File created: 19-Feb-87 09:42:40 **{QV}<LFG>PARSER>SIMPLIFY.;1**

previous date: 6-NOV-79 17:25:50 <LISPUSERS>SIMPLIFY.;3

Read Table: OLD-INTERLISP-FILE

Package: INTERLISP

Format: XCCS

```
          (* * Copyright (c) 1987 by Xerox Corporation. All rights reserved.)

(RPAQQ SIMPLIFYCOMS
       ((* Tools for symbolic simplification of LISP forms)
        (FNS SIMPLIFY)
        (FNS APPLYFORM ONCE ONCE1 OPAQUE SIMPLEP SUBSTVAL)
        (BLOCKS (APPLYFORM APPLYFORM ONCE ONCE1 OPAQUE SIMPLEP SUBSTVAL))))

          (* * Tools for symbolic simplification of LISP forms)

(DEFINEQ

(SIMPLIFY
  [LAMBDA (FORM)                                                  (* bas: " 6-NOV-79 16:51")

          (* Eventually this will be a general symbolic simplification package, but for now its just a dummy entry)

    FORM])
)

(DEFINEQ

(APPLYFORM
  [LAMBDA (FN ARG1)                                               (* bas: " 6-NOV-79 17:24")
    (PROG (FNARG FNFORM)
          (RETURN (if (AND (EQ (CAR (LISTP FN))
                               (QUOTE LAMBDA))
                           [LISTP (CAR (LISTP (CDR FN]
                           (NULL (CDADR FN))
                           (LITATOM (SETQ FNARG (CAADR FN)))
                           FNARG
                           (OR (PROGN (SETQ FNFORM (if (CDDDR FN)
                                                        then (CONS (QUOTE PROGN)
                                                                   (CDDR FN))
                                                      else (CADDR FN)))
                                      (SIMPLEP ARG1))
                               (ONCE FNARG FNFORM)))
                      then

          (* We know that FN is a LAMBDA with one non-NIL litatom argument, and that either FNARG can be safely evaluated
          multiple times or the function body only references it once.)

                            (if (EQ FNARG ARG1)
                               then                                (* Arg and arg name are same so body will do)
                                    FNFORM
                             else (SUBSTVAL ARG1 FNARG FNFORM))
                    else (LIST FN ARG1])

(ONCE
  [LAMBDA (ATOM FORM FLG)                                         (* bas: "19-AUG-78 17:34")
    (DECLARE (SPECVARS FLG))
    (ONCE1 ATOM FORM)
    (NEQ FLG (QUOTE FAILED])

(ONCE1
  [LAMBDA (A L)                                                   (* bas: "18-SEP-79 17:03")
    (for I in L do [if (LISTP I)
                          then (OR (OPAQUE I A)
                                   (ONCE1 A I))
                        elseif (EQ A I)
                          then (SETQ FLG (if FLG
                                               then (QUOTE FAILED)
                                             else (QUOTE ONCE]
       until (EQ FLG (QUOTE FAILED])

(OPAQUE
  [LAMBDA (FORM VAR)                                              (* rmk: " 5-AUG-79 22:11")
                                                                  (* Determines if VAR substitution can take place in FORM)

    (SELECTQ (CAR FORM)
         (QUOTE T)
         ([LAMBDA NLAMBDA]
             (FMEMB VAR (CADR FORM)))
         (PROG (for I in (CADR FORM) thereis (EQ VAR (if (LISTP I)
                                                       then (CAR I)
                                                     else I))))
         NIL])

(SIMPLEP
  [LAMBDA (FORM)                                                  (* rmk: " 5-AUG-79 22:06")

          (* Decides if a form is simple enough so that it can be evaluated repeatedly rather than taking a LAMBDA binding)

    (OR (ATOM FORM)
        (SELECTQ (CAR (LISTP FORM))
             ((QUOTE CAR CDR CADR CDDR)
                  (LITATOM (CADR FORM)))
             NIL)
        (STRINGP FORM])

(SUBSTVAL
  [LAMBDA (NEW OLD FORM)                                          (* bas: " 8-MAR-79 20:39")
                                                                  (* Substitutes NEW for OLD in FORM.
                                                                  Just like SUBST except is sensitive to opacity)
    (if (LISTP FORM)
        then [if (OPAQUE FORM OLD)
                 then FORM
               else (PROG (NSCR OSCR)
                          (RETURN (if [SETQ OSCR (for I in FORM thereis (NEQ I (SETQ NSCR (SUBSTVAL NEW OLD I]
                                      then (for I in FORM collect (if (NULL OSCR)
                                                                      then (SUBSTVAL NEW OLD I)
                                                                    elseif (EQ OSCR I)
                                                                      then (SETQ OSCR NIL)
                                                                           NSCR
                                                                    else I))
                                    else FORM]
      elseif (EQ FORM OLD)
        then NEW
      else FORM])
)

(DECLARE: DONTEVAL@LOAD DOEVAL@COMPILE DONTCOPY

(BLOCK: APPLYFORM APPLYFORM ONCE ONCE1 OPAQUE SIMPLEP SUBSTVAL)
)

(PUTPROPS SIMPLIFY COPYRIGHT ("Xerox Corporation" 1987))
```

{MEDLEY}<lispusers>SIMPLIFY.;1   28-Jun-2024 18:34:03

-- Listed on 30-Jun-2024 13:14:53 --

FUNCTION INDEX