```
(RPAQQ TMAX-NGRAPHCOMS
       ((* |Developed| |under| |support| |from| NIH |grant| RR-00785.)
        (* |Written| |by| |Frank| |Gilmurray| |and| |Sami| |Shaio.|)
        (* * |Number| |Group| GRAPH |functions|)
        (FNS GRAPHMENU INITIAL.NGROUP.GRAPH NGROUP.MAKE.ROOTNODE TSPGRAPHREGION CLOSE.NGROUP.GRAPH
             NGROUP.GRAPH.CLOSEFN ADD.NGROUP.TO.MOTHER.NODE ADD.NODE.TO.GRAPH COLLECT.HASHARRAY
             CREATE.NGROUP.NODE GET.FROMNODES GET.TONODES FIND.NODE TSP.GET.NGROUP.ARRAY TSP.LEGALID
             LIST.ANCESTORS TOPLEVEL.SISTERS GET.NGROUP.MOTHER)
        (* * |Number| |counting| |functions|)
        (FNS DOWNDATE.NUMBEROBJS UPDATE.NUMBEROBJS RESET.DEPENDENT.CLASSES RESET.NCOUNTER GET.NCOUNTER NCOUNTER?
             FLATTEN.TREE.TO.STRING NGROUP.CHARTYPE NGROUP.CHARTYPE.CONVERT NUMBER.TO.LETTER REMOVE.ALL.COUNTERS
             )))


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       (* * |Number| |Group| GRAPH |functions|)


(DEFINEQ
```

(GRAPHMENU
```
  (LAMBDA (TSTREAM TWINDOW)                              (* |fsg| "11-Jul-87 12:17")
    (LET* ((GRAPH (OR (AND (NOT (WINDOWPROP TWINDOW 'REBUILD.GRAPHFLG))
                           (WINDOWPROP TWINDOW 'NGROUP.GRAPH))
                      (INITIAL.NGROUP.GRAPH TWINDOW)))
           (REGION (TSPGRAPHREGION GRAPH TWINDOW T))
           (GRAPHW (CREATEW REGION "Number Group Graph" NIL T)))
        (AND (NGROUPMENU.ENABLED? TWINDOW)
             (CLOSE.NGROUP.GRAPH TWINDOW))
        (WINDOWPROP GRAPHW 'REPAINTFN NIL)
        (ATTACHWINDOW GRAPHW TWINDOW 'TOP 'JUSTIFY 'LOCALCLOSE)
        (SHOWGRAPH GRAPH GRAPHW (FUNCTION INSERT.NGROUP)
                   (FUNCTION CHANGE.NGROUP))
        (WINDOWPROP TWINDOW 'REBUILD.GRAPHFLG NIL)
        (WINDOWPROP TWINDOW 'NGROUPW GRAPHW)
        (WINDOWPROP TWINDOW 'NGROUP.GRAPH GRAPH)
        (WINDOWPROP GRAPHW 'CLOSEFN (FUNCTION NGROUP.GRAPH.CLOSEFN))
        (WINDOWPROP GRAPHW 'TWINDOW TWINDOW)
        (WINDOWPROP GRAPHW 'TSTREAM TSTREAM))))
```

(INITIAL.NGROUP.GRAPH
```
  (LAMBDA (WINDOW)                                       (* |ss:| "27-Jun-87 16:56")
    (LET* ((ROOTNODE (NGROUP.MAKE.ROOTNODE))
           (NODELST (|for| NODE |in| (COLLECT.HASHARRAY (TSP.GET.NGROUP.ARRAY WINDOW)) |collect| (CADR NODE))))
        (OR (FIND.NODE 'NEW.NGROUP WINDOW)
            (PROGN (SETQ NODELST (CONS ROOTNODE NODELST))
                   (ADD.NGROUP.TO.DBASE 'NEW.NGROUP NIL NIL NIL ROOTNODE WINDOW)))
        (LAYOUTGRAPH NODELST '(NEW.NGROUP)))))
```

(NGROUP.MAKE.ROOTNODE
```
  (LAMBDA NIL                                            (* |ss:| "27-Jun-87 16:14")
    (NODECREATE 'NEW.NGROUP '|NGroups| NIL NIL NIL (FONTCREATE 'HELVETICA 10 'BRR)
          1)))
```

(TSPGRAPHREGION
```
  (LAMBDA (GRAPH MAIN.WINDOW TITLEFLG BORDER)            (* |ss:| " 2-Apr-86 16:28")
    (LET ((R (GRAPHREGION GRAPH))
          (MAIN.R (WINDOWREGION MAIN.WINDOW)))
        (|replace| (REGION WIDTH) |of| R |with| (WIDTHIFWINDOW (|fetch| (REGION WIDTH) |of| R)))
        (|replace| (REGION HEIGHT) |of| R |with| (HEIGHTIFWINDOW (|fetch| (REGION HEIGHT) |of| R)
                                                      TITLEFLG BORDER))
        R)))
```

(CLOSE.NGROUP.GRAPH
```
  (LAMBDA (TWINDOW)                                      (* |fsg| "11-Jul-87 12:51")

        (* * |Program| |invoked| |close| |of| |the| |NGroup| |menu| |graph| |window.|
        PROGRAM.CLOSE |is| |used| |to| |distinguish| |between| |our| |closing| |the| |window| |and| |the| |user| |buttoning| |the|
        |Window| |Menu| CLOSE |command.|)
```

```
    (LET ((GRAPH.WINDOW (WINDOWPROP TWINDOW 'NGROUPW)))
         (WINDOWPROP GRAPH.WINDOW 'PROGRAM.CLOSE T)
         (FREEATTACHEDWINDOW GRAPH.WINDOW)
         (CLOSEW GRAPH.WINDOW))))
```

(**NGROUP.GRAPH.CLOSEFN**
```
  (LAMBDA (GRAPH.WINDOW)                                              ; Edited 29-Sep-87 15:04 by fsg

         (* * |Clean| |up| \a |few| |things| |when| |user| CLOSE\s |the| |NGroup| |menu| |graph| |window.|)

    (OR (WINDOWPROP GRAPH.WINDOW 'PROGRAM.CLOSE)
        (LET ((TWINDOW (WINDOWPROP GRAPH.WINDOW 'TWINDOW)))
             (FM.CHANGESTATE (FM.GETITEM 'NGROUP.MENU NIL (WINDOWPROP TWINDOW 'IMAGEOBJ.MENUW))
                    NIL
                    (WINDOWPROP TWINDOW 'IMAGEOBJ.MENUW))
             (FREEATTACHEDWINDOW GRAPH.WINDOW)))))
```

(**ADD.NGROUP.TO.MOTHER.NODE**
```
  (LAMBDA (ID MOTHERID W)                                       (* |ss:| " 3-Apr-86 17:50")
    (LET* ((MOTHER.NODE (FIND.NODE MOTHERID W))
           (TONODES (|fetch| (GRAPHNODE TONODES) |of| MOTHER.NODE)))
         (OR (MEMBER ID TONODES)
             (|replace| (GRAPHNODE TONODES) |of| MOTHER.NODE |with| (CONS ID TONODES))))))
```

(**ADD.NODE.TO.GRAPH**
```
  (LAMBDA (NODE GRAPH WINDOW)                                   (* |ss:| "27-Jun-87 15:57")
    (LET* ((PARENT.NODE (FIND.NODE (CAR (|fetch| (GRAPHNODE FROMNODES) |of| NODE))
                              WINDOW))
           (TONODES (|fetch| (GRAPHNODE TONODES) |of| NODE)))
         (OR (MEMBER (|fetch| (GRAPHNODE NODEID) |of| NODE)
                    TONODES)
             (PROGN (|replace| (GRAPHNODE TONODES) |of| PARENT.NODE |with| (CONS (|fetch| (GRAPHNODE NODEID)
                                                                                    |of| NODE)
                                                                             (|fetch| (GRAPHNODE TONODES)
                                                                                |of| PARENT.NODE)))
                    (|replace| (GRAPH GRAPHNODES) |of| GRAPH |with| (CONS NODE (|fetch| (GRAPH GRAPHNODES) |of| GRAPH)))
                    ))
         (LAYOUTGRAPH (|fetch| (GRAPH GRAPHNODES) |of| GRAPH)
                '(NEW.NGROUP)))))
```

(**COLLECT.HASHARRAY**
```
  (LAMBDA (HARRAY)                                              (* |ss:| "27-Jun-87 16:03")
    (LET ((RESULT NIL))
         (MAPHASH HARRAY (FUNCTION (LAMBDA (VAL KY)
                                      (SETQ RESULT (CONS VAL RESULT)))))
         RESULT)))
```

(**CREATE.NGROUP.NODE**
```
  (LAMBDA (ID MOTHER USERDATA W)                                (* |fsg| "22-Jun-87 13:27")
    (LET* ((NGROUP.HARRAY (TSP.GET.NGROUP.ARRAY W))
           (NODE (GETHASH ID NGROUP.HARRAY)))
         (OR NODE (LET ((NEW.NODE (SELECTQ ID
                                      (NEW.NGROUP (NGROUP.MAKE.ROOTNODE))
                                      (NODECREATE ID ID NIL NIL (LIST MOTHER)))))
                       (PUTHASH ID (LIST USERDATA NEW.NODE)
                              (LIST NGROUP.HARRAY))
                       NEW.NODE))
         (OR (AND NODE (CAR NODE))
             (AND USERDATA NODE (RPLACA NODE USERDATA))))))
```

(**GET.FROMNODES**
```
  (LAMBDA (NGID WINDOW)                                         (* |ss:| " 3-Apr-86 16:00")
    (CAR (|fetch| (GRAPHNODE FROMNODES) |of| (FIND.NODE NGID WINDOW)))))
```

(**GET.TONODES**
```
  (LAMBDA (NGID WINDOW)                                         (* |fsg| "28-Jul-87 10:54")

         (* * I\f NGID |has| |only| |one| |child| |then| |return| |that| |child's| |name| |as| |an| |atom.|
         |Else| |return| |the| |list| |of| |NGID's| |children.|)

         (* * A\s |of| |the| |date| |above,| |this| |function| |is| NOT |called.|)

    (LET ((TONODES (|fetch| (GRAPHNODE TONODES) |of| (FIND.NODE NGID WINDOW))))
         (COND
            ((CDR TONODES)
             (REVERSE TONODES))
            (T (CAR TONODES))))))
```

(**FIND.NODE**

```
  (LAMBDA (NGID WINDOW)                                              (* |fsg| " 4-Mar-87 10:22")
    (CADR (GETHASH NGID (TSP.GET.NGROUP.ARRAY WINDOW)))))
```

(**TSP.GET.NGROUP.ARRAY**

```
  (LAMBDA (WINDOW)                                                   (* |ss:| "27-Jun-87 16:21")
    (WINDOWPROP WINDOW 'TSP.NGROUP.ARRAY)))
```

(**TSP.LEGALID**

```
  (LAMBDA (PREV.NGROUPS STREAM)                                      (* |fsg| " 3-Aug-87 17:04")

          (* * |Get| \a |new| |NGroup| ID |and| |make| |sure| |it's| |not| |already| |defined.|)

    (LET ((NGROUP.ID (MKATOM (TEDIT.GETINPUT STREAM "Group name:"))))
         (|while| (MEMBER NGROUP.ID PREV.NGROUPS) |do| (SETQ NGROUP.ID (MKATOM
                                                        (TEDIT.GETINPUT
                                                         STREAM
                                                         (CONCAT NGROUP.ID (COND
                                                                             ((EQ NGROUP.ID
                                                                                  'NEW.NGROUP)
                                                                              " is a reserved
                                                                             name...Group name:")
                                                                             (T " already
                                                                                exists...Group
                                                                                name:")))))))
         NGROUP.ID)))
```

(**LIST.ANCESTORS**

```
  (LAMBDA (NID ANCESTORS WINDOW)                                     (* |ss:| "27-Jun-87 16:09")

          (* * |Return| \a |list| |of| |the| |parents| |of| |the| |given| |node.|)

    (LET ((MOTHER (GET.FROMNODES NID WINDOW)))
         (COND
            ((AND MOTHER (NEQ MOTHER 'NEW.NGROUP))
             (LIST.ANCESTORS MOTHER (CONS MOTHER ANCESTORS)
                    WINDOW))
            (T ANCESTORS)))))
```

(**TOPLEVEL.SISTERS**

```
  (LAMBDA (WINDOW)                                                   (* |ss:| "27-Jun-87 16:21")

          (* * |Returns| \a |list| |of| |the| |top| |level| |NGroup| |nodes.| A |top| |level| |node| |is| \a |node| |whose| |mother| |is|
          NEW.NGROUP.)

    (REVERSE (|fetch| (GRAPHNODE TONODES) |of| (FIND.NODE 'NEW.NGROUP WINDOW)))))
```

(**GET.NGROUP.MOTHER**

```
  (LAMBDA (NGID WINDOW)                                              (* |fsg| " 4-Mar-87 11:24")

          (* * |Return| |the| |top| |level| |mother| |of| \a |branch| |of| |the| |Ngroup| |tree.|)

    (LET ((ANCESTORS (LIST.ANCESTORS NGID NIL WINDOW)))
         (COND
            (ANCESTORS (CAR ANCESTORS))
            (T (COND
                   ((FIND.NODE NGID WINDOW)
                    NGID)
                   (T NIL)))))))
)


          (* * |Number| |counting| |functions|)

(DEFINEQ
```

(**DOWNDATE.NUMBEROBJS**

```
  (LAMBDA (WINDOW STREAM OBJSELECTFN)                                (* |fsg| "25-Sep-87 09:45")

          (* * |Undoes| |what| UPDATE.NUMBEROBJS |does.|)

    (LET ((NBROBJ.LIST (TSP.LIST.OF.OBJECTS (TEXTOBJ WINDOW)
                               OBJSELECTFN)))
         (AND NBROBJ.LIST (PROGN (TEDIT.PROMPTPRINT STREAM (CONCAT "Undoing Update of " (SELECTQ OBJSELECTFN
                                                                               (NGROUPP "Number
                                                                                        Groups")
                                                                               (ENDNOTEP
                                                                                       "Endnotes
")
                                                                               "Number Groups and
                                                                                 Endnotes")
                                                                 "...")
```

```
                                                       T)
                                   (|for| NBROBJ |in| NBROBJ.LIST
                                     |do| (LET ((DATUM (|fetch| OBJECTDATUM |of| (CAR NBROBJ))))
                                              (|with| NUMBEROBJ DATUM (SETQ PAGE.NUMBER NIL)
                                                     (AND UPDATED.OBJ (PROGN (SETQ UPDATED.OBJ NIL)
                                                                            (|replace| (NGTEMPLATE NG.CURRENTVAL)
                                                                             |of| TEMPLATE |with| NIL)
                                                     (SETQ NUMSTRING
                                                      (SELECTQ USE
                                                             (NGROUP (CONCAT "[" REF.TYPE
                                                                             "]"))
                                                             (NOTE "Note#")
                                                             NIL))
                                                     (TEDIT.OBJECT.CHANGED STREAM
                                                             (CAR NBROBJ)))))))))
                              (TEDIT.PROMPTPRINT STREAM "done"))))))
```

(**UPDATE.NUMBEROBJS**
```
  (LAMBDA (WINDOW STREAM OBJSELECTFN)                                           (* |fsg| "25-Sep-87 09:34")

          (* * |Convert| |the| |NGroup| |and| |Endnote| |markers| |to| |their| |corresponding| |numeric| |values.|)

    (LET ((NBROBJ.LIST (TSP.LIST.OF.OBJECTS (TEXTOBJ WINDOW)
                              OBJSELECTFN)))
        (AND NBROBJ.LIST (PROGN (TEDIT.PROMPTPRINT STREAM (CONCAT "Updating " (SELECTQ OBJSELECTFN
                                                                                     (NGROUPP "Number Groups")
                                                                                     (ENDNOTEP "Endnotes")
                                                                                     "Number Groups and
                                                                                        Endnotes")
                                                                 "...")
                                T)
                (|for| NBROBJ |in| NBROBJ.LIST
                  |do| (LET ((DATUM (|fetch| OBJECTDATUM |of| (CAR NBROBJ)))
                               NEW.COUNT)
                           (|with| NUMBEROBJ DATUM (**RESET.DEPENDENT.CLASSES** WINDOW USE
                                                          REF.TYPE)
                                  (SETQ NEW.COUNT (**GET.NCOUNTER** WINDOW USE REF.TYPE
                                                         NGROUP.MOTHER TEMPLATE DATUM))
                                  (AND (NEQ NEW.COUNT NUMSTRING)
                                       (PROGN (SETQ NUMSTRING NEW.COUNT)
                                              (SETQ UPDATED.OBJ T)
                                              (TEDIT.OBJECT.CHANGED STREAM (CAR NBROBJ))))))
                |finally| (**REMOVE.ALL.COUNTERS** WINDOW))
                (TEDIT.PROMPTPRINT STREAM "done"))))))
```

(**RESET.DEPENDENT.CLASSES**
```
  (LAMBDA (WINDOW USE REF.TYPE)                                                 (* |fsg| "12-Dec-86 10:50")
    (|for| DEPENDENT |in| (|fetch| (GRAPHNODE TONODES) |of| (**FIND.NODE** REF.TYPE WINDOW))
      |do| (PROGN (**RESET.NCOUNTER** WINDOW USE DEPENDENT)
                  (**RESET.DEPENDENT.CLASSES** WINDOW USE DEPENDENT)))))
```

(**RESET.NCOUNTER**
```
  (LAMBDA (WINDOW USE REF.TYPE)                                                 (* |fsg| "12-Dec-86 11:07")
    (LET* ((TEMPLATE (SELECTQ USE
                            (NGROUP (|fetch| (NUMBEROBJ TEMPLATE) |of| (CAR (GETHASH REF.TYPE (**TSP.GET.NGROUP.ARRAY**
                                                                                                 WINDOW)))))
                            NIL))
          (COUNTER (**NCOUNTER?** WINDOW USE REF.TYPE TEMPLATE)))
        (|replace| NCOUNT |of| COUNTER |with| (COND
                                                (TEMPLATE (SUB1 (|fetch| NG.START |of| TEMPLATE)))
                                                (T 0))))))
```

(**GET.NCOUNTER**
```
  (LAMBDA (WINDOW USE REF.TYPE MOTHER.CLASS TEMPLATE NBR.DATUM)  (* |fsg| "11-Aug-87 15:26")
    (LET ((COUNTER (**NCOUNTER?** WINDOW USE REF.TYPE TEMPLATE)))
        (AND COUNTER (PROGN (|with| NGCOUNTER COUNTER (|add| NCOUNT 1)
                                   (AND (EQ USE 'NGROUP)
                                        TEMPLATE
                                        (|replace| (NGTEMPLATE NG.CURRENTVAL) |of| TEMPLATE |with| NCOUNT)))
                           (COND
                              (MOTHER.CLASS (**FLATTEN.TREE.TO.STRING** WINDOW USE REF.TYPE NBR.DATUM))
                              (T (MKSTRING (|fetch| NCOUNT |of| COUNTER)))))))))
```

(**NCOUNTER?**
```
  (LAMBDA (WINDOW USE REF.TYPE TEMPLATE)                                        (* |fsg| "14-Jul-87 14:10")

          (* * |Return| |the| |record| |for| |this| |number| |counter.| I\f |the| |record| |doesn't| |exist,| |we| |create| |one| |based| |on| |the|
          USE |value.|)

    (LET ((COUNTER.ID (MKATOM (CONCAT (SELECTQ USE
                                             (NGROUP (CONCAT "NGROUP." REF.TYPE "."))
                                             (NOTE "ENDNOTE.")
```

```
                                              (ERROR "Unknown NUMBER type" USE))
                              "COUNTER"))))
        (OR (WINDOWPROP WINDOW COUNTER.ID)
            (PROGN (WINDOWPROP WINDOW COUNTER.ID (|create| NGCOUNTER
                                                    NCOUNT _ (COND
                                                              ((AND (EQ USE 'NGROUP)
                                                                    TEMPLATE)
                                                               (SUB1 (|fetch| NG.START |of| TEMPLATE)))
                                                              (T 0))
                                                    ANCESTRY _ (SELECTQ USE
                                                                  (NGROUP (LIST.ANCESTORS REF.TYPE NIL
                                                                             WINDOW))
                                                                  NIL)))
                   (WINDOWADDPROP WINDOW 'COUNTERS COUNTER.ID)
                   (WINDOWPROP WINDOW COUNTER.ID))))))
```

(**FLATTEN.TREE.TO.STRING**
```
  (LAMBDA (WINDOW USE REF.TYPE NBR.DATUM)                          (* |fsg| " 5-Aug-87 14:12")
    (LET* ((NGROUP.COUNTER (NCOUNTER? WINDOW USE REF.TYPE))
           (NGROUP.LIST (APPEND (|fetch| (NGCOUNTER ANCESTRY) |of| NGROUP.COUNTER)))
           (ABBREVVAL (|with| NUMBEROBJ NBR.DATUM (AND ABBREV-VAL (LIST.ANCESTORS ABBREV-VAL NIL WINDOW))))
           (FLAT.TREE "")
           ANCESTOR)
          (AND NGROUP.LIST (|while| (SETQ ANCESTOR (|pop| NGROUP.LIST))
                                 |do| (OR (AND ABBREVVAL (MEMB ANCESTOR ABBREVVAL))
                                          (SETQ FLAT.TREE (CONCAT FLAT.TREE (NGROUP.CHARTYPE WINDOW ANCESTOR
                                                                              (|fetch| (NGCOUNTER NCOUNT)
                                                                               |of| (NCOUNTER? WINDOW USE
                                                                                      ANCESTOR))
                                                                              (OR (CAR NGROUP.LIST)
                                                                                  REF.TYPE)))))))
          (SETQ FLAT.TREE (CONCAT FLAT.TREE (NGROUP.CHARTYPE WINDOW REF.TYPE (|fetch| (NGCOUNTER NCOUNT)
                                                                              |of| NGROUP.COUNTER)
                                                              NIL))))))
```

(**NGROUP.CHARTYPE**
```
  (LAMBDA (WINDOW REF.TYPE NCOUNT NEXT.NGROUP)                     (* |fsg| "11-Aug-87 15:23")

        (* * |Convert| |the| |number| NCOUNT |to| |the| |format| |specified| |in| TEMPLATE.
        DELIMITFLG |is| |the| |next| |NGroup's| |preceding| |delimiter| |or| NIL |if| |either| |the| |next| |NGroup| |has| |no| |preceding|
        |delimiter| |or| |there| |is| |no| |next| |NGroup.|)

    (LET ((DELIMITFLG (AND NEXT.NGROUP (|with| NGTEMPLATE (|fetch| (NUMBEROBJ TEMPLATE)
                                                            |of| (CAR (GETHASH NEXT.NGROUP (TSP.GET.NGROUP.ARRAY
                                                                                             WINDOW))))
                                                 NG.TEXT-BEFORE))))
         (|with| NGTEMPLATE (|fetch| (NUMBEROBJ TEMPLATE) |of| (CAR (GETHASH REF.TYPE (TSP.GET.NGROUP.ARRAY WINDOW))
                                                                ))
                (CONCAT (OR NG.TEXT-BEFORE "")
                        (NGROUP.CHARTYPE.CONVERT NG.CHARTYPE NCOUNT)
                        (COND
                           (DELIMITFLG "")
                           (T (OR NG.TEXT-AFTER ""))))))))
```

(**NGROUP.CHARTYPE.CONVERT**
```
  (LAMBDA (CHARTYPE NCOUNT)                                        (* |fsg| "28-Jul-87 11:12")

        (* * |Convert| |the| |value| NCOUNT |to| |the| |type| |specified| |by| CHARTYPE.
        I\f NCOUNT < 1 |and| CHARTYPE |is| |Letter/Roman| |then| |we| |return| NIL.
        |This| |anomaly| |is| |usually| |caused| |by| |out-of-order| |NGroups.|)

    (COND
       ((FIXP NCOUNT)
        (COND
           ((OR (IGREATERP NCOUNT 0)
                (EQ CHARTYPE '|Number|)
                (EQ CHARTYPE '|Null String|))
            (SELECTQ CHARTYPE
               (UPPERCASE\ LETTER
                   (NUMBER.TO.LETTER NCOUNT T))
               (|lowercase letter|
                   (NUMBER.TO.LETTER NCOUNT))
               (UPPERCASE\ ROMAN
                   (ROMANNUMERALS NCOUNT T))
               (|lowercase roman|
                   (ROMANNUMERALS NCOUNT))
               (|Null String|
                   "")
               (|Number| (MKSTRING NCOUNT))
               (ERROR "Unknown display type" CHARTYPE)))
           (T (MKSTRING NIL))))
       (T (ERROR "Invalid integer" NCOUNT)))))
```

(**NUMBER.TO.LETTER**
```
  (LAMBDA (NUMBER UCFLG)                                              (* |fsg| " 5-Dec-86 10:18")


              (* * |Convert| NUMBER |to| |equivalent| |letter| |code.|)

    (LET ((LTRLST (MKSTRING (CHARACTER (IPLUS (CHARCODE A)
                                              (IREMAINDER (SUB1 NUMBER)
                                                  26)))))
          (LTRNBR (IQUOTIENT (SUB1 NUMBER)
                      26)))
         (|until| (ZEROP LTRNBR) |do| (SETQ LTRLST (CONCAT (CHARACTER (SUB1 (IPLUS (CHARCODE A)
                                                                            (IREMAINDER LTRNBR 26))))
                                               LTRLST))
                               (SETQ LTRNBR (IQUOTIENT LTRNBR 26)))
         (COND
            (UCFLG (U-CASE LTRLST))
            (T (L-CASE LTRLST))))))
```

(**REMOVE.ALL.COUNTERS**
```
  (LAMBDA (WINDOW)                                                   (* |ss:| "30-Sep-85 09:38")
    (|for| COUNTER |in| (WINDOWPROP WINDOW 'COUNTERS) |do| (WINDOWPROP WINDOW COUNTER NIL)
       |finally| (WINDOWPROP WINDOW 'COUNTERS NIL))))

)

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