

```

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

previous date:    19-Nov-91 14:14:15  {DSK}<usr>local>users>welch>lisp>clos>browser>NEW-CLOS-BROWSER.;21

Read Table:      XCL

Package:         USER

Format:          XCCS

```

```
; Copyright (c) 1991 by Venue. All rights reserved.
```

```
(IL:RPAQQ IL:NEW-CLOS-BROWSERCOMS
 (
```

```
... *****
;;;
```

```
...
;;;
```

```
;;; 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
```

```
;;
;;
;;
;;
```

```
;;; 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)

```

;;

;; 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)))

```

;;

;; 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)

```

;;

;;; SETUP RELEASE INFO

```

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

```

;;

;;

;; 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)))

```

... *****

...

...

...

```
;; 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)
```

```
(DEFUN CLOS-BROWSER::COLLECT-FAMILY (CLOS-BROWSER::FAMILY CLOS-BROWSER::CLASS-LIST)
  "gather all of the sub-classes of the class passed as family"
  ;; for efficiency, to avoid gathering and filtering subclasses more than once, we assume family only contains classes whose family has already been gathered.
  (IF CLOS-BROWSER::CLASS-LIST
    (LET ((CLOS-BROWSER::FIRST-CLASS (CAR CLOS-BROWSER::CLASS-LIST))
          (REST (CDR CLOS-BROWSER::CLASS-LIST)))
      (IF (MEMBER CLOS-BROWSER::FIRST-CLASS CLOS-BROWSER::FAMILY)
        (PROGN ;; skip gathering class-direct-subclasses
              (CLOS-BROWSER::COLLECT-FAMILY CLOS-BROWSER::FAMILY REST))
        (PROGN (PUSH CLOS-BROWSER::FIRST-CLASS CLOS-BROWSER::FAMILY)
              (CLOS-BROWSER::COLLECT-FAMILY CLOS-BROWSER::FAMILY (APPEND REST (CLOS::CLASS-DIRECT-SUBCLASSES CLOS-BROWSER::FIRST-CLASS))))))
    CLOS-BROWSER::FAMILY))

(DEFUN CLOS-BROWSER::MAKE-NODES (CLOS-BROWSER::CLASS-LIST)
  (LET* ((CLOS-BROWSER::NODE-HASH (MAKE-HASH-TABLE))
         (CLOS-BROWSER::NODE-LIST (MAP 'LIST #'(LAMBDA (CLOS-BROWSER::CLASS &AUX (CLOS-BROWSER::NODE (MAKE-INSTANCE CLOS-BROWSER::CLOS-BROWSER-NODE)))
                                       (SETF (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS) CLOS-BROWSER::CLASS)
                                       (SETF (WEB:NODE-NAME CLOS-BROWSER::NODE) (CLASS-NAME CLOS-BROWSER::CLASS))
                                       (SETF (GETHASH CLOS-BROWSER::CLASS CLOS-BROWSER::NODE-HASH) CLOS-BROWSER::NODE)
                                       CLOS-BROWSER::NODE)
                                       CLOS-BROWSER::CLASS-LIST)))
    (DOLIST (CLOS-BROWSER::NODE CLOS-BROWSER::NODE-LIST)
      (SETF (WEB:NODE-LINKS CLOS-BROWSER::NODE)
            (MAP 'LIST #'(LAMBDA (CLOS-BROWSER::SUB)
                              (GETHASH CLOS-BROWSER::SUB CLOS-BROWSER::NODE-HASH)
                              (CLOS::CLASS-DIRECT-SUBCLASSES (SLOT-VALUE CLOS-BROWSER::NODE 'CLOS-BROWSER::CLASS))))))
      CLOS-BROWSER::NODE-LIST))

(DEFUN CLOS-BROWSER::CLOS-BROWSER-CLOSE-FN (CLOS-BROWSER::WINDOW)
  (LET ((CLOS-BROWSER::BROWSER (IL:WINDOWPROP CLOS-BROWSER::WINDOW 'WEB:WEB-EDITOR)))
    (SETF (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::CLASS-BROWSERS)
          (REMOVE CLOS-BROWSER::BROWSER (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::CLASS-BROWSERS)))
    (WHEN (EQ CLOS-BROWSER::BROWSER (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::DESTINATION-BROWSER))
      (SETF (SLOT-VALUE CLOS-BROWSER:CLOS-ICON 'CLOS-BROWSER::DESTINATION-BROWSER)
            NIL)))

(DEFUN CLOS-BROWSER::BROWSER-CONTAINS-P (CLOS-BROWSER::CLASS CLOS-BROWSER::BROWSER)
  "created because too slow to call contains-p method inside a tight loop"
  (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)))

(DEFCLASS CLOS-BROWSER:CLOS-BROWSER (WEB:WEB-EDITOR)
  ((CLOS-BROWSER::ROOT-CLASSES)
   (WEB:TITLE-ITEMS :ALLOCATION :INSTANCE
                    ;; Items for menu of selections in title of window
                    :INITFORM
                    '(("Recompute" WEB:RECOMPUTE "Recompute lattice from starting objects" (IL:SUBITEMS ("Recompute" WEB:RECOMPUTE "Recompute lattice from starting objects") ("Recompute labels" WEB:RECOMPUTE-LABELS "Recomputes the labels") ("Recompute in place" WEB:RECOMPUTE-IN-PLACE))
```

```

                                "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)

```

[illegible]

```

(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
) ; The class represented by this node
(CLOS-BROWSER::MENU-CACHE :INITFORM NIL) ; Menus of methods and slots. See clos-icon for the switch that
; controls when this gets updated.
(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."))

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("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::INHERITED-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)))

(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::INHERITED-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

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                                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-BROWSER::THIS-ITEM)
                                                         (CLOS::METHOD-GENERIC-FUNCTION (SECOND
                                                                 CLOS-BROWSER::PREVIOUS-ITEM)
                                                                 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)
                            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)

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(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

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    (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")
    IL:MENUFONT IL:_ (WHEN (> (LENGTH CLOS-BROWSER::ITEMS)
      (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
                '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

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    ((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)

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(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::SPECIALIFIER (SLOT-VALUE CLOS::GF-METHOD 'CLOS::SPECIALIZERS))
                  (UNLESS (OR (EQ CLOS::T-CLASS CLOS::SPECIALIFIER)
                              (NOT (MEMBER CLOS::SPECIALIFIER CLOS::CLASS-PRECEDENCE-LIST
                                             :TEST #'EQ)))
                    (PUSHNEW CLOS::GF-METHOD CLOS::INHERITED-METHODS)
                    (RETURN))))))
                (PUSH CLOS::GF CLOS::MY-GFS))))
          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
                                                                    CLOS-BROWSER::FROM-CLASS)
  (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 lambda 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
                                                                    )))
  IL:|BackgroundMenuCommands|) "Select a package and browse all the classes defined in that package."))
(SETQ IL:|BackgroundMenu| NIL)
(IL:PUTPROPS IL:NEW-CLOS-BROWSER IL:COPYRIGHT ("Venue" 1991))
```

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