF ((CLOS-BROWSER::CLASS STANDARD-CLASS))
  (APPEND (LIST CLOS-BROWSER::CLASS)
    (IL:FOR CLOS-BROWSER::SUBCLASS IL:IN (SLOT-VALUE CLOS-BROWSER::CLASS 'CLOS::DIRECT-SUBCLASSES)
      IL:JOIN (IF (SLOT-VALUE CLOS-BROWSER::SUBCLASS 'CLOS::DIRECT-SUBCLASSES)
                 (CLOS-BROWSER::SUBCLASSES-OF CLOS-BROWSER::SUBCLASS)
                 (LIST CLOS-BROWSER::SUBCLASS))))))
```

;;  
;; OPERATORS ON CLOS::STANDARD-METHOD

```
(DEFMETHOD CLOS-BROWSER::DELETE-METHOD ((CLOS-BROWSER::METHOD STANDARD-METHOD))
  (REMOVE-METHOD (SLOT-VALUE CLOS-BROWSER::METHOD 'CLOS::GENERIC-FUNCTION)
    CLOS-BROWSER::METHOD))
```

```
(DEFMETHOD CLOS-BROWSER::COPY ((CLOS-BROWSER::METHOD STANDARD-METHOD)
  (CLOS-BROWSER::TO-CLASS STANDARD-CLASS)
  &OPTIONAL CLOS-BROWSER::FROM-CLASS)
  (WHEN (EQ CLOS-BROWSER::TO-CLASS CLOS-BROWSER::FROM-CLASS)
    (RETURN-FROM CLOS-BROWSER::COPY))
```

;; if we have the source code, find all the references to the from class, change them to the to-class, and evaluate the new form. If from-class is not provided, if method is specialized on just one class, use it, otherwise ask the user.

;; If we dont have source code, we could ask if you want to just move the method object, but instead we print a complaint and punt.

```
(LET ((CLOS-BROWSER::METHOD-DEFINITION (COPY-TREE (XCL:IGNORE-ERRORS (IL:GETDEF (CLOS::FULL-METHOD-NAME
                                                                                CLOS-BROWSER::METHOD)
                                                                                'CLOS-BROWSER::METHODS))))
      (CLOS-BROWSER::NON-T-CLASSES (MAPCAR #'(LAMBDA (CLOS-BROWSER::CLASS)
                                             (UNLESS (EQ CLOS-BROWSER::CLASS 'T)
                                                     (CLOS-BROWSER::CLASS))
                                             (CLOS::METHOD-SPECIALIZERS CLOS-BROWSER::METHOD))))
      (UNLESS CLOS-BROWSER::METHOD-DEFINITION
        (FORMAT T "The definition for ~A is not loaded" (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD NIL)
          (RETURN-FROM CLOS-BROWSER::COPY NIL))
      (IF CLOS-BROWSER::FROM-CLASS
        ;; method should be specialized on from-class.
        (UNLESS (MEMBER CLOS-BROWSER::FROM-CLASS CLOS-BROWSER::NON-T-CLASSES)
          (ERROR "The ~A method is not specialized on the ~A class" (CLOS::FULL-METHOD-NAME
                                                                    CLOS-BROWSER::METHOD NIL)
            (CLASS-NAME CLOS-BROWSER::FROM-CLASS)))
        ;; otherwise see if we can deduce FROM-CLASS
        (CASE (LENGTH CLOS-BROWSER::NON-T-CLASSES)
          (0 (FORMAT T "Unspecialized methods cannot be copied. ~A" (CLOS::FULL-METHOD-NAME
                                                                    CLOS-BROWSER::METHOD NIL)))
          (1 (SETQ CLOS-BROWSER::FROM-CLASS (CAR CLOS-BROWSER::NON-T-CLASSES)))
          (OTHERWISE (SETQ CLOS-BROWSER::FROM-CLASS (CLOS::SYMBOL-CLASS (IL:PROMPTFORWARD
                                                                    (FORMAT NIL "Which class in ~A do
                                                                    you wish to move from?"
                                                                    (CLOS::FULL-METHOD-NAME
                                                                    CLOS-BROWSER::METHOD NIL)
                                                                    ))))))))
```

;; should contain from-class. If it is not the same, abort.

```
(CLOS-BROWSER::REPLACE-SPECIALIZERS CLOS-BROWSER::METHOD-DEFINITION (CLASS-NAME
  (CLASS-NAME CLOS-BROWSER::TO-CLASS))
  (PRINT (EVAL CLOS-BROWSER::METHOD-DEFINITION))))
```

```
(DEFMETHOD CLOS-BROWSER::MOVE ((CLOS-BROWSER::METHOD STANDARD-METHOD)
  (CLOS-BROWSER::TO-CLASS STANDARD-CLASS)
  &OPTIONAL CLOS-BROWSER::FROM-CLASS)
  (WHEN (EQ CLOS-BROWSER::TO-CLASS CLOS-BROWSER::FROM-CLASS)
    (RETURN-FROM CLOS-BROWSER::MOVE))
  (IF (CLOS-BROWSER::COPY CLOS-BROWSER::METHOD CLOS-BROWSER::TO-CLASS CLOS-BROWSER::FROM-CLASS)
    (CLOS-BROWSER::DELETE-METHOD CLOS-BROWSER::METHOD)
    (FORMAT T "copy of ~A to ~A failed" (XCL:IGNORE-ERRORS (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD))
      (XCL:IGNORE-ERRORS (CLASS-NAME CLOS-BROWSER::TO-CLASS))))))
```

```
(DEFMETHOD CLOS-BROWSER::PRINT-DEFINITION ((CLOS-BROWSER::SELF STANDARD-METHOD))
  (PPRINT (IL:GETDEF (CLOS::FULL-METHOD-NAME CLOS-BROWSER::SELF)
    'CLOS-BROWSER::METHODS)))
```

```
(DEFMETHOD CLOS-BROWSER::DESCRIBE-METHOD ((CLOS-BROWSER::METHOD CLOS::METHOD))
  (CLOS::DESCRIBE-OBJECT CLOS-BROWSER::METHOD *TRACE-OUTPUT*))
```

```
(DEFMETHOD CLOS-BROWSER::RENAME ((CLOS-BROWSER::METHOD STANDARD-METHOD)
  &OPTIONAL CLOS-BROWSER::NEW-NAME)
  (UNLESS CLOS-BROWSER::NEW-NAME
    (SETQ CLOS-BROWSER::NEW-NAME (READ (MAKE-STRING-INPUT-STREAM (IL:PROMPTFORWORD (FORMAT NIL "~%New name
      for ~A"
      (
        CLOS::FULL-METHOD-NAME
          CLOS-BROWSER::METHOD
            ))))))))
    (LET ((CLOS-BROWSER::METHOD-DEFINITION (XCL:IGNORE-ERRORS (IL:GETDEF CLOS-BROWSER::METHOD))))
      (UNLESS CLOS-BROWSER::METHOD-DEFINITION
        (FORMAT T "The definition for ~A is not loaded" (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD NIL))
        (RETURN-FROM CLOS-BROWSER::RENAME NIL))
      (IF (AND (SETF (SECOND CLOS-BROWSER::METHOD-DEFINITION)
        CLOS-BROWSER::NEW-NAME)
        (PRINT (EVAL CLOS-BROWSER::METHOD-DEFINITION)))
        (DELETE CLOS-BROWSER::METHOD)
        (FORMAT T "~%Rename of ~A to ~A failed" (XCL:IGNORE-ERRORS (CLOS::FULL-METHOD-NAME
          CLOS-BROWSER::METHOD)
            CLOS-BROWSER::NEW-NAME))))))
```

```
(DEFMETHOD CLOS-BROWSER::UPDATE-CACHED-MENUES ((CLOS-BROWSER::METHOD STANDARD-METHOD)
  &OPTIONAL
  (CLOS-BROWSER::CACHE-SWITCH (SLOT-VALUE
    CLOS-BROWSER:CLOS-ICON
      /
      CLOS-BROWSER::MENU-CACHE-SWITCH
        )))
  "set cached menus for this method's class to nil"
  (LET ((CLOS-BROWSER::ORIGINALCURSOR (IL:CURSOR)))
    (UNWIND-PROTECT
      (PROGN (IL:SETCURSOR IL:WAITINGCURSOR)
        (DOLIST (CLOS-BROWSER::BROWSER (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
          'CLOS-BROWSER::CLASS-BROWSERS))
          (DOLIST (CLOS-BROWSER::CLASS (SLOT-VALUE CLOS-BROWSER::METHOD 'CLOS::SPECIALIZERS))
            ;; fix bug in the inconsistent way CLOS objects store T class specializers and do method lookup.
            (WHEN (EQ CLOS-BROWSER::CLASS T)
              (SETQ CLOS-BROWSER::CLASS (CLOS::SYMBOL-CLASS T)))
            (LET ((CLOS-BROWSER::NODE (CLOS-BROWSER::BROWSER-CONTAINS-P CLOS-BROWSER::CLASS
              CLOS-BROWSER::BROWSER)))
              (WHEN CLOS-BROWSER::NODE
                (CASE CLOS-BROWSER::CACHE-SWITCH
                  (:LAZY
                    (CLOS-BROWSER::UNCACHE CLOS-BROWSER::NODE)
                    (CLOS-BROWSER::UNCACHE CLOS-BROWSER::NODE :ALL)
                    (DOLIST (CLOS-BROWSER::SUB-CLASS (CLOS-BROWSER::SUBCLASSES-OF
                      (SLOT-VALUE CLOS-BROWSER::NODE
                        'CLOS-BROWSER::CLASS)))
                      (WHEN (SETQ CLOS-BROWSER::NODE (CLOS-BROWSER::CONTAINS-P
                        CLOS-BROWSER::SUB-CLASS
                          CLOS-BROWSER::BROWSER))
                        (CLOS-BROWSER::UNCACHE CLOS-BROWSER::NODE :INHERITED)
                        (CLOS-BROWSER::UNCACHE CLOS-BROWSER::NODE :ALL))))
                    (:EAGER (PRINT ":eager method menu cacheing not yet implemented.))
                    (OTHERWISE
                      NIL ; do nothing
                    ))
                ))
              ))
            ))
        (IL:SETCURSOR CLOS-BROWSER::ORIGINALCURSOR))))
```

```
(DEFMETHOD CLOS-BROWSER::WHO-OWNS ((CLOS-BROWSER::METHOD STANDARD-METHOD))
  (PRINT (CLOS::FULL-METHOD-NAME CLOS-BROWSER::METHOD)))
```

```
(DEFMETHOD ADD-METHOD :AFTER
  ((CLOS-BROWSER::GENERIC-FUNCTION STANDARD-GENERIC-FUNCTION)
  (CLOS-BROWSER::METHOD STANDARD-METHOD))
  "Update cached menus."
  (LET (CLOS-BROWSER::CACHE-SWITCH)
    (WHEN (AND CLOS-BROWSER::METHOD (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::CLASS-BROWSERS)
      ; there are some browsers
      (NOT (EQ (SETQ CLOS-BROWSER::CACHE-SWITCH (SLOT-VALUE CLOS-BROWSER:CLOS-ICON
        'CLOS-BROWSER::MENU-CACHE-SWITCH))
        :NONE))
      ; we want auto cache updating
    ))
    )
```

```
(CLOS-BROWSER::UPDATE-CACHED-MENUES CLOS-BROWSER::METHOD CLOS-BROWSER::CACHE-SWITCH))
CLOS-BROWSER::GENERIC-FUNCTION))
```

```
(DEFUN CLOS-BROWSER::REPLACE-SPECIALIZERS (CLOS-BROWSER::METHOD-DEFINITION
      CLOS-BROWSER::FROM-CLASS-NAME
      CLOS-BROWSER::TO-CLASS-NAME &KEY
      CLOS-BROWSER::IN-LAMDA-LIST-ONLY-FLAG)
  (NSUBST CLOS-BROWSER::TO-CLASS-NAME CLOS-BROWSER::FROM-CLASS-NAME (IF CLOS-BROWSER::IN-LAMDA-LIST-ONLY-FLAG
    ;; get the lamba list
    (THIRD (MULTIPLE-VALUE-LIST
            (CLOS::PARSE-DEFMETHOD
             (CDR
              CLOS-BROWSER::METHOD-DEFINITION
              )))
    ; note this gets argument names as well as specializers. Usually
    ; not what you want. Needs to be made smarter to just get
    ; specializers.
    ;; otherwise do the whole method
    CLOS-BROWSER::METHOD-DEFINITION)))
```

```
;;
;;; SETUP RELEASE INFO
```

```
(IL:RPAQ CLOS-BROWSER::RELEASE-ID "0.02")
(IL:RPAQ CLOS-BROWSER::SYSTEM-DATE (CAAR (IL:GETPROP 'IL:CLOS-BROWSER 'IL:FILEDATES)))
```

```
;;
;;
;; SETUP BACKGROUND MENU
```

```
(DEFUN CLOS-BROWSER::IN-SELECT-PACKAGE ()
  "pops up a menu of packages"
  ; Edited 18-Mar-87 13:13 by sml
  ;
  ;; kirk: 16Mar88 modified for clos-browser
  (LET ((PACKAGE (IL:MENU (IL:create| IL:MENU
    IL:TITLE IL:_ "Select package"
    IL:ITEMS IL:_
    (IL:SORT (IL:for| PACKAGE IL:in| (LIST-ALL-PACKAGES) IL:bind| IL:PACKAGE-NAME
      IL:collect| (IL:SETQ IL:PACKAGE-NAME (PACKAGE-NAME PACKAGE))
      \',(IL:CONCAT (OR (CAR (PACKAGE-NICKNAMES PACKAGE))
        IL:PACKAGE-NAME)
        ":")
      ',IL:PACKAGE-NAME
      ,(IL:CONCAT "Set the current package to " IL:PACKAGE-NAME
        ":"))
      (IL:FUNCTION (IL:LAMBDA (IL:X IL:Y)
        (IL:ALPHORDER (CAR IL:X)
          (CAR IL:Y))))
      IL:CENTERFLG IL:_ T))))
    (IL:if| PACKAGE
      IL:then| (IN-PACKAGE PACKAGE))))
```

```
(DEFUN CLOS-BROWSER::CLASSES-IN-PACKAGE (PACKAGE &OPTIONAL CLOS-BROWSER::MAP-ON-PACKAGE)
  "Retrieves a list of all the classes for a given package. When map-on-package is t this can be very slow."
  ;; The maphash is always fast, whereas for some strange reason map-on-package varies among packages greatly.
```

```
(LET ((CLOS-BROWSER::CLASSES))
  (UNLESS (TYPEP PACKAGE 'PACKAGE)
    (SETQ PACKAGE (FIND-PACKAGE PACKAGE)))
  (IF CLOS-BROWSER::MAP-ON-PACKAGE
    (DO-SYMBOLS (CLOS-BROWSER::SYM PACKAGE)
      (IF (AND (EQ (SYMBOL-PACKAGE CLOS-BROWSER::SYM)
        PACKAGE)
        (CLOS::SYMBOL-CLASS CLOS-BROWSER::SYM T))
        (PUSH CLOS-BROWSER::SYM CLOS-BROWSER::CLASSES)))
    (MAPHASH #'(LAMBDA (CLOS-BROWSER::KEY CLOS-BROWSER::VAL)
      (IF (EQ (SYMBOL-PACKAGE CLOS-BROWSER::KEY)
        PACKAGE)
        (PUSH CLOS-BROWSER::KEY CLOS-BROWSER::CLASSES)))
      CLOS::*FIND-CLASS*))
  CLOS-BROWSER::CLASSES)
```

```
;; pushnew should eliminate this
```

```
(SETQ IL:|BackgroundMenuCommands| (REMOVE 'IL:|BrowseClass| IL:|BackgroundMenuCommands| :KEY #'CAR))
(PUSH ' (IL:|BrowseClass| (CLOS-BROWSER:BROWSE-CLASS)
```



```
"Bring up a class browser."  
(IL:SUBITEMS (IL:|all in a package| (CLOS-BROWSER:BROWSE-CLASS (  
                                                                    CLOS-BROWSER::CLASSES-IN-PACKAGE  
                                                                    (  
                                                                    CLOS-BROWSER::IN-SELECT-PACKAGE  
                                                                    )))  
  "Select a package and browse all the classes defined in that package.)))  
  IL:|BackgroundMenuCommands|)  
(SETQ IL:|BackgroundMenu| NIL)  
(IL:PUTPROPS IL:NEW-CLOS-BROWSER IL:COPYRIGHT ("Venue" 1991))
```

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