

File created: 5-Dec-2020 16:26:01 {DSK}<Users>arunwelch>SKYDRIVE>DOCUMENTS>UNIX>LISP>LDE>ROOM
S>MEDLEY-35>ROOMS-CORE.;2

previous date: 17-Aug-90 12:39:01 {DSK}<Users>arunwelch>SKYDRIVE>DOCUMENTS>UNIX>LISP>LDE>ROOMS>MEDLEY-35>ROOMS-CORE.;1

Read Table: XCL

Package: ROOMS

Format: XCCS

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(IL:RPAQQ **IL:ROOMS-CORECOMS**

(
;; core rooms code

(FILE-ENVIRONMENTS IL:ROOMS-CORE)
(IL:P (EXPORT ' (ROOM ROOM-P ROOM-NAME ROOM-PLACEMENTS ROOM-INCLUSIONS ROOM-BACKGROUND
ROOM-TTY-PROCESS ROOM-PROPS ROOM-PROP MAKE-ROOM COPY-ROOM DELETE-ROOM
RENAME-ROOM ROOM-NAMED ROOM-SORT-FUNCTION))
(EXPORT ' (*CURRENT-ROOM* *POCKET-ROOM-NAME* *ROOM-ENTRY-FUNCTIONS* *ROOM-EXIT-FUNCTIONS*
ROOM-CHANGED-FUNCTIONS))
(EXPORT ' (PLACEMENT PLACEMENT-P PLACEMENT-WINDOW PLACEMENT-REGION PLACEMENT-SHRUNKEN?
PLACEMENT-ICON-POSITION PLACEMENT-PROPS PLACEMENT-PROP MAKE-PLACEMENT
COPY-PLACEMENT MOVE-PLACEMENT))
(EXPORT ' (GO-TO-ROOM UPDATE-PLACEMENTS FIND-PLACEMENT ROOM-CHANGED DO-INCLUSIONS RESET))
(REQUIRE "ROOMS"))

(IL:COMS

;; the room -- a named object

(IL:STRUCTURES ROOM)
(IL:VARIABLES *ROOMS* *CURRENT-ROOM*)
(IL:FUNCTIONS IN-ROOM? MAKE-ROOM COPY-ROOM RENAME-ROOM ROOM-PROP DO-ROOMS ALL-ROOMS
ROOM-SORT-FUNCTION ROOM-NAMED DELETE-ROOM))

(IL:COMS

;; placements

(IL:STRUCTURES PLACEMENT)
(IL:FUNCTIONS PLACEMENT-PROP MAKE-PLACEMENT COPY-PLACEMENT MOVE-PLACEMENT ADD-PLACEMENT
DELETE-PLACEMENT))

;; going from one room to another

(IL:VARIABLES *POCKET-ROOM-NAME* *MONITOR-LOCK* *ROOM-ENTRY-FUNCTIONS* *ROOM-EXIT-FUNCTIONS*)
(IL:FUNCTIONS GO-TO-ROOM GO-TO-ROOM-PROCESS GO-TO-ROOM-INTERNAL CALL-ENTRY-FUNCTIONS
CALL-EXIT-FUNCTIONS UPDATE-PLACEMENTS FIND-PLACEMENT FIND-PLACEMENT-IN-ROOM UPDATE-PLACEMENT
PLACE-PLACEMENTS FIND-PLACEMENTS PLACE-PLACEMENT)
(IL:FUNCTIONS UPDATE-TTY-PROCESS PLACE-TTY-PROCESS)

;; other essentials

(IL:FUNCTIONS FIND-ROOMS-CONTAINING)
(IL:COMS (IL:VARIABLES *ROOM-CHANGED-FUNCTIONS*)
(IL:FUNCTIONS ROOM-CHANGED))
(IL:FUNCTIONS DO-INCLUSIONS ROOM-INCLUDERS)

;; bootstrapping & resetting

(IL:VARIABLES *RESET-FORMS*)
(IL:FUNCTIONS RESET)
(IL:VARIABLES OLD-WHOLESCREEN *SCREEN-CHANGED-FUNCTIONS*)
(IL:FUNCTIONS AROUNDEXITFN %INTERNALIZE-ALL-PLACEMENTS %INTERNALIZE-PLACEMENTS)
(IL:GLOBALVARS IL:PROMPTWINDOW IL:AROUNDEXITFNS)
(EVAL-WHEN (LOAD)
(IL:P

; smash system code which moves windows around on reboot so
; we don't fight with it.

(PUSHNEW ' (IL:CHANGENAME ' IL:\\STARTDISPLAY ' IL:\\MOVE.WINDOWS.ONTO.SCREEN ' IL:NILL)
RESET-FORMS :TEST 'EQUAL))

;; random

(IL:PROP IL:ARGNAMES GO-TO-ROOM)
(IL:SEDI-FORMATS DO-INCLUSIONS DO-ROOMS))

;; core rooms code

(DEFINE-FILE-ENVIRONMENT **IL:ROOMS-CORE** :COMPILER :COMPILE-FILE
:PACKAGE "ROOMS"
:READTABLE "XCL")

(EXPORT ' (ROOM ROOM-P ROOM-NAME ROOM-PLACEMENTS ROOM-INCLUSIONS ROOM-BACKGROUND ROOM-TTY-PROCESS ROOM-PROPS
ROOM-PROP MAKE-ROOM COPY-ROOM DELETE-ROOM RENAME-ROOM ROOM-NAMED ROOM-SORT-FUNCTION))

(EXPORT ' (*CURRENT-ROOM* *POCKET-ROOM-NAME* *ROOM-ENTRY-FUNCTIONS* *ROOM-EXIT-FUNCTIONS*
ROOM-CHANGED-FUNCTIONS))

(EXPORT ' (PLACEMENT PLACEMENT-P PLACEMENT-WINDOW PLACEMENT-REGION PLACEMENT-SHRUNKEN? PLACEMENT-ICON-POSITION
PLACEMENT-PROPS PLACEMENT-PROP MAKE-PLACEMENT COPY-PLACEMENT MOVE-PLACEMENT))

```
{MEDLEY}<rooms>ROOMS-CORE.;1
```

```
(EXPORT ' (GO-TO-ROOM UPDATE-PLACEMENTS FIND-PLACEMENT ROOM-CHANGED DO-INCLUSIONS RESET))
```

```
(REQUIRE "ROOMS")
```

```
;; the room -- a named object
```

```
(DEFSTRUCT (ROOM (:CONSTRUCTOR MAKE-ROOM-INTERNAL)
                 (:COPIER COPY-ROOM-INTERNAL)
                 (:PRINT-FUNCTION (LAMBDA (ROOM STREAM DEPTH)
                                   (FORMAT STREAM "#<Room ~S>" (ROOM-NAME ROOM))))))
  (NAME NIL :READ-ONLY T)
  (PLACEMENTS NIL :TYPE LIST)
  ;; list of PLACEMENT objects
  (INCLUSIONS NIL :TYPE LIST)
  ;; list of names of included rooms
  (BACKGROUND NIL :TYPE BACKGROUND)
  ;; how to paint the background
  (TTY-PROCESS NIL)
  ;; which process has the TTY in this room
  (PROPS NIL :TYPE LIST)
  ;; property list
)
```

```
(DEFVAR *ROOMS* (MAKE-HASH-TABLE :TEST 'EQUAL)
           "A hash table mapping from room names to rooms.")
```

```
(DEFGLOBALVAR *CURRENT-ROOM* NIL
              "The room the user is currently in.")
```

```
(DEFUN IN-ROOM? (ROOM)
```

```
;;; true if ROOM is a sub-room of the current room
```

```
  (DO-INCLUSIONS (INCLUDED-ROOM *CURRENT-ROOM*)
                    (WHEN (EQUAL (ROOM-NAME ROOM)
                                  (ROOM-NAME INCLUDED-ROOM))
                          (RETURN-FROM DO-INCLUSIONS T))))
```

```
(DEFUN MAKE-ROOM (NAME &REST REST-KEYS &KEY PLACEMENTS INCLUSIONS (BACKGROUND NIL BACKGROUND-SPECIFIED?)
                    TTY-PROCESS &ALLOW-OTHER-KEYS)
```

```
;; check whether a room with this already exists
```

```
(WHEN (ROOM-NAMED NAME)
      (CERROR "Delete existing room named ~S (will close windows)" "A room named ~S already exists" NAME)
      (DELETE-ROOM (ROOM-NAMED NAME))))
```

```
;; check the types of the placements
```

```
(DOLIST (PLACEMENT PLACEMENTS)
        (CHECK-TYPE PLACEMENT PLACEMENT))
```

```
;; default the background to contain the name of the room
```

```
(UNLESS BACKGROUND-SPECIFIED?
  (SETQ BACKGROUND `(:TEXT ,NAME)))
(LET ((ROOM (MAKE-ROOM-INTERNAL :NAME NAME :PLACEMENTS PLACEMENTS :INCLUSIONS INCLUSIONS :BACKGROUND
                               (MAKE-BACKGROUND BACKGROUND)
                               :TTY-PROCESS TTY-PROCESS :PROPS (LET ((PROPS (COPY-LIST REST-KEYS))
                                                                    (DOLIST (KEYWORD '(:PLACEMENTS :INCLUSIONS
                                                                    :BACKGROUND :TTY-PROCESS))
                                                                    (REMF PROPS KEYWORD))
                                                                    PROPS))))
```

```
      (SETF (ROOM-NAMED NAME)
            ROOM)
```

```
      (WHEN *CURRENT-ROOM*
        (WHEN (EQUAL NAME (ROOM-NAME *CURRENT-ROOM*))
              (SETQ *CURRENT-ROOM* ROOM))
        (ROOM-CHANGED ROOM :CREATED))
      ROOM))
```

```
(DEFUN COPY-ROOM (ROOM NEW-NAME)
```

```
  (UPDATE-PLACEMENTS
   (APPLY 'MAKE-ROOM NEW-NAME :PLACEMENTS (MAPCAR #'COPY-PLACEMENT (ROOM-PLACEMENTS ROOM))
          :INCLUSIONS
          (COPY-LIST (ROOM-INCLUSIONS ROOM))
          :BACKGROUND
          (LET* ((BACKGROUND (COPY-TREE (BACKGROUND-EXTERNAL-FORM (ROOM-BACKGROUND ROOM))))
```

```

(OLD-NAME (ROOM-NAME ROOM))
(TEXT (FIND-IF #'(LAMBDA (COMMAND)
                (AND (EQ (FIRST COMMAND)
                        :TEXT)
                    (EQUAL (SECOND COMMAND)
                          OLD-NAME))))
      BACKGROUND)))
(WHEN TEXT
  (SETF (SECOND TEXT)
        NEW-NAME))
BACKGROUND)
(COPY-TREE (ROOM-PROPS ROOM)))

```

```

(DEFUN RENAME-ROOM (ROOM NEW-NAME)
  (LET ((OLD-NAME (ROOM-NAME ROOM)))
    (PROG1 (COPY-ROOM ROOM NEW-NAME)
      (DELETE-ROOM ROOM)
      (LET ((SUITE-NAME (FIND-SUITE-CONTAINING OLD-NAME)))
        ;; if its in a suite, rename it there too
        (WHEN SUITE-NAME
          (SETF (SUITE-ROOMS SUITE-NAME)
                (SUBSTITUTE NEW-NAME OLD-NAME (SUITE-ROOMS SUITE-NAME)
                          :TEST
                          'EQUAL))))
        (DO-ROOMS (ROOM)
          ;; rename it in inclusions of other rooms
          (WHEN (MEMBER OLD-NAME (ROOM-INCLUSIONS ROOM)
                        :TEST
                        'EQUAL)
            ;; don't need to call UPDATE-PLACEMENTS as COPY-ROOM has already called it for us.
            (SETF (ROOM-INCLUSIONS ROOM)
                  (SUBSTITUTE NEW-NAME OLD-NAME (ROOM-INCLUSIONS ROOM)
                            :TEST
                            'EQUAL))
            (ROOM-CHANGED ROOM :EDITED))))))

```

```

(DEFMACRO ROOM-PROP (ROOM PROP &OPTIONAL (NEW-VALUE NIL NEW-VALUE-SUPPLIED))
  (IF NEW-VALUE-SUPPLIED
    `(SETF (GETF (ROOM-PROPS ,ROOM)
                ,PROP)
           ,NEW-VALUE)
    `(GETF (ROOM-PROPS ,ROOM)
           ,PROP)))

```

```

(DEFMACRO DO-ROOMS ((ROOM-VAR)
  &BODY BODY)

```

;;; evaluate BODY once for each room with ROOM-VAR bound to the room.

```

` (BLOCK DO-ROOMS
  (MAPHASH #'(LAMBDA (, (GENSYM)
                    , ROOM-VAR)
            , @BODY)
    *ROOMS*))

```

```

(DEFUN ALL-ROOMS (&OPTIONAL SORTED?)

```

;;; return a list of all rooms. if SORTED? is true, sort them alphabetically by name

```

(LET ((ALL-ROOMS (WITH-COLLECTION (DO-ROOMS (ROOM)
                                         (COLLECT ROOM))))
  (IF SORTED?
    (SORT ALL-ROOMS #'ROOM-SORT-FUNCTION)
    ALL-ROOMS)))

```

```

(DEFUN ROOM-SORT-FUNCTION (ROOM-1 ROOM-2)

```

;;; used as the predicate for sorting lists of rooms. we sort alphabetically by the name of the room.

```

(MACROLET ((STRINGIFY (NAME)
  `(IF (STRINGP ,NAME)
      ,NAME
      (PRINC-TO-STRING ,NAME))))
  (LET ((NAME-1 (ROOM-NAME ROOM-1))
        (NAME-2 (ROOM-NAME ROOM-2)))
    (STRING-LESSP (STRINGIFY NAME-1)
                  (STRINGIFY NAME-2)))))

```

```

{MEDLEY}<rooms>ROOMS-CORE.;1

(DEFMACRO ROOM-NAMED (NAME)
  `(GETHASH ,NAME *ROOMS*))

(DEFUN DELETE-ROOM (ROOM)
  ;; first close all the windows which only have placements in this room
  (LET ((ONLY-THIS-ROOM (LIST ROOM)))
    (DOLIST (WINDOW (ALL-WINDOWS T))
      (WHEN (EQUAL (FIND-ROOMS-CONTAINING WINDOW)
                   ONLY-THIS-ROOM)
        (UN-HIDE-WINDOW WINDOW)
        (CLOSE-WINDOW (IF (SHRUNKEN? WINDOW)
                          (WINDOW-ICON WINDOW)
                          WINDOW))))))
    (WHEN (DO-ROOMS (RM)
              (WHEN (EQ ROOM RM)
                (RETURN-FROM DO-ROOMS T)))
      ;; if it's in the name table, remove it. this is so deleting an un-named room (like the Overview) doesn't cause a room named "Overview" to also
      ;; disappear.
      (REMHASH (ROOM-NAME ROOM)
                *ROOMS*))
      ;; tell the world we've deleted it
      (ROOM-CHANGED ROOM :DELETED))

;; placements

(DEFSTRUCT (PLACEMENT (:CONSTRUCTOR MAKE-PLACEMENT-INTERNAL)
                      (:COPIER COPY-PLACEMENT-INTERNAL))
  WINDOW
  REGION
  SHRUNKEN?
  ICON-POSITION
  PROPS)

(DEFMACRO PLACEMENT-PROP (PLACEMENT PROP &OPTIONAL (NEW-VALUE NIL NEW-VALUE-SUPPLIED))
  (IF NEW-VALUE-SUPPLIED
    `(SETF (GETF (PLACEMENT-PROPS ,PLACEMENT)
                 ,PROP)
           ,NEW-VALUE)
    `(GETF (PLACEMENT-PROPS ,PLACEMENT)
           ,PROP)))

(DEFUN MAKE-PLACEMENT (WINDOW)
  (LET ((PLACEMENT (MAKE-PLACEMENT-INTERNAL :WINDOW WINDOW)))
    (UPDATE-PLACEMENT PLACEMENT)
    PLACEMENT))

(DEFUN COPY-PLACEMENT (PLACEMENT)
  ;; make sure PROPS gets copied. it is not important that REGION & ICON-POSITION are copied, but seems safer.
  (MAKE-PLACEMENT-INTERNAL :WINDOW (PLACEMENT-WINDOW PLACEMENT)
    :REGION
    (COPY-REGION (PLACEMENT-REGION PLACEMENT))
    :SHRUNKEN?
    (PLACEMENT-SHRUNKEN? PLACEMENT)
    :ICON-POSITION
    (COPY-TREE (PLACEMENT-ICON-POSITION PLACEMENT))
    :PROPS
    (COPY-TREE (PLACEMENT-PROPS PLACEMENT))))

(DEFUN MOVE-PLACEMENT (PLACEMENT FROM-ROOM TO-ROOM &OPTIONAL COPY?)
  (ADD-PLACEMENT (COPY-PLACEMENT PLACEMENT)
    TO-ROOM)
  (UNLESS COPY?
    (DELETE-PLACEMENT PLACEMENT FROM-ROOM)
    (LET* ((WINDOW (PLACEMENT-WINDOW PLACEMENT))
           (INHERITED (FIND-PLACEMENT WINDOW)))
      (HIDE-WINDOW WINDOW)
      (WHEN INHERITED (PLACE-PLACEMENT INHERITED))))))

(DEFUN ADD-PLACEMENT (PLACEMENT ROOM)
  ;;; add PLACEMENT to ROOM's placements. does not update screen.
  ;; first delete any old placements for same window
  (SETF (ROOM-PLACEMENTS ROOM)
        (DELETE (PLACEMENT-WINDOW PLACEMENT)
                (ROOM-PLACEMENTS ROOM)))

```

```

      :TEST
      'EQ :KEY #'PLACEMENT-WINDOW))
;; add it
(PUSH PLACEMENT (ROOM-PLACEMENTS ROOM))
;; notify system that ROOM has changed.
(ROOM-CHANGED ROOM :PLACEMENTS))

```

```

(DEFUN DELETE-PLACEMENT (PLACEMENT ROOM)
  ;; delete PLACEMENT from ROOM. does not remove placement from screen.
  (SETF (ROOM-PLACEMENTS ROOM)
    (DELETE (PLACEMENT-WINDOW PLACEMENT)
      (ROOM-PLACEMENTS ROOM)
      :TEST
      'EQ :KEY #'PLACEMENT-WINDOW))
  ;; notify system that ROOM has changed.
  (ROOM-CHANGED ROOM :PLACEMENTS))

```

;; going from one room to another

```

(DEFGLOBALVAR *POCKET-ROOM-NAME* NIL
  "The name of the room to be the pockets or NIL.")

```

```

(DEFGLOBALVAR *MONITOR-LOCK*)

```

```

(DEFVAR *ROOM-ENTRY-FUNCTIONS* NIL
  "A list of functions to be called before a room is entered")

```

```

(DEFVAR *ROOM-EXIT-FUNCTIONS* NIL
  "A list of functions to be called before a room is left")

```

```

(DEFUN GO-TO-ROOM (&REST ARGS)

```

;;; skip to GO-TO-ROOM-INTERNAL for details...

;; can't run under mouse, as mouse switches TTY around. have to spawn our own process, let the mouse return the TTY, then we'll be run.

```

(CHECK-TYPE (FIRST ARGS)
  ROOM)
(IL:RESETVAR IL:\\PROC.RUN.NEXT.FLG T
  ;; ensure that we'll be the next process run when the mouse blocks.
  (IL:ADD.PROCESS `(GO-TO-ROOM-PROCESS ',ARGS)
    'IL:NAME "Go To Room"))

```

```

(DEFUN GO-TO-ROOM-PROCESS (ARGS)
  (LET ((OLD-CURSOR (IL:CURSOR)))
    (UNWIND-PROTECT
      (IF (IL:OBTAIN.MONITORLOCK *MONITOR-LOCK* T)
        (PROGN (IL:CURSOR IL:WAITINGCURSOR)
          (IL:\\CARET.DOWN NIL IL:MAX.FIXP)
          (APPLY 'GO-TO-ROOM-INTERNAL ARGS))
        (NOTIFY-USER "Can't! Rooms is busy."))
      (IL:RELEASE.MONITORLOCK *MONITOR-LOCK*)
      (IL:CURSOR OLD-CURSOR)
      (IL:CARET T))))

```

```

(DEFUN GO-TO-ROOM-INTERNAL (ROOM &KEY NO-UPDATE BAGGAGE)
  (CHECK-TYPE ROOM ROOM)

```

;;; Leave the current room & enter ROOM. BAGGAGE is a list of additional placements to be placed in ROOM.

```

;; call exit hooks on current room
(CALL-EXIT-FUNCTIONS *CURRENT-ROOM*)
(UNLESS NO-UPDATE
  ;; update the current room per the screen
  (UPDATE-PLACEMENTS *CURRENT-ROOM*))
;; note which process has the keyboard
(UPDATE-TTY-PROCESS *CURRENT-ROOM*)
;; clear the screen
(HIDE-ALL-WINDOWS)
(UNWIND-PROTECT
  (PROGN ;; paint the background

```

```

(PAINT-BACKGROUND ROOM *SCREEN-BITMAP*)
;; call entry hooks
(CALL-ENTRY-FUNCTIONS ROOM)
;; set *CURRENT-ROOM*.
(SETQ *CURRENT-ROOM* ROOM)
;; place placements from ROOM -- inherited & direct
(PLACE-PLACEMENTS ROOM BAGGAGE)
;; place the caret
(PLACE-TTY-PROCESS ROOM)

```

```

(DEFUN CALL-ENTRY-FUNCTIONS (ROOM)
  ;; first call global entry functions
  (DOLIST (FN *ROOM-ENTRY-FUNCTIONS*)
    (FUNCALL FN ROOM))
  ;; then call inherited entry functions
  (DO-INCLUSIONS (SUB-ROOM ROOM)
    (DOLIST (FN (ROOM-PROP SUB-ROOM :BEFORE-ENTRY-FUNCTIONS))
      (FUNCALL FN ROOM))))

```

```

(DEFUN CALL-EXIT-FUNCTIONS (ROOM)
  ;; first call global room exit functions
  (DOLIST (FN *ROOM-EXIT-FUNCTIONS*)
    (FUNCALL FN ROOM))
  ;; then call inherited functions on ROOM
  (DO-INCLUSIONS (SUB-ROOM ROOM)
    (DOLIST (FN (ROOM-PROP SUB-ROOM :BEFORE-EXIT-FUNCTIONS))
      (FUNCALL FN ROOM))))

```

```

(DEFUN UPDATE-PLACEMENTS (&OPTIONAL (FOR-ROOM *CURRENT-ROOM*))

```

;;; called when leaving a room to update it's placements

;;; returns the new list of placements

```

(LET ((NEW-PLACEMENTS NIL)
      (CHANGED-ROOMS NIL)
      (OLD-PLACEMENTS (ROOM-PLACEMENTS FOR-ROOM))
      (ALL-WINDOWS (ALL-WINDOWS)))
  (DOLIST (WINDOW ALL-WINDOWS)
    (MULTIPLE-VALUE-BIND (PLACEMENT IN-ROOM)
      (FIND-PLACEMENT WINDOW FOR-ROOM)
      (UNLESS PLACEMENT
        ;; new window in this room - make a placement
        (SETQ PLACEMENT (MAKE-PLACEMENT WINDOW))
        (SETQ IN-ROOM FOR-ROOM)
        ;; note change to this room
        (PUSHNEW FOR-ROOM CHANGED-ROOMS :TEST 'EQ))
        ;; collect placements in this room in top to bottom order.
        (WHEN (EQ IN-ROOM FOR-ROOM)
          (PUSH PLACEMENT NEW-PLACEMENTS))
        ;; update the placement
        (WHEN (UPDATE-PLACEMENT PLACEMENT)
          ;; placement has changed - note it
          (PUSHNEW IN-ROOM CHANGED-ROOMS :TEST 'EQ))))
  (DOLIST (PLACEMENT (FIND-PLACEMENTS FOR-ROOM))
    (UNLESS (MEMBER (PLACEMENT-WINDOW PLACEMENT)
      ALL-WINDOWS :TEST 'EQ)
      ;; it's a window that's been closed
      (DO-INCLUSIONS (ROOM FOR-ROOM)
        (WHEN (MEMBER PLACEMENT (ROOM-PLACEMENTS ROOM))
          :TEST
          'EQ)
        ;; delete its placement
        (UNLESS (EQ ROOM FOR-ROOM)
          ;; unless we'll delete it below anyway
          (DELETE-PLACEMENT PLACEMENT ROOM))
        ;; note that this room has changed

```

```

(PUSHNEW ROOM CHANGED-ROOMS :TEST 'EQ)
(RETURN-FROM DO-INCLUSIONS)))
(UNLESS (EQUAL NEW-PLACEMENTS OLD-PLACEMENTS)
;; check if occlusion order of placements has changed
(PUSHNEW FOR-ROOM CHANGED-ROOMS :TEST 'EQ))
(SETF (ROOM-PLACEMENTS FOR-ROOM)
NEW-PLACEMENTS)
(DOLIST (ROOM CHANGED-ROOMS)
(ROOM-CHANGED ROOM :PLACEMENTS))
T))

```

```
(DEFUN FIND-PLACEMENT (WINDOW &OPTIONAL (FROM-ROOM *CURRENT-ROOM*))
```

;;; returns the placement which caused WINDOW to be in ROOM.

;;; does a breadth-first search through ROOM & its inclusions for a placement containing WINDOW. second value is room placement was found in.

```

( DO-INCLUSIONS (ROOM FROM-ROOM)
(LET ((PLACEMENT (FIND-PLACEMENT-IN-ROOM WINDOW ROOM))
(WHEN PLACEMENT
(RETURN-FROM FIND-PLACEMENT (VALUES PLACEMENT ROOM))))))

```

```
(DEFMACRO FIND-PLACEMENT-IN-ROOM (WINDOW ROOM)
` (LET ((WINDOW ,WINDOW)
(DOLIST (PLACEMENT (ROOM-PLACEMENTS ,ROOM))
(WHEN (EQ (PLACEMENT-WINDOW PLACEMENT)
WINDOW)
(RETURN PLACEMENT))))))

```

```
(DEFUN UPDATE-PLACEMENT (PLACEMENT)
```

;;; called when leaving a room on each placement in the room. returns true if placement has changed since the last time it was updated.

```

(LET* ((WINDOW (PLACEMENT-WINDOW PLACEMENT))
(ICON-POSITION (ICON-POSITION WINDOW))
(REGION (WINDOW-REGION WINDOW))
(SHRUNKEN? (SHRUNKEN? WINDOW))
(CHANGED? NIL))
(UNLESS (EQUAL ICON-POSITION (PLACEMENT-ICON-POSITION PLACEMENT))
(SETF (PLACEMENT-ICON-POSITION PLACEMENT)
(COPY-TREE ICON-POSITION))
(SETQ CHANGED? T))
(UNLESS (EQUAL REGION (PLACEMENT-REGION PLACEMENT))
(SETF (PLACEMENT-REGION PLACEMENT)
(COPY-REGION REGION))
(SETQ CHANGED? T))
(UNLESS (EQ SHRUNKEN? (PLACEMENT-SHRUNKEN? PLACEMENT))
(SETF (PLACEMENT-SHRUNKEN? PLACEMENT)
SHRUNKEN?)
(SETQ CHANGED? T))

```

;; call the user hook

```

(LET ((WINDOW-TYPE (WINDOW-TYPE WINDOW T))
(WHEN WINDOW-TYPE
(LET ((UPDATER (WINDOW-TYPE-UPDATER WINDOW-TYPE))
(WHEN UPDATER
(FUNCALL (WINDOW-TYPE-UPDATER WINDOW-TYPE)
PLACEMENT))))))
CHANGED?))

```

```
(DEFUN PLACE-PLACEMENTS (ROOM &OPTIONAL BAGGAGE)
(DOLIST (PLACEMENT (FIND-PLACEMENTS ROOM))
(PLACE-PLACEMENT PLACEMENT))
(DOLIST (PLACEMENT BAGGAGE)
(PLACE-PLACEMENT PLACEMENT)))

```

```
(DEFUN FIND-PLACEMENTS (ROOM)
```

;;; returns the list of placements to be displayed in room, ordered in bottom first (i.e. the order they should be displayed in)

```

(LET (PLACEMENTS)
( DO-INCLUSIONS (INCLUSION ROOM)
(DOLIST (PLACEMENT (ROOM-PLACEMENTS INCLUSION))
;; save one placement for each window on the way down
;; optimization: this rather convoluted piece of code is used rather than (pushnew placement placements :key
;; #placement-window) because pushnew compiles into something really slow in XCL.
(LET ((WINDOW (PLACEMENT-WINDOW PLACEMENT))
(UNLESS (DOLIST (PLACEMENT PLACEMENTS)
(WHEN (EQ (PLACEMENT-WINDOW PLACEMENT)
WINDOW)

```


:: other essentials

(DEFUN **FIND-ROOMS-CONTAINING** (WINDOW)

::: return a list of all rooms which directly contain a placement for WINDOW

```
(LET ((ROOMS))
      (DO-ROOMS (ROOM)
                (WHEN (FIND-PLACEMENT-IN-ROOM WINDOW ROOM)
                    (PUSH ROOM ROOMS))))
```

:: we need a general way of handling un-named rooms, but as there is only one now, we can just special case it.

```
(WHEN (FIND-PLACEMENT-IN-ROOM WINDOW *OVERVIEW-ROOM*)
      (PUSH *OVERVIEW-ROOM* ROOMS))
ROOMS))
```

(DEFGLOBALVAR ***ROOM-CHANGED-FUNCTIONS*** NIL)

(DEFUN **ROOM-CHANGED** (ROOM REASON)

::: called when we notice a room has changed to ensure display is up to date.

```
(ECASE REASON
  (:EDITED :CREATED :DELETED) (WHEN (IN-ROOM? ROOM)
                                     ;; if we're in this room, redisplay whole screen
                                     ;; note: we depend upon our caller to update placements
                                     (IL:WITH-MONITOR *MONITOR-LOCK* (GO-TO-ROOM-INTERNAL *CURRENT-ROOM*
                                                                                       :NO-UPDATE T))))
  (:PLACEMENTS ;; we presume our caller & the hooks handle these cases
   ))
```

:: call hooks

```
(DOLIST (FN *ROOM-CHANGED-FUNCTIONS*)
        (FUNCCALL FN ROOM REASON))
```

(DEFMACRO **DO-INCLUSIONS** ((ROOM-VAR ROOM-FORM)
 &BODY BODY)

::: descend breadth-first, left to right down the inclusions of a room, performing BODY with ROOM-VAR bound to each room.

```
`(LET* ((,ROOM-VAR ,ROOM-FORM)
        ($ROOMS$ (LIST ,ROOM-VAR))
        ($QUEUE-HEAD$ $ROOMS$)
        ($QUEUE-TAIL$ $QUEUE-HEAD$)
        ($POCKET-ROOM-NAME$ *POCKET-ROOM-NAME*)
        $INCLUSIONS$ $INCLUSION$)
  (BLOCK DO-INCLUSIONS
    (TAGBODY $LOOP$ ,@BODY (SETQ $INCLUSIONS$ (ROOM-INCLUSIONS ,ROOM-VAR))
      (UNLESS (LISTP $INCLUSIONS$)
              (RETURN-FROM DO-INCLUSIONS))
      (DOLIST (INCLUDED-ROOM-NAME $INCLUSIONS$)
              (SETQ $INCLUSION$ (ROOM-NAMED INCLUDED-ROOM-NAME))
              (WHEN (AND $INCLUSION$ (NOT (MEMBER $INCLUSION$ $ROOMS$ :TEST #'EQ))))
                  (RPLACD $QUEUE-TAIL$ (SETQ $QUEUE-TAIL$ (LIST $INCLUSION$))))))
      (POP $QUEUE-HEAD$)
      (IF $QUEUE-HEAD$
          (SETQ ,ROOM-VAR (FIRST $QUEUE-HEAD$))
          (IF (AND $POCKET-ROOM-NAME$ (SETQ ,ROOM-VAR (ROOM-NAMED $POCKET-ROOM-NAME$))
                  (NOT (MEMBER ,ROOM-VAR $ROOMS$ :TEST #'EQ)))
              (SETQ $POCKET-ROOM-NAME$ NIL)
              (RETURN-FROM DO-INCLUSIONS)))
          (GO $LOOP$))))))
```

(DEFUN **ROOM-INCLUDERS** (ROOM &OPTIONAL SORTED?)

::: returns the list of rooms which include ROOM.

::: note that every room implicitly includes itself. the motivation for this is that most code which wants to map over includers also wants the root.

```
(IF (EQUAL (ROOM-NAME ROOM)
           *POCKET-ROOM-NAME*)
    ;; special case: all rooms include the pocket room
    (ALL-ROOMS SORTED?)
    (DO* ((INCLUDERS NIL) ; list of included rooms
          (QUEUE (LIST ROOM)) ; list of rooms to examine
          (INCLUDEDER ROOM (POP QUEUE)) ; room being examined
          (INCLUDEDER-NAME (ROOM-NAME INCLUDEDER)
                           (ROOM-NAME INCLUDEDER))
          ((NULL QUEUE)))
```

```

(IF SORTED?
  (SORT INCLUDERS #'ROOM-SORT-FUNCTION)
  INCLUDERS))
(UNLESS (MEMBER INCLUDER INCLUDERS :TEST 'EQ)
  (PUSH INCLUDER INCLUDERS)
  (DO-ROOMS (ROOM)
    (LET ((INCLUSIONS (ROOM-INCLUSIONS ROOM)))
      (WHEN (AND (LISTP INCLUSIONS)
                  (MEMBER INCLUDER-NAME INCLUSIONS :TEST 'EQUAL))
        (PUSHNEW ROOM QUEUE :TEST 'EQ)))))))

```

:: bootstrapping & resetting

```

(DEFVAR *RESET-FORMS* NIL
  "List of forms to be EVALled when Rooms is reset.")

```

```

(DEFUN RESET ()
  ;; delete all existing rooms
  (CLRHASH *ROOMS*)
  ;; bootstrap *CURRENT-ROOM*
  (SETQ *CURRENT-ROOM* NIL)
  (SETQ *POCKET-ROOM-NAME* "Pockets")
  (MAKE-ROOM *POCKET-ROOM-NAME* :PLACEMENTS
    ;; put promptwindow in pockets
    (LIST (MAKE-PLACEMENT IL:PROMPTWINDOW)
      :BACKGROUND
      (COPY-TREE '(:WHOLE-SCREEN (:EVAL IL:WINDOWBACKGROUNDSHADE))))))
  (SETQ *CURRENT-ROOM* (MAKE-ROOM "Original"))
  (SETQ *MONITOR-LOCK* (IL:CREATE.MONITORLOCK "Rooms"))
  (IL:WITH.MONITOR *MONITOR-LOCK* (GO-TO-ROOM-INTERNAL *CURRENT-ROOM*))
  ;; install our aroundexitfn last so it gets called before greet
  (UNLESS (MEMBER 'AROUNDEXITFN IL:AROUNDEXITFNS)
    (SETQ IL:AROUNDEXITFNS (NCONC IL:AROUNDEXITFNS (LIST 'AROUNDEXITFN))))
  ;; do reset forms
  (DOLIST (FORM *RESET-FORMS*)
    (EVAL FORM))
  ;; may have lost some windows...
  (CHECK-LOST-WINDOWS))

```

```

(DEFGLOBALVAR OLD-WHOLESCREEN (COPY-REGION IL:WHOLESCREEN))

```

```

(DEFGLOBALVAR *SCREEN-CHANGED-FUNCTIONS* (LIST '%INTERNALIZE-ALL-PLACEMENTS))

```

```

(DEFUN AROUNDEXITFN (EVENT)
  (CASE EVENT
    ((IL:BEFORESAVEVM IL:BEFORELOGOUT IL:BEFORESYSOUT IL:BEFOREMAKESYS) )
    ((IL:AFTERSAVEVM IL:AFTERLOGOUT IL:AFTERSYSOUT IL:AFTERMAKESYS) (UNLESS (EQUAL IL:WHOLESCREEN
      OLD-WHOLESCREEN)
      (DOLIST #'*SCREEN-CHANGED-FUNCTIONS*
        (FUNCALL FUNCTION))
      (SETQ OLD-WHOLESCREEN (COPY-REGION
        IL:WHOLESCREEN
        ))))))

```

```

(DEFUN %INTERNALIZE-ALL-PLACEMENTS ()

```

::: called when we re-boot on different sized screen. re-scales the placement regions & icon-positions of all placements.

```

(LET ((OLD-SCREEN-WIDTH (REGION-WIDTH OLD-WHOLESCREEN))
      (OLD-SCREEN-HEIGHT (REGION-HEIGHT OLD-WHOLESCREEN)))
  (UPDATE-PLACEMENTS)
  (DO-ROOMS (ROOM)
    ;; do all the named rooms
    (%INTERNALIZE-PLACEMENTS ROOM OLD-SCREEN-WIDTH OLD-SCREEN-HEIGHT)
    (ROOM-CHANGED ROOM :PLACEMENTS))
  ;; redisplay the current room.
  (IL:PROCESS.RESULT (GO-TO-ROOM *CURRENT-ROOM* :NO-UPDATE T)
    T)))

```

```

(DEFUN %INTERNALIZE-PLACEMENTS (ROOM OLD-SCREEN-WIDTH OLD-SCREEN-HEIGHT)
  (DOLIST (PLACEMENT (ROOM-PLACEMENTS ROOM))

```

;; re-scale placements to new size of screen

```
(LET ((REGION (PLACEMENT-REGION PLACEMENT)))
  (SETF (PLACEMENT-REGION PLACEMENT)
        (INTERNALIZE-REGION (MAKE-REGION :LEFT (EXTERNALIZE-COORDINATE (REGION-LEFT REGION)
                                                                           OLD-SCREEN-WIDTH)
                                       :BOTTOM
                                       (EXTERNALIZE-COORDINATE (REGION-BOTTOM REGION)
                                                                           OLD-SCREEN-HEIGHT)
                                       :WIDTH
                                       (EXTERNALIZE-COORDINATE (REGION-WIDTH REGION)
                                                                           OLD-SCREEN-WIDTH)
                                       :HEIGHT
                                       (EXTERNALIZE-COORDINATE (REGION-HEIGHT REGION)
                                                                           OLD-SCREEN-HEIGHT))))))
(LET ((POSITION (PLACEMENT-ICON-POSITION PLACEMENT))
      (WHEN POSITION
        (SETF (PLACEMENT-ICON-POSITION PLACEMENT)
              (INTERNALIZE-POSITION (MAKE-POSITION (EXTERNALIZE-COORDINATE (POSITION-X POSITION)
                                                                              OLD-SCREEN-WIDTH)
                                                  (EXTERNALIZE-COORDINATE (POSITION-Y POSITION)
                                                                              OLD-SCREEN-HEIGHT)))))))
```

```
(IL:DECLARE\ : IL:DOEVAL@COMPILE IL:DONTCOPY
```

```
(IL:GLOBALVARS IL:PROMPTWINDOW IL:AROUNDXITFNS)
)
```

```
(EVAL-WHEN (LOAD)
```

;; smash system code which moves windows around on reboot so we don't fight with it.

```
(PUSHNEW ' (IL:CHANGENAME ' IL:\\STARTDISPLAY ' IL:\\MOVE.WINDOWS.ONTO.SCREEN ' IL:NILL)
          *RESET-FORMS* :TEST 'EQUAL)
)
```

;; random

```
(IL:PUTPROPS GO-TO-ROOM IL:ARGNAMES (ROOM &KEY NO-UPDATE BAGGAGE))
```

```
(SEEDIT:DEF-LIST-FORMAT DO-INCLUSIONS :INDENT (1)
  :ARGS (:KEYWORD :BINDING NIL)
  :SUBLISTS (2))
```

```
(SEEDIT:DEF-LIST-FORMAT DO-ROOMS :INDENT (1)
  :ARGS (:KEYWORD :BINDING NIL)
  :SUBLISTS (2))
```

```
(IL:PUTPROPS IL:ROOMS-CORE IL:COPYRIGHT ("Venue & Xerox Corporation" 1987 1988 1990 2020))
```

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