File created: 5-Dec-2020 16:34:55 **{DSK}<Users>arunwelch>SKYDRIVE>DOCUMENTS>UNIX>LISP>LDE>ROOMS>MEDLEY-35>ROOMS-WINDOW-TYPES.;2**

previous date: 17-Aug-90 13:37:32 {DSK}<Users>arunwelch>SKYDRIVE>DOCUMENTS>UNIX>LISP>LDE>ROOMS>MEDLEY-35>ROOMS-WINDOW-TYPES.;1

Read Table: XCL

Package: ROOMS

Format: XCCS

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```
(IL:RPAQQ IL:ROOMS-WINDOW-TYPESCOMS
          ((FILE-ENVIRONMENTS IL:ROOMS-WINDOW-TYPES)
           (IL:P (EXPORT '(DEF-WINDOW-TYPE WINDOW-TYPE WINDOW-TYPE-PROP))
                 (REQUIRE "ROOMS"))
           (IL:STRUCTURES WINDOW-TYPE)
           (IL:FUNCTIONS WINDOW-TYPE-PROP)
           (IL:DEFINE-TYPES IL:WINDOW-TYPES)
           (IL:VARIABLES *WINDOW-TYPES*)
           (IL:FUNCTIONS DEF-WINDOW-TYPE WINDOW-TYPE-NAMED WINDOW-TYPE WINDOW-TYPE-INTERNAL ABSTRACT-WINDOW
                  RECONSTITUTE-WINDOW)
           (IL:SEDIT-FORMATS DEF-WINDOW-TYPE)))


(DEFINE-FILE-ENVIRONMENT IL:ROOMS-WINDOW-TYPES :COMPILER :COMPILE-FILE
   :PACKAGE "ROOMS"
   :READTABLE "XCL")

(EXPORT '(DEF-WINDOW-TYPE WINDOW-TYPE WINDOW-TYPE-PROP))

(REQUIRE "ROOMS")


(DEFSTRUCT (WINDOW-TYPE (:PRINT-FUNCTION (LAMBDA (WINDOW-TYPE STREAM DEPTH)
                                                 (FORMAT STREAM "#<Window Type ~S>" (WINDOW-TYPE-NAME
                                                                                     WINDOW-TYPE)))))
   (NAME NIL :TYPE STRING)
   (DEPENDENCIES NIL :TYPE LIST)
   (RECOGNIZER NIL :TYPE FUNCTION)
   (ABSTRACTER NIL :TYPE FUNCTION)
   (RECONSTITUTER NIL :TYPE FUNCTION)
   (PLACER NIL :TYPE FUNCTION)
   (UPDATER NIL :TYPE FUNCTION)
   (PROPS NIL :TYPE LIST))


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


(DEF-DEFINE-TYPE IL:WINDOW-TYPES "Window types"
   :UNDEFINER (LAMBDA (NAME)
                      (REMHASH NAME *WINDOW-TYPES*)))


(DEFGLOBALVAR *WINDOW-TYPES* (MAKE-HASH-TABLE :TEST 'EQ)
                             "Hash table mapping from window type names to window type objects.")

(DEFDEFINER DEF-WINDOW-TYPE IL:WINDOW-TYPES (NAME &REST REST-KEYS &KEY DEPENDENCIES RECOGNIZER ABSTRACTER
                                                  RECONSTITUTER PLACER UPDATER &ALLOW-OTHER-KEYS)

;;; defines a window type

   (FLET ((KWOTE (X)
                 ;; we want lambda expressions wrapped in FUNCTION and named functions just quoted
                 (TYPECASE X
                     (CONS (LIST (CASE (FIRST X)
                                       ((LAMBDA IL:LAMBDA) 'FUNCTION)
                                       (T 'QUOTE))
                                 X))
                     ((SATISFIES CONSTANTP) X)
                     (T (LIST 'QUOTE X)))))
          `(SETF (GETHASH ',NAME *WINDOW-TYPES*)
                 (MAKE-WINDOW-TYPE :NAME ',NAME :DEPENDENCIES ',DEPENDENCIES :RECOGNIZER ,(KWOTE RECOGNIZER)
                        ,@(WHEN ABSTRACTER
                                `(:ABSTRACTER ,(KWOTE ABSTRACTER)))
                        ,@(WHEN RECONSTITUTER
                                `(:RECONSTITUTER ,(KWOTE RECONSTITUTER)))
                        ,@(WHEN UPDATER
```

```
                        `(:UPDATER ,(KWOTE UPDATER)))
                    ,@(WHEN PLACER
                        `(:PLACER ,(KWOTE PLACER)))
                    :PROPS
                    (LIST ,@(MAPCAR #'KWOTE (LET ((PROPS (COPY-LIST REST-KEYS)))
                                               (DOLIST (KEYWORD '(:DEPENDENCIES :RECOGNIZER :ABSTRACTER
                                                                  :RECONSTITUTER :PLACER :UPDATER))
                                                   (REMF PROPS KEYWORD))
                                               PROPS)))))))
```

```
(DEFUN WINDOW-TYPE-NAMED (NAME &OPTIONAL NO-ERROR?)
   (OR (GETHASH NAME *WINDOW-TYPES*)
       (UNLESS NO-ERROR? (ERROR "No window type named ~S." NAME))))
```

```
(DEFUN WINDOW-TYPE (WINDOW &OPTIONAL NO-ERROR?)
```

;;; return the window type object for WINDOW.

```
   (LET ((CACHED-TYPE-NAME (IL:WINDOWPROP WINDOW 'WINDOW-TYPE)))
        (IF CACHED-TYPE-NAME
            (LET ((TYPE (WINDOW-TYPE-NAMED CACHED-TYPE-NAME T)))
                 (IF (AND TYPE (FUNCALL (WINDOW-TYPE-RECOGNIZER TYPE)
                                        WINDOW))
                     TYPE
                     (PROGN ;; invalidate cache
                            (IL:WINDOWPROP WINDOW 'WINDOW-TYPE NIL)
                            ;; try again
                            (WINDOW-TYPE WINDOW NO-ERROR?))))
            (LET ((TYPE (WINDOW-TYPE-INTERNAL WINDOW NO-ERROR?)))
                 ;; should cache misses here too
                 (WHEN TYPE                                          ; cache it
                     (IL:WINDOWPROP WINDOW 'WINDOW-TYPE (WINDOW-TYPE-NAME TYPE))
                                                                     ; return it
                     TYPE)))))
```

```
(DEFUN WINDOW-TYPE-INTERNAL (WINDOW NO-ERROR?)
```

;;; We only want the most specific type -- that which no others are dependent upon. We find this by first enumerating all the types whose recognizer fires
;;; on WINDOW. We then delete from this list any types upon which others in the list are dependent. The remaining list should have only one element --
;;; the right type.

```
   (LET* ((ALL-TYPES (WITH-COLLECTION (MAPHASH #'(LAMBDA (NAME TYPE)
                                                   (WHEN (FUNCALL (WINDOW-TYPE-RECOGNIZER TYPE)
                                                                  WINDOW)
                                                         (COLLECT TYPE)))
                                              *WINDOW-TYPES*)))
          (REMAINING-TYPES (COPY-LIST ALL-TYPES)))
         (DOLIST (TYPE ALL-TYPES)
             (DOLIST (DEPENDENCY (WINDOW-TYPE-DEPENDENCIES TYPE))
                 (SETQ REMAINING-TYPES (DELETE (WINDOW-TYPE-NAMED DEPENDENCY)
                                               REMAINING-TYPES))))
         (COND
            ((NULL REMAINING-TYPES)
             (UNLESS NO-ERROR? (ERROR "Can't find window type for ~S." WINDOW)))
            ((ENDP (REST REMAINING-TYPES))
             (FIRST REMAINING-TYPES))
            (T (UNLESS NO-ERROR?
                   (ERROR "Type conflict: ~S is of types ~S." WINDOW (MAPCAR #'WINDOW-TYPE-NAME REMAINING-TYPES)
                          ))))))
```

```
(DEFUN ABSTRACT-WINDOW (WINDOW &OPTIONAL SHH)
```

;;; returns an abstraction suitable for passing to RECONSTITUTE-WINDOW, or NIL if it can't find one.

```
   (LET* ((TYPE (WINDOW-TYPE WINDOW T))
          (ABSTRACTER (AND TYPE (WINDOW-TYPE-ABSTRACTER TYPE))))
         (IF ABSTRACTER
             (LIST* :TYPE (WINDOW-TYPE-NAME TYPE)
                    (FUNCALL ABSTRACTER WINDOW))
             (UNLESS SHH
                 (FRESH-LINE *ERROR-OUTPUT*)
                 (IF TYPE
                     (FORMAT *ERROR-OUTPUT* "Can't abstract windows of type ~S." (WINDOW-TYPE-NAME TYPE))
                     (FORMAT *ERROR-OUTPUT* "~S has no type." WINDOW))
                 (LET ((HIDDEN? (WINDOW-HIDDEN? WINDOW)))
                      (WHEN HIDDEN? (UN-HIDE-WINDOW WINDOW))
                      (IL:FLASHWINDOW (IF (SHRUNKEN? WINDOW)
                                          (WINDOW-ICON WINDOW)
                                          WINDOW)
                                      2)
```

```
                    (WHEN HIDDEN? (HIDE-WINDOW WINDOW)))
                (FORMAT *ERROR-OUTPUT* "  Ignoring.~%")
                NIL))))
```

```
(DEFUN RECONSTITUTE-WINDOW (TYPE-NAME ARG)
   (LET ((TYPE (WINDOW-TYPE-NAMED TYPE-NAME T)))
        (IF TYPE
            (FUNCALL (WINDOW-TYPE-RECONSTITUTER TYPE)
                  ARG)
            (PROG1 NIL (WARN "Can't reconstitute windows of type ~A." TYPE-NAME)))))
```

```
(SEDIT:DEF-LIST-FORMAT DEF-WINDOW-TYPE :ARGS (NIL :KEYWORD NIL)
   :INDENT (1))
```

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

FUNCTION INDEX

SEDIT-FORMAT INDEX

DEFINER INDEX

VARIABLE INDEX

FILE-ENVIRONMENT INDEX

DEFINE-TYPE INDEX

MACRO INDEX

STRUCTURE INDEX