For convenience and practice, the M routines demonstrated in the lessons on this CD are being provided, should your facility wish to install them in a TEST environment.

FTP the file *(int_m.rtn)* **from the CD (on the PC) to a VMS or NT system drive. From there, perform a Routine Restore (%RR).**

The following is an example of how to restore these routines into a TEST account:

```
        DSM V7.2.1 for OpenVMS AXP
             DSMTRN
             [TRN,STU]
```

TRN,STU>D ^%RR

Routine Restore

Input Device ? > int_m.rtn

Restoring routines from USER$:[CHANNELL]int_m.rtn;1

Saved by %RS from [TRN,STU] on 9-SEP-2000 15:01:29.94
Header: Intermediate M routines

Restore All (A), Selected (S), or Confirm on overwrite (C) ? <A> A

```
VECS512   VECS517   VECS55    VECS56    VECS59    VECS5CR   VECS5DEL   VECS5ED    VECS5MN
VECS5PR
VECS6CR   VECS6DEL   VECS6ED   VECS6MN   VECS6PR   VECS7CRI   VECS7EDI   VECS7FLD   VECS7MNI
VECS7PRI
VECS81   VECS82    VECS83    VECSDT    VECS8ENT   VECS8FLD   VECS8MN   VECS8PRI   VECS8SET
VECS8STA
```
   30 routines restored

Input Device ? >
TRN,STU>

The routines shown in this document are in Word format, provided for your reference.

```
Saved by %RS from [TRN,STU] on  4-NOV-2000 19:03:42.38
INTERMEDIATE MUMPS ROUTINES
VECS512
VECS512     ;ATL/ACE PROGRAMMER-EMPLOYEE SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;
      ;OPT = Option number as entered by the user
      ;NAME = The employee's name
      ;NR = The employee number
      ;^VECEMP( = The employee file
      ;
MENU  ;
      W !!,"Employee System"
      W !!,"Option   Function"
      W !!,"1        Load employess"
      W !!,"2        Print employees"
      R !!!,"Enter option number:  ",OPT:DTIME G EXIT:OPT=""
      I '$T!(OPT["^") G EXIT
      I OPT<1!(OPT>2) W !,"Enter 1 or 2" G MENU
OPTIONS      ;
      D LOAD:OPT=1
      D PRINT:OPT=2
      G MENU
EXIT  ;
      K OPT,NAME,NR
      Q
LOAD  ;
      R !!,"Enter employee number:  ",NR:DTIME G LOADEX:NR=""
      I '$T!(NR["^") G LOADEX
      R !,"Enter employee name:  ",NAME:DTIME
      I '$T!(NAME["^") G LOADEX
      S ^VECEMP(NR)=NAME
      G LOAD
LOADEX      ;
      Q
PRINT ;
      S NR=""
      F  S NR=$O(^VECEMP(NR)) Q:NR=""  D OUTPUT
      Q
OUTPUT      ;
      W !!,"The employee number is ",NR
      W !,"The name is ",^VECEMP(NR)
      Q


VECS517
VECS517     ;ATL/ACE PROGRAMMER-INVENTORY SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;
      ;OPT = Option number as entered by the user
      ;DESCR = Description of the inventory item
      ;NR = The item number
      ;^VECINV( = The inventory file
MENU  ;
      W !!,"Inventory System"
      W !!,"Option   Function"
```

```
      W !!,"1        Load stock items"
      W !!,"2        Print stock items"
      R !!!,"Enter option number: ",OPT:DTIME G EXIT:OPT=""
      I '$T!(OPT["^") G EXIT
      I OPT<1!(OPT>2) W !,"Enter 1 or 2" G MENU
OPTIONS      ;
      D LOAD:OPT=1
      D PRINT:OPT=2
      G MENU
EXIT  ;
      K OPT,DESCR,NR
      Q
LOAD  ;
      R !!,"Enter stock number: ",NR:DTIME G LOADEX:NR=""
      I '$T!(NR["^") G LOADEX
      R !,"Enter item description: ",DESCR:DTIME
      I '$T!(DESCR["^") G LOADEX
      S ^VECINV(NR)=DESCR
      G LOAD
LOADEX       ;
      Q
PRINT ;
      S NR=""
      F  S NR=$O(^VECINV(NR)) Q:NR=""  D OUTPUT
      Q
OUTPUT       ;
      W !!,"The stock number is ",NR
      Q


VECS55
VECS55       ;
      ;;1
      FOR RECNR=1:1:5 DO ENTER
      QUIT
ENTER ;
      READ !,"Enter name: ",NAME:DTIME
      IF '$T!(NAME["^") GOTO ENEXIT
      SET ^VECARR1(RECNR)=NAME
ENEXIT       ;
      QUIT


VECS56
VECS56       ;
      ;;1
      S RECNR=""
      F  S RECNR=$ORDER(^VECARR1(RECNR)) Q:RECNR=""  D PR
      QUIT
PR    ;
      W !,"The content for record number ",RECNR
      W " is ",^VECARR1(RECNR)
      Q


VECS59
VECS59       ;ATL/ACE PROGRAMMER-DICTIONARY SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;
```

```
        ;OPT = Option number as entered by the user
        ;WORD = The word being defined
        ;DEF = The definition
        ;^VECDIC( = The dictionary file
        ;
MENU    ;
        W !!,"Dictionary System"
        W !!,"Option    Function"
        W !!,"1         Load dictionary"
        W !!,"2         Print dictionary"
        R !!!,"Enter option number: ",OPT:DTIME G EXIT:OPT=""
        I '$T!(OPT["^") G EXIT
        I OPT<1!(OPT>2) W !,"Enter 1 or 2" G MENU
OPTIONS      ;
        D LOAD:OPT=1
        D PRINT:OPT=2
        G MENU
EXIT    ;
        K OPT,WORD,DEF
        Q
LOAD    ;
        R !!,"Enter word: ",WORD:DTIME G LOADEX:WORD=""
        I '$T!(WORD["^") G LOADEX
        R !,"Enter short definition: ",DEF:DTIME
        I '$T!(DEF["^") G LOADEX
        S ^VECDIC(WORD)=DEF
        G LOAD
LOADEX       ;
        Q
PRINT   ;
        S WORD=""
        F  S WORD=$O(^VECDIC(WORD)) Q:WORD=""  D OUTPUT
        Q
OUTPUT       ;
        W !!,"The word is ",WORD
        W !,"The definition is ",^VECDIC(WORD)
        Q


VECS5CR
VECS5CR      ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
        ;;1
        ;     VARIABLE LIST
        ;
        ;     NAME        =     Individual's name
        ;     ADDR        =     Address
        ;     CITY        =     City
        ;     STATE       =     State
        ;     ZIP         =     Zip code
        ;
START   ;
        W @IOF
        W !!,?20,"Create Mailing List entry"
NAME    ;
        R !!,"Enter NAME : ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
        I NAME'?1U.AP1",",1U.AP!($L(NAME)>30)!(NAME["?")
        I  W !,"Enter the name of the new entry. "
        I  W "Enter last name,first name",! G NAME
```

```
        D CREATE,STORE G NAME
EXIT  ;
        K NAME,ADDR,CITY,STATE,ZIP
        Q
CREATE          ;
        S (ADDR,CITY,STATE,ZIP)=""
ADDR  ;
        R !,"ADDRESS : ",ADDR:DTIME I '$T!(ADDR["^") G CREXIT
        I ADDR="" G CITY
        I ADDR'?.ANP!($L(ADDR)>25)!(ADDR["?")
        I  W !,"Address must not exceed 25 characters",! G ADDR
CITY  ;
        R !,"CITY : ",CITY:DTIME I '$T!(CITY["^") G CREXIT
        I CITY="" G STATE
        I CITY'?.ANP!($L(CITY)>20)!(CITY["?")
        I  W !,"City must not exceed 20 characters" G CITY
STATE ;
        R !,"STATE : ",STATE:DTIME I '$T!(STATE["^") G CREXIT
        I STATE="" G ZIP
        I STATE'?2U!(STATE["?") W !,"State must be a 2 letter"
        I  W " abbreviation",! G STATE
ZIP   ;
        R !,"ZIP CODE : ",ZIP:DTIME I '$T!(ZIP["^") G CREXIT
        I ZIP="" G CREXIT
        I ZIP'?5N&(ZIP'?9N)!(ZIP["?") W !,"Zip code must be five"
        I  W " or nine digits, no hyphens" G ZIP
CREXIT          ;
        Q
STORE ;
        S ^VECS5G(NAME)=ADDR_"^"_CITY_"^"_STATE_"^"_ZIP
        Q


VECS5DEL
VECS5DEL        ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
        ;;1
        ;       VARIABLE LIST
        ;
        ;       NAME         =      Individual's name
        ;       ANS          =      User's response:
        ;                           <ENTER>, YES, or Y if they want to
        ;                                 delete record
        ;                           any other response if they don't
        ;                                 want to delete
        ;       MISSING      =      Set to 1 if NAME does not exist
START ;
        W @IOF
        W !!,?20,"Delete Mailing List entry"
NAME  ;
        S MISSING=0
        R !!,"Enter NAME : ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
        I NAME'?1U.A1","1U.AP!($L(NAME)>30)!(NAME["?")
        I  W !,"Enter the name of the new entry."
        I  W "  Enter last name,first name",! G NAME
        D LOOKUP D DELETE:MISSING'=1 G NAME
EXIT  ;
        K NAME,ANS,MISSING
        Q
```

```
LOOKUP          ;
        I $D(^VECS5G(NAME))=0 W !,"Record does not exist"
        I  S MISSING=1
        Q
DELETE          ;
        R !!,"Are you sure? NO//",ANS:DTIME
        I '$T!(ANS["^") G DELEXIT
        I (ANS="Y")!(ANS="YES") K ^VECS5G(NAME)
        I  W !,"Name deleted!"
        E  W !,"Name not deleted!"
DELEXIT         ;
        Q


VECS5ED
VECS5ED         ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
        ;;1
        ;       VARIABLE LIST
        ;       NAME, ADDR, CITY, STATE, ZIP = same as VECS5CR
        ;       MISSING    =    set to 1 if NAME does not exist
        ;       RECORD     =    contains record copied from ^VECS5G
        ;       INDATA     =    user's response before it is validated
START ;
        W @IOF
        W !!,?20,"Edit Mailing List entry"
NAME    ;
        S MISSING=0
        R !!,"Enter NAME : ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
        I NAME'?1U.A1",".1U.AP!($L(NAME)>30)!(NAME["?")
        I  W !,"Enter the name of the new entry."
        I  W "  Enter last name,first name",! G NAME
        D LOOKUP D STORE:MISSING'=1 G NAME
EXIT    ;
        K NAME,ADDR,CITY,STATE,ZIP,MISSING,RECORD,INDATA
        Q
LOOKUP          ;
        I $D(^VECS5G(NAME))=0 W !,"Record does not exist"
        I  S MISSING=1 G LOOKEXIT
        S RECORD=^VECS5G(NAME)
        S ADDR=$P(RECORD,"^",1)
        S CITY=$P(RECORD,"^",2)
        S STATE=$P(RECORD,"^",3)
        S ZIP=$P(RECORD,"^",4)
ADDR    ;
        W !,"ADDRESS : ",$S(ADDR="":"",1:ADDR_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G LOOKEXIT
        I INDATA="" G CITY
        I INDATA'?.ANP!($L(INDATA)>25)!(INDATA["?") W !,"Address must not "
        I  W "exceed 25 characters",! G ADDR
        S ADDR=INDATA
CITY    ;
        W !,"CITY : ",$S(CITY="":"",1:CITY_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G LOOKEXIT
        I INDATA="" G STATE
        I INDATA'?.ANP!($L(INDATA)>20)!(INDATA["?") W !,"City must not
exceed"
        I  W " 20 characters" G CITY
        S CITY=INDATA
```

```
STATE ;
      W !,"STATE : ",$S(STATE="":"",1:STATE_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G LOOKEXIT
      I INDATA="" G ZIP
      I INDATA'?2U!(INDATA["?") W !,"State must be a 2 letter"
      I  W " abbreviation",! G STATE
      S STATE=INDATA
ZIP    ;
      W !,"ZIP CODE : ",$S(ZIP="":"",1:ZIP_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G LOOKEXIT
      I INDATA="" G LOOKEXIT
      I INDATA'?5N&(INDATA'?9N)!(INDATA["?") W !,"Zip code must be five
or"
      I  W " nine digits, no hyphens" G ZIP
      S ZIP=INDATA
LOOKEXIT    ;
      Q
STORE ;
      S ^VECS5G(NAME)=ADDR_"^"_CITY_"^"_STATE_"^"_ZIP
      Q


VECS5MN
VECS5MN     ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;
      ;OPT = Option number as entered by user
      ;IOF = Control characters to clear screen (not to
      ;                      be KILLed)
      ;DTIME = Delay time for READs (not to be KILLed)
      ;II   =  Loop counter to display menu text
      ;
MAIN  ;
      D DISMENU
      I OPT=""!(OPT["^") G EXIT
      D ^VECS5CR:OPT=1,^VECS5ED:OPT=2,^VECS5DEL:OPT=3,^VECS5PR:OPT=4
      G MAIN
DISMENU     ;
      W @IOF
      W !!!,"Mailing List System"
      W !!,"Options    Functions"
      F II=1:1:4 D DISMENU2
DISMENU1    ;
      R !!,"Enter option number: ",OPT:DTIME
      I '$T!(OPT["^")!(OPT="") Q
      I (OPT<1)!(OPT>4)!(OPT="?") W !!,"Option must be "
      I  W "between 1 and 4" G DISMENU1
      Q
DISMENU2    ;
      W !!,II,$P($T(OPTIONS+II),";",3)
      Q
EXIT  ;
      K II,OPT
      Q
OPTIONS     ;
      ;;.....Create Mailing List entry
      ;;.....Edit Mailing List entry
```

```
      ;;.....Delete Mailing List entry
      ;;.....Print Mailing List entry


VECS5PR
VECS5PR     ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;NAME   = Individual's name
      ;RECORD = copy of ^VECS5G(NAME) node
      ;ANS    = user's response to "Press Enter..." prompt
      ;
START ;
      D HEADING
      D ORDER
      R !!,"Press Enter to go back to the menu",ANS:DTIME
EXIT  ;
      K NAME,RECORD,ANS
      Q
HEADING      ;
      W @IOF
      W !!,?30,"Mailing List File Listing"
      Q
ORDER ;
      S NAME=""
      F  S NAME=$O(^VECS5G(NAME)) Q:NAME=""  D DISPLAY
      Q
DISPLAY      ;
      W !!,NAME
      I $D(^VECS5G(NAME))=0 Q
      S RECORD=^VECS5G(NAME)
      W !,$P(RECORD,"^",1)
      W !,$P(RECORD,"^",2)
      W !,$P(RECORD,"^",3)
      W !,$P(RECORD,"^",4)
      Q


VECS6CR
VECS6CR     ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ;RECNR = Record number selected
      ;NAME = Individual's name
      ;ADDR = Address
      ;CITY = City
      ;STATE = State
      ;ZIP = Zip code
      ;PHONE = Phone number
      ;LCD = Last date of contact
      ;DTIME = Delay time
      ;OK = Flag used with the LOCK command
      ;  OK=1 when file is ok for updates
      ;  OK=0 when file is busy
START ;
      W @IOF
      W !!,?20,"Create Mailing List entry"
ASK   ;
      R !!,"Enter NAME: ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
```

```
        I NAME'?1U.U1","1U.UP!($L(NAME)>30)!(NAME["?")
        I  W !,"Enter the name of the desired entry."
        I  W " Enter last name,first name.",! G ASK
        S OK=1 D ADD,EDITFLDS:OK G ASK
EXIT    ;
        K NAME,ADDR,CITY,STATE,ZIP,PHONE,LCD,OK,RECNR
        Q
ADD     ;Create a new record
        L ^VECS6G(0):5 I '$T W !,"File is busy, try again later" S OK=0 Q
        I '$D(^VECS6G(0)) S ^VECS6G(0)="MAILING LIST^1^0^0"
        F RECNR=$P(^VECS6G(0),"^",3)+1:1 I '$D(^VECS6G(RECNR)) Q
        S $P(^VECS6G(0),"^",3,4)=RECNR_"^"_($P(^VECS6G(0),"^",4)+1)
        S ^VECS6G(RECNR,0)=NAME L
        W !,"Record # ",RECNR,!
        Q
EDITFLDS     ;Edit data fields
        S (ADDR,CITY,STATE,ZIP,PHONE,LCD)=""
ADDR    ;
        L ^VECS6G(RECNR,0):5
        I '$T W !,"File is busy, try again later" Q
        R !,"ADDRESS: ",ADDR:DTIME I '$T!(ADDR["^") G EDEXIT
        I ADDR'="",ADDR'?.ANP!($L(ADDR)>25)!(ADDR["?")
        I  W !,"Address must not exceed 25 characters.",!,$C(7) G ADDR
CITY    ;
        R !,"CITY: ",CITY:DTIME I '$T!(CITY["^") G EDEXIT
        I CITY'="",CITY'?.ANP!($L(CITY)>20)!(CITY["?")
        I  W !,"City must not exceed 20 characters.",!,$C(7) G CITY
STATE   ;
        R !,"STATE: ",STATE:DTIME I '$T!(STATE["^") G EDEXIT
        I STATE'="",STATE'?2U W !,"State must be a 2 character "
        I  W "abbreviation.",!,$C(7) G STATE
ZIP     ;
        R !,"ZIP: ",ZIP:DTIME I '$T!(ZIP["^") G EDEXIT
        I ZIP'="",ZIP'?5N&(ZIP'?9N) W !,"Zip must be five or "
        I  W "nine digits, no hyphen",!,$C(7) G ZIP
PHONE   ;
        R !,"PHONE: ",PHONE:DTIME I '$T!(PHONE["^") G EDEXIT
        I PHONE'="",PHONE'?3N1"-"3N1"-"4N&(PHONE'?3N1"-"4N)
        I  W !,"Phone must be entered with or without area "
        I  W "code, using hyphens.",!,$C(7) G PHONE
LCD     ;
        R !,"LAST CONTACT DATE: ",LCD:DTIME I '$T!(LCD["^") G EDEXIT
        I LCD'="",LCD'?2N1"/"2N1"/"4N W !,"Enter a date in the "
        I  W "format of MM/DD/YYYY, where MM & DD are each two "
        I  W "digits and YYYY is 4 digits.",!,$C(7) G LCD
        ;
        ; THE DATE IS ACCEPTED IN NORMAL DISPLAY FORMAT MM/DD/YYYY
        ; BUT IS STORED IN INTERNAL FORMAT YYYMMDD WITH NO SLASHES.
        ;
        I LCD'="" S LCD=($E(LCD,7,10)-1700)_$E(LCD,1,2)_$E(LCD,4,5)
EDEXIT       ;
        S
^VECS6G(RECNR,0)=NAME_"^"_ADDR_"^"_CITY_"^"_STATE_"^"_ZIP_"^"_PHONE_"^"_LC
D
        L
        Q
```

```
VECS6DEL
VECS6DEL    ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM [ 08/31/92  6:09 AM ]
      ;;1
START ;
      W @IOF
      W !!,?20,"Delete Mailing List entry"
NAME  ;
      S MISSING=0
      R !!,"Enter NAME: ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
      I NAME'?1U.A1","1U.AP!($L(NAME)>30)!(NAME["?")
      I  W !,"Enter the name of the new entry."
      I  W " Enter last name,first name",! G NAME
      D LOOKUP D DELETE:MISSING'=1 G NAME
EXIT  ;
      K NAME,ANS,MISSING
      Q
LOOKUP        ;
      F RECNR=0:0 S RECNR=$O(^VECS6G(RECNR)) Q:RECNR'>0  I
$D(^VECS6G(RECNR,0)),($P(^VECS6G(RECNR,0),"^",1)=NAME) Q
      I RECNR'>0 S MISSING=1
      Q
DELETE        ;
      R !!,"Are you sure? NO//",ANS:DTIME
      I '$T!(ANS["^") G DELEXIT
      I (ANS="Y")!(ANS="YES") K ^VECS6G(RECNR)
      I  S $P(^VECS6G(0),"^",4)=$P(^VECS6G(0),"^",4)-1
      I  W !,"Name deleted!"
      E  W !,"Name not deleted!"
      Q
DELEXIT       ;
      Q


VECS6ED
VECS6ED     ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
      ;;1
      ;VARIABLE LIST
      ; NAME, ADDR, CITY, STATE, ZIP, PHONE, LCD...
      ; same as CReate routine
      ; RECNR = Record number assigned in CReate
      ; INDATA = Temporary variable used to hold entry made by user
      ;          before it has been validated
      ; XDATE = Holds the display format of the date
      ; RECORD = Copy of the contents of the data node
START ;
      W @IOF
      W !!,?20,"Edit Mailing List entry"
ASK   ;
      R !!,"Enter NAME: ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
      I NAME'?1U.U1","1U.UP!($L(NAME)>30)!(NAME["?")
      I  W !,"Enter the name of the desired entry. "
      I  W "Enter last name,first name.",! G ASK
      D LOOKUP,EDITFLDS:RECNR>0 G ASK
EXIT  ;
      K NAME,ADDR,CITY,STATE,ZIP,PHONE,LCD,RECNR,INDATA,XDATE
      K RECORD
      Q
LOOKUP        ;
```

```
      F RECNR=0:0 S RECNR=$O(^VECS6G(RECNR)) Q:RECNR'>0  I
$D(^VECS6G(RECNR,0)),($P(^VECS6G(RECNR,0),"^",1)=NAME) S
RECORD=^VECS6G(RECNR,0) Q
      I RECNR'>0 W $C(7),"  ??",!
      Q
EDITFLDS    ;Edit data fields
      L ^VECS6G(RECNR,0):5
      I '$T W !,"File is busy, try again later" Q
      S NAME=$P(RECORD,"^",1),ADDR=$P(RECORD,"^",2)
      S CITY=$P(RECORD,"^",3)
      S STATE=$P(RECORD,"^",4),ZIP=$P(RECORD,"^",5)
      S PHONE=$P(RECORD,"^",6),LCD=$P(RECORD,"^",7)
      ;
      ; SINCE THE DATE IS STORED IN INTERNAL FORMAT YYYMMDD,
      ; WE MUST TRANSFORM IT INTO DISPLAY FORMAT MM/DD/YYYY.
      I LCD'="" S XDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,1,3)+1700)
      I LCD="" S XDATE=""
NAME  ;
      W !,"NAME: ",$S(NAME="":"",1:NAME_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?1U.U1","1U.UP!($L(INDATA)>30)!(INDATA["?")
      I  W !,"Enter the name of the desired entry. "
      I  W "Enter last name,first name.",!,$C(7) G NAME
      S:INDATA'="" NAME=INDATA
ADDR  ;
      W !,"ADDRESS: ",$S(ADDR="":"",1:ADDR_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?.ANP!($L(INDATA)>25)!(INDATA["?") W !,"Address
must "
      I  W "not exceed 25 characters.",!,$C(7) G ADDR
      S:INDATA'="" ADDR=INDATA
CITY  ;
      W !,"CITY: ",$S(CITY="":"",1:CITY_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?.ANP!($L(INDATA)>20)!(INDATA["?") W !,"City
must not "
      I  W "exceed 20 characters.",!,$C(7) G CITY
      S:INDATA'="" CITY=INDATA
STATE ;
      W !,"STATE: ",$S(STATE="":"",1:STATE_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?2U W !,"State must be a 2 character "
      I  W "abbreviation.",!,$C(7) G STATE
      S:INDATA'="" STATE=INDATA
ZIP   ;
      W !,"ZIP: ",$S(ZIP="":"",1:ZIP_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?5N&(INDATA'?9N) W !,"Zip must be five or "
      I  W "nine digits, no hyphen",!,$C(7) G ZIP
      S:INDATA'="" ZIP=INDATA
PHONE ;
      W !,"PHONE: ",$S(PHONE="":"",1:PHONE_"//") R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      I INDATA'="",INDATA'?3N1"-"3N1"-"4N&(INDATA'?3N1"-"4N) W !,"Phone
must "
      I  W "be entered with or without area code, using "
      I  W "hyphens.",!,$C(7) G PHONE
```

```
        S:INDATA'="" PHONE=INDATA
LCD     ;
        W !,"LAST CONTACT DATE: ",$S(XDATE="":"",1:XDATE_"//") R
INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        I INDATA'="",INDATA'?2N1"/"2N1"/"4N W !,"Enter a date in the "
        I  W "format of MM/DD/YYYY, where MM & DD are each two "
        I  W "digits and YYYY is 4 digits.",!,$C(7) G LCD
        ; AGAIN, THE DATE IS DISPLAYED IN DISPLAY FORMAT MM/DD/YYYY BUT IS
STORED
        ; IN INTERNAL FORMAT YYYMMDD WITH NO SLASHES.  IF THE DATE HAS BEEN
        ; CHANGED, THE TRANSFORMATION TO INTERNAL FORMAT IS DONE ON THE
VARIABLE
        ; INDATA--IF IT HAS NOT BEEN CHANGED, XDATE IS USED.
        S:INDATA'="" LCD=($E(INDATA,7,10)-
1700)_$E(INDATA,1,2)_$E(INDATA,4,5)
        S:INDATA="" LCD=($E(XDATE,7,10)-1700)_$E(XDATE,1,2)_$E(XDATE,4,5)
EDEXIT      ;
        S
$P(^VECS6G(RECNR,0),"^",1,7)=NAME_"^"_ADDR_"^"_CITY_"^"_STATE_"^"_ZIP_"^"_
PHONE_"^"_LCD
        L
        Q


VECS6MN
VECS6MN     ;ATL/ACE PROGRAMMER-MAILING LIST SYSTEM ;12/1/90
        ;;1
        ;VARIABLE LIST
        ;
        ;SPECIAL VARIABLES USED IN VA (not to be KILLed):
        ; DTIME.....Delay time
        ; IOF.......contains the codes to start output
        ;           at the top of a page or screen
        ;APPLICATION VARIABLES:
        ; OPT.......Option number chosen by the user
        ; ROUTINE...Routine name for option chosen
        ; ITEMS.....Number of items in menu
        ; II........Menu loop counter
        ; XDESCR......Text for menu option
        ;
MAIN    ;
        D DISMENU
        I (OPT["^") G EXIT
        S ROUTINE=$P($T(OPTIONS+OPT),"^",2,3)
        D @ROUTINE G MAIN
EXIT    ;
        K OPT,ROUTINE,ITEMS,II,XDESCR
        Q
DISMENU     ;
        W @IOF
        W !!!,?20,"MAILING LIST SYSTEM"
        W !!,"OPTIONS    FUNCTIONS"
        F II=1:1 D DISMENU2 Q:XDESCR=""
        S ITEMS=II-1
DISMENU1    ;
        R !!,"ENTER OPTION NUMBER: ",OPT:DTIME
        IF '$T!(OPT["^")!(OPT="") S OPT="^" Q
```

```
        I (OPT<1)!(OPT>ITEMS) W !!,"OPTION NUMBER MUST BE "
        I  W "BETWEEN 1 AND ",ITEMS G DISMENU1
        Q
DISMENU2     ;
        S XDESCR=$P($T(OPTIONS+II),";;",2)
        I XDESCR'="" W !!,II,$P(XDESCR,"^",1)
        Q
OPTIONS      ;
        ;;.....CREATE MAILING LIST ENTRY^^VECS6CR
        ;;.....EDIT MAILING LIST ENTRY^^VECS6ED
        ;;.....DELETE MAILING LIST ENTRY^^VECS6DEL
        ;;.....PRINT MAILING LIST ENTRIES^^VECS6PR


VECS6PR
VECS6PR      ;LM/ATLANTA PARAGON
        ;;1
        ;VARIABLE LIST
        ;
        ;RECNR.....RECNR number assigned in CReate
        ;PAGE......Page number counter
        ;ANS.......response to prompt
        ;NODE......contents of ^VECS6G(RECNR,0) node
        ;OUT.......holds response: during display of
        ;      multiple pages of output, user can press
        ;      Enter to continue or ^ to stop display
        ;POP.......holds response: when user is asked to
        ;      enter a device number, they can enter
        ;      a number, press Enter, or ^ to quit.  If
        ;      they enter ^, POP gets set to 1
        ;XDATE.....date in display format
        ;LCD.......date in internal format
        ;IN........input from the device prompt
        ;
START ;
        S PAGE=1,OUT=""
        D OPEN G EXIT:POP
        U IO
        D HEADING
        D ORDER
        D CLOSE
        R !,"Press Enter to go back to the menu",ANS:DTIME
EXIT  ;
        K RECNR,PAGE,ANS,NODE,OUT,POP,LCD,XDATE,IN
        Q
HEADING      ;
        I PAGE>1,($E(IOST,1,2)="C-")
        I  R !,"Press Enter to continue or ^ to exit",OUT:DTIME
Q:'$T!(OUT["^")
        W @IOF
        W !!,?30,"MAILING LIST LISTING",?60,"PAGE ",PAGE
        S PAGE=PAGE+1
        Q
ORDER ;
        F RECNR=0:0 S RECNR=$O(^VECS6G(RECNR)) Q:RECNR'>0  D DISPLAY
Q:OUT["^"
        Q
DISPLAY      ;LINE 1
```

```
      Q:'$D(^VECS6G(RECNR,0))
      S NODE=^VECS6G(RECNR,0)
      W !!!,$P(NODE,"^",1)
      W ?40,"PHONE: ",$P(NODE,"^",6)
LINE2 ;
      W !,$P(NODE,"^",2)
LINE3 ;
      W !,$P(NODE,"^",3),?$X+2
      W $P(NODE,"^",4),?$X+2
      W $P(NODE,"^",5)
      ; WE WANT THE DATE PRINTED IN DISPLAY FORMAT MM/DD/YYYY
      ; NOT INTERNAL FORMAT YYYMMDD
      S LCD=$P(NODE,"^",7)
      I LCD="" S XDATE=""
      I LCD'="" S XDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,1,3)+1700)
      W ?40,XDATE
      D:$Y+2>IOSL HEADING
      Q
OPEN  ;
      S %ZIS="M" D ^%ZIS
      Q
CLOSE ;
      D ^%ZISC
      Q

VECS7CRI
VECS7CRI     ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
      ;;1
      ;
      ;VARIABLE LIST
      ;
      ;NAME........Name as entered by the user
      ;RECNR......Record number
      ;DTIME.......Delay time (not to be KILLed)
      ;XDUP.........flag used to show that name entered is
      ; a duplicate (XDUP=1 means that record
      ; is a duplicate)
      ;BUSY........flag used to show that file is busy
      ; (BUSY=1 means the file is busy)
      ;OK..........flag used to show that the NAME is valid
      ; (OK=1 means NAME is valid)
      ;
START ;
      W @IOF
      W !!,?20,"Create Mailing List Entry"
ASK   ;
      R !!,"Enter NAME: ",NAME:DTIME I '$T!(NAME["^")!(NAME="") G EXIT
      S OK=1,XDUP=0 D CHECK G:'OK!(XDUP) ASK
      S BUSY=0 D ADD G:BUSY ASK
      D ^VECS7FLD
      G ASK
EXIT  ;
      K OK,BUSY,XDUP,NAME,RECNR
      Q
ADD   ;Create a new record
      L +^VECS7G(0):5 I '$T W !,"File is busy, try again later." S BUSY=1
Q
```

```
            ;  There are a few changes in this paragraph other than
            ;  adding the code to create the "B" index.  A few of
            ;  the global references below have been coded using
            ;  the concept of naked references which is discussed
            ;  later in this lesson
            I '$D(^VECS7G(0)) S ^(0)="MAILING LIST^1^0^0"
            F RECNR=$P(^VECS7G(0),"^",3)+1:1 I '$D(^(RECNR)) Q
            S $P(^VECS7G(0),"^",3,4)=RECNR_"^"_($P(^(0),"^",4)+1)
            S ^VECS7G(RECNR,0)=NAME,^VECS7G("B",NAME,RECNR)="" L -^VECS7G(0)
            W !,"Record # ",RECNR,!
            Q
CHECK ;
            I NAME["""" S NAME=$P(NAME,"""",2) G CHKEXIT
            I $D(^VECS7G("B",NAME)) W !,"Record with this name "
            I  W "already exists, if you wish to add, enter name "
            I  W "enclosed",!," in quotes",! S XDUP=1 Q
CHKEXIT      ;
            I NAME'?1U.U1","1U.UP!($L(NAME)>30)!(NAME["?")
            I  W !,"Enter the name of the desired entry.  "
            I  W "Enter last name,first name.",! S OK=0
            Q


VECS7EDI
VECS7EDI    ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
            ;;1
            ;VARIABLE LIST
            ;
            ;NAME..........Name entered by user
            ;RECNR........Record number
            ;COUNT.........Number of matches to name user entered
            ;CHOICE........If there were duplicate names, number
            ; of choice user entered
            ;NAMES().......Array to hold duplicate names
            ;CH...........Loop counter to number selections
            ;
START ;
            W @IOF
            W !,?20,"Edit Mailing List Entries"
ASK    ;
            R !!,"Select MAILING LIST NAME: ",NAME:DTIME
            I '$T!(NAME["^")!(NAME="") G EXIT
            I NAME'?1U.U1","1U.UP!($L(NAME)>30)!(NAME["?")
            I  W !,"Enter the name of the desired entry.  "
            I  W "Enter last name,first name.",! G ASK
            D LOOKUP,^VECS7FLD:RECNR>0 G ASK
EXIT   ;
            K NAME,CHOICE,CH,COUNT,NAMES,RECNR
            Q
LOOKUP       ;
            S COUNT=0
            F RECNR=0:0 S RECNR=$O(^VECS7G("B",NAME,RECNR))  Q:RECNR'>0  DO
MATCH
            S CHOICE=""
            I COUNT=1 S CHOICE=1
            I COUNT>1 D CHOOSE
            I $D(NAMES(+CHOICE)) S RECNR=NAMES(CHOICE)
            I RECNR'>0 W $C(7)," ??",!
```

```
        Q
MATCH ;
        S COUNT=COUNT+1
        S NAMES(COUNT)=RECNR,NAMES(COUNT,0)=^VECS7G(RECNR,0)
        Q
CHOOSE          ;
        F CH=1:1:COUNT W !,CH,")
",$P(NAMES(CH,0),"^",1),?40,$P(NAMES(CH,0),"^",6) I CH#5=0!(CH=COUNT) D
REPLY Q:CHOICE'=""
        Q
REPLY  ;
        W !,"CHOOSE 1 - ",CH," or press RETURN to continue: "
        R CHOICE:DTIME
        ; We want to see if the user entered an ^ or pressed the Enter
        ; key.  To understand this "trick" we must remember that a null
        ; in contained in EVERYTHING (even an "^")  That means, that
        ; ("^"[CHOICE) is the same thing as
        ; (CHOICE["^")!(CHOICE="")
        ;.
        I '$T!("^"[CHOICE) G CHEXIT
        ;
        I '$D(NAMES(CHOICE)) W !,?10,"Must be a number "
        I  W "from 1 through ",CH,!,$C(7) G REPLY
CHEXIT          ;
        Q

VECS7FLD
VECS7FLD    ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
        ;;1
        ;VARIABLE LIST
        ;RECNR.........Record number
        ;RECORD........copy of data node
        ;NAME..........Name as stored in the record
        ;OLDNAME.......Original name as stored in the record
        ;ADDR..........Address
        ;CITY..........City
        ;STATE.........State
        ;ZIP...........Zip code
        ;PHONE.........Phone number
        ;LCD...........Internal form of last contact date
        ;XDATE.......Display form of date as stored in node
        ;ANS...........User's answer to delete? questions
        ;INDATA........Holds users input before validation
        ;OK............Flag to designate if user is deleting
        ; record (OK=1 says record is to be
        ; deleted)
START ;
        ;Edit data fields
        L +^VECS7G(RECNR,0):5
        I '$T W !,"File is busy, try again later" Q
        S RECORD=^VECS7G(RECNR,0)
        S (OLDNAME,NAME)=$P(RECORD,"^",1),ADDR=$P(RECORD,"^",2)
        S CITY=$P(RECORD,"^",3)
        S STATE=$P(RECORD,"^",4),ZIP=$P(RECORD,"^",5)
        S PHONE=$P(RECORD,"^",6)
        S LCD=$P(RECORD,"^",7)
        I LCD'="" S XDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,1,3)+1700)
```

```
             I LCD="" S XDATE=""
NAME   ;
             W !,"NAME: ",$S(NAME="":"",1:NAME_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" ADDR
             I  W !,"City must not exceed 20 characters.",!,$C(7) G CITY
             I INDATA="@" D DELETE I INDATA'="" G EXIT:OK,NAME
             S NAME=INDATA
ADDR   ;
             W !,"ADDRESS:  ",$S(ADDR="":"",1:ADDR_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" CITY
             I INDATA'="@",INDATA'?.ANP!($L(INDATA)>25)!(INDATA["?")
             I  W !,"Address must not exceed 25 characters.",!,$C(7) G ADDR
             I INDATA="@" D DELFLD I INDATA'="" G ADDR
             S ADDR=INDATA
CITY   ;
             W !,"CITY:  ",$S(CITY="":"",1:CITY_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" STATE
             I INDATA'="@",INDATA'?.ANP!($L(INDATA)>20)!(INDATA["?")
             I  W !,"City must not exceed 20 characters.",!,$C(7) G CITY
             I INDATA="@" D DELFLD I INDATA'="" G CITY
             S CITY=INDATA
STATE  ;
             W !,"STATE: ",$S(STATE="":"",1:STATE_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" ZIP
             I INDATA'="@",INDATA'?2U W !,"State must be a 2 character "
             I  W "abbreviation.",!,$C(7) G STATE
             I INDATA="@" D DELFLD I INDATA'="" G STATE
             S STATE=INDATA
ZIP    ;
             W !,"ZIP: ",$S(ZIP="":"",1:ZIP_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" PHONE
             I INDATA'="@",INDATA'?5N&(INDATA'?9N) W !,"Zip must be five or "
             I  W "nine digits, no hyphen.",!,$C(7) G ZIP
             I INDATA="@" D DELFLD I INDATA'="" G ZIP
             S ZIP=INDATA
PHONE  ;
             W !,"PHONE: ",$S(PHONE="":"",1:PHONE_"//") R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" LCD
             I INDATA'="@",INDATA'?3N1"-"3N1"-"4N&(INDATA'?3N1"-"4N)
             I  W !,"Phone must be entered with or without area code, using "
             I  W "hyphens.",!,$C(7) G PHONE
             I INDATA="@" D DELFLD I INDATA'="" G PHONE
             S PHONE=INDATA
LCD    ;
             W !,"LAST CONTACT DATE: ",$S(XDATE="":"",1:XDATE_"//")
             R INDATA:DTIME
             I '$T!(INDATA["^") G EDEXIT
             G:INDATA="" DATE
             I INDATA'="@",INDATA'?2N1"/"2N1"/"4N W !,"Enter a date in the "
             I  W "format of MM/DD/YYYY, where MM & DD are each two "
             I  W "digits and YYYY is 4 digits.",!,$C(7) G LCD
```

```
       I INDATA="@" D DELFLD G LCD:INDATA'="" I INDATA="" S LCD="" G EDEXIT
DATE   ;
       S:INDATA'="" LCD=($E(INDATA,7,10)-
1700)_$E(INDATA,1,2)_$E(INDATA,4,5)
       S:INDATA=""&(XDATE'="") LCD=($E(XDATE,7,10)-
1700)_$E(XDATE,1,2)_$E(XDATE,4,5)
       I INDATA=""&(XDATE="") S LCD=""
EDEXIT     ;
       S
$P(^VECS7G(RECNR,0),"^",1,7)=NAME_"^"_ADDR_"^"_CITY_"^"_STATE_"^"_ZIP_"^"_
PHONE_"^"_LCD
       I OLDNAME'=NAME K ^VECS7G("B",OLDNAME,RECNR)
       I  S ^VECS7G("B",NAME,RECNR)=""
       L -^VECS7G(RECNR,0)
EXIT   ;
       K NAME,ADDR,CITY,STATE,ZIP,PHONE,LCD,XDATE,ANS,INDATA
       K OK,OLDNAME,RECNR,RECORD
       Q
DELFLD     ;
       R !,"Sure you wish to delete ? ",ANS:DTIME
       I '$T!(ANS["^")!(ANS="") GOTO DELFEXIT
       I (ANS="Y")!(ANS="YES") S INDATA=""
       I  W "   ... <FIELD DELETED>"
       E  W "   ... <FIELD NOT DELETED>"
DELFEXIT   ;
       QUIT
DELETE     ;
       L +^VECS7G(0):5
       I '$T W !,"File is busy, try again later" Q
       W !!,"Sure you want to delete the entire '",NAME,"' MAILING LIST ?"
       R ANS:DTIME I '$T!(ANS["^")!(ANS="") G DELEXIT
       I (ANS'="Y"),(ANS'="YES") W !," ... not deleted !",$C(7),! G DELEXIT
       K ^VECS7G(RECNR),^VECS7G("B",NAME,RECNR)
       S $P(^VECS7G(0),"^",4)=$P(^VECS7G(0),"^",4)-1 L -^VECS7G(0)
       W !," '",NAME,"' DELETED !",! S OK=1
DELEXIT    ;
       Q


VECS7MNI
VECS7MNI    ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM;12/1/90
       ;;1
       ;VARIABLE LIST
       ;
       ;SPECIAL VARIABLES USED IN VA:
       ;DTIME......Delay time (not to be KILLed)
       ;IOF........contains the codes to start output
       ;  at the top of a page or screen
       ;APPLICATION VARIABLES:
       ;OPT........Option number chosen by the user
       ;ROUTINE...Routine name for option chosen
       ;ITEMS.....Number of items in menu
       ;II........Menu loop counter
       ;XDESCR....Text for menu option
START ;
MAIN  ;
       D DISMENU
       I OPT=""!(OPT["^") G EXIT
```

```
        S ROUTINE=$P($T(OPTIONS+OPT),"^",2,3)
        D @ROUTINE G MAIN
EXIT    ;
        K OPT,ROUTINE,ITEMS,XDESCR,II
        Q
DISMENU     ;
        W @IOF
        W !!!,?20,"MAILING LIST SYSTEM"
        W !!,"OPTIONS     FUNCTIONS"
        F II=1:1 D DISMENU2 Q:XDESCR=""
        S ITEMS=II-1
DISMENU1    ;
        R !!,"ENTER OPTION NUMBER: ",OPT:DTIME
        Q:OPT=""!('$T)!(OPT["^")
        I (OPT<1)!(OPT>ITEMS) W !!,"OPTION NUMBER MUST BE "
        I  W "BETWEEN 1 AND ",ITEMS
        I  R !!,?10,"Press RETURN to continue",OPT:DTIME G DISMENU1
        Q
DISMENU2    ;
        S XDESCR=$P($T(OPTIONS+II),";;",2)
        I XDESCR'="" W !!,II,$P(XDESCR,"^",1)
        Q
OPTIONS     ;
        ;;.....CREATE MAILING LIST ENTRY^^VECS7CRI
        ;;.....EDIT MAILING LIST ENTRY^^VECS7EDI
        ;;.....PRINT MAILING LIST ENTRIES^^VECS7PRI


VECS7PRI
VECS7PRI    ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
        ;;1
        ;VARIABLE LIST
        ;RECNR.....Record number assigned in Create
        ;PAGE......Page number counter
        ;IN........holds reponse:  during display of
        ;ANS.......holds repsonse to "Press enter to continue.."
        ;NODE......contents of ^VECS7G(RECNR,0) node
        ;OUT.......holds response: during display of
        ;  multiple pages of output, user can press
        ;  enter to continue or ^ to stop display
        ;POP.......holds response:  when user is asked to
        ;  enter a device number, they can enter
        ;  a number, press Enter, or ^ to quit.  If
        ;  they enter ^, POP gets set to 1
        ;XDATE.....Holds the display format of the date
        ;LCD.......Holds the internal format of the date
        ;
START   ;
        S PAGE=1,OUT=""
        D OPEN G EXIT:POP
        U IO
        D HEADING
        D ORDER
        D CLOSE
        R !,"Press Enter to go back to the menu",ANS:DTIME
EXIT    ;
        K RECNR,PAGE,IN,ANS,NODE,OUT,POP,LCD,XDATE
        Q
```

```
HEADING     ;
      I PAGE>1,($E(IOST,1,2)="C-")
      I  R !,"Press Enter to continue ^ to exit",OUT:DTIME Q:'$T!(OUT["^")
      W @IOF
      W !!,?30,"MAILING LIST FILE LISTING",?60,"PAGE ",PAGE
      S PAGE=PAGE+1
      Q
ORDER ;
      F RECNR=0:0 S RECNR=$O(^VECS7G(RECNR)) Q:RECNR'>0  D DISPLAY
Q:OUT["^"
      Q
DISPLAY     ;LINE1
      Q:'$D(^VECS7G(RECNR,0))
      S NODE=^VECS7G(RECNR,0)
      W !!!,$P(NODE,"^",1)
      W ?40,"PHONE:  ",$P(NODE,"^",6)
LINE2 ;LINE 2
      W !,$P(NODE,"^",2)
LINE3 ;LINE 3
      W !,$P(NODE,"^",3),?$X+2
      W $P(NODE,"^",4),?$X+2
      W $P(NODE,"^",5)
      ;WE WANT THE DATE PRINTED IN DISPLAY FORMAT MM/DD/YYYY
      ;NOT INTERNAL FORMAT YYYMMDD
      S LCD=$P(NODE,"^",7)
      I LCD="" S XDATE=""
      I LCD'="" S XDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,1,3)+1700)
      W ?40,XDATE
      D:$Y+2>IOSL HEADING
      Q
OPEN  ;
      S %ZIS="M" D ^%ZIS
      Q
      ;
CLOSE ;
      D ^%ZISC
      Q


VECS81
VECS81      ;LESSON 8
      ;;1
      SET A=15
      SET B=20
      DO SUB1
      QUIT
SUB1  ;
      NEW A
      WRITE !,"THE VALUE OF A IS NOW: ",A
      QUIT


VECS82
VECS82      ;LESSON 8
      ;;1
      SET A=15
      SET B=20
      DO SUB1
      WRITE !,"AFTER SUB1, THE VALUE OF A IS: ",A
```

```
      QUIT
SUB1  ;
      NEW A
      SET A="ABCDEF"
      WRITE !,"IN SUB1, THE VALUE OF A IS NOW: ",A
      WRITE !,"IN SUB1, THE VALUE OF B IS: ",B
      QUIT


VECS83
VECS83      ;LESSON 8
      ;;1
      ;VARIABLE LIST
      ;FIRST = Letter to search by
      ;  as entered by user
      ;BEFOREFR = Letter of the alphabet
      ;  that is before the
      ;  letter entered by the
      ;  user
      ;NAME = NAME subscript
      ;RECNR = Record nr. subscript
      ;
      READ !,"ENTER FIRST LETTER OF NAME: ",FIRST:DTIME
      DO FIND
      QUIT
FIND  ;
      SET BEFOREFR=$A(FIRST)-1
      SET NAME=$C(BEFOREFR)_"zzzz"
      F X=1:1 S NAME=$O(^VECS8G("B",NAME)) Q:NAME](FIRST_"zzzz")!(NAME="")
DO DISPLAY
      QUIT
DISPLAY     ;
      SET RECNR=""
      F X=1:1 S RECNR=$O(^VECS8G("B",NAME,RECNR)) Q:RECNR=""  DO DISP1
      QUIT
DISP1 ;
      WRITE !,"RECORD NUMBER OF ",NAME," IS ",RECNR
      QUIT


VECS8DT
VECS8DT      ;LCM;DATE UTILITY ROUTINE
      ;;1
DATE  ;
      SET ERROR=0
      READ !,"ENTER THE DATE: ",XDATE:DTIME
      SET MON=$P(XDATE,"/",1)
      SET XDAY=$P(XDATE,"/",2)
      SET YR=$P(XDATE,"/",3)
      IF MON<1!(MON>12) DO ERRMSG G DATE
DAYS  ;
      D
ERRMSG:$P("31,"_(YR#4=0+28)_",31,30,31,30,31,31,30,31,30,31",",",MON)<XDAY
      G DATE:ERROR
      QUIT
ERRMSG      ;
      SET ERROR=1
      WRITE !,"REENTER DATE"
      QUIT
```

```
VECS8ENT
VECS8ENT      ;LCM;04:19 PM  2 Dec 1989
      ;;1
      ;VARIABLE LIST
      ;
      ;FORCE.........Flag to indicate whether a record with
      ;  a duplicate name should be forced
      ;  into the file; FORCE=1 means bypass
      ;  the lookup
      ;RECNR........Record number
      ;ANS..........User's response to a question
      ;NREC.........Record number with proper ending
      ;MOD..........Result of modulo division
      ;TEEN.........Record number is in the teens
      ;COUNT........Counter of duplicate names
      ;CHOICE.......User's choice from list of duplicates
      ;CH...........Selection number on list of duplicates
      ;NAMES()......Local array which holds duplicate names
      ;BUSY.........Flag that indicates file is locked:
      ;  BUSY=1 when file is busy
      ;FORCE........Flag that indicates whether a duplicate
      ;  record is being forced into the file:
      ;  FORCE=0 if record is NOT forced
      ;  FORCE=1 if record IS to be forced
START ;
      W @IOF
ASK   ;
      NEW NAME,CHOICE,NREC,MOD,TEEN,COUNT,CH,BUSY,FORCE,ANS,RECNR
      S (FORCE,RECNR)=0
      R !!,"Select MAILING LIST NAME: ",NAME:DTIME
      I '$T!(NAME["^")!(NAME="") G EXIT
      I NAME["""" S NAME=$P(NAME,"""",2),FORCE=1
      I NAME'?1U.U1","1U.UP!($L(NAME)>30)!(NAME["?")
      I  W !,"Enter the name of the desired entry."
      I  W "Enter last name,first name.",! G ASK
      I 'FORCE D LOOKUP I CHOICE="" G ASK
      I RECNR'>0 D CREATE I RECNR'>0 W $C(7)," ??" G ASK
      D ^VECS8FLD G ASK
EXIT  ;
      Q
LOOKUP        ;
      S COUNT=0
      F RECNR=0:0 S RECNR=$O(^VECS8G("B",NAME,RECNR)) Q:RECNR'>0  I
$D(^VECS8G(RECNR,0)),$P(^VECS8G(RECNR,0),"^",1)=NAME D MATCH
      S CHOICE=""
      I COUNT=0 S CHOICE="None" Q
      I COUNT=1 S CHOICE=1
      I COUNT>1 D CHOOSE
      I $D(NAMES(+CHOICE)) S RECNR=NAMES(CHOICE)
      K NAMES
      Q
MATCH ;
      S COUNT=COUNT+1
      S NAMES(COUNT)=RECNR,NAMES(COUNT,0)=^VECS8G(RECNR,0)
      Q
CHOOSE        ;
```

```
      F CH=1:1:COUNT W
!,CH,")",$P(NAMES(CH,0),"^",1),?40,$P(NAMES(CH,0),"^",6) I
CH#5=0!(CH=COUNT) D REPLY Q:CHOICE'=""
      Q
REPLY ;
      W !,"CHOOSE 1 - ",CH,": " R CHOICE:DTIME
      I '$T!("^"[CHOICE) G CHEXIT
      I '$D(NAMES(CHOICE)) W !,?10,"Must be a number "
      I  W "from 1 through ",CH,!,$C(7) G REPLY
CHEXIT       ;
      Q
CREATE       ;Create a new record
      S
NREC=$S($D(^VECS8G(0)):$P(^VECS8G(0),"^",4)+1,1:1),MOD=NREC#10,TEEN=NREC#1
00>10&(NREC#100<20)
      S
NREC=NREC_$S(TEEN:"TH",1:$P("TH^ST^ND^RD^TH^TH^TH^TH^TH^TH","^",MOD+1))
ASKCR ;
      W $C(7),!?4,"ARE YOU ADDING '",NAME,"' AS A NEW MAILING LIST (THE
",NREC,")? "
      R ANS:DTIME I '$T!(ANS="^") G CREXIT
      I ANS=""!("NnYy"'[$E(ANS)) W $C(7),"  ??" G ASKCR
      I "Yy"[$E(ANS) D ADD
CREXIT       ;
      Q
ADD   ;
      L ^VECS8G(0):5 I '$T W !,"File is busy, try again later." S BUSY=1 Q
      I '$D(^VECS8G(0)) S ^VECS8G(0)="MAILING LIST^1^0^0"
      F RECNR=$P(^VECS8G(0),"^",3)+1:1 I '$D(^VECS8G(RECNR)) Q
      S $P(^VECS8G(0),"^",3,4)=RECNR_"^"_($P(^VECS8G(0),"^",4)+1)
      S ^VECS8G(RECNR,0)=NAME,^VECS8G("B",NAME,RECNR)="" L
      W !,"Record # ",RECNR,!
      Q

VECS8FLD
VECS8FLD     ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
      ;;1
      ;VARIABLE LIST
      ;RECNR.........Record number
      ;RECORD........copy of data node
      ;NAME..........Name as stored in the record
      ;OLDNAME.......Original name as stored in the record
      ;ADDR..........Address
      ;CITY..........City
      ;STATE.........State
      ;ZIP...........Zip code
      ;PHONE.........Phone number
      ;LCD...........Internal form of last contact date
      ;YDATE.......Display form of date as stored in node
      ;ANS...........User's answer to delete? questions
      ;INDATA........Holds users input before validation
      ;OK............Flag to designate if user is deleting
      ;  record (OK=1 says record is to be
      ;  deleted)
      ;Edit data fields
START ;
```

```
        N
RECORD,ADDR,CITY,STATE,ZIP,PHONE,LCD,YDATE,ANS,INDATA,OK,NAME,OLDNAME
        L +^VECS8G(RECNR,0):5
        I '$T W !,"File is busy, try again later" Q
        S RECORD=^VECS8G(RECNR,0)
        S (OLDNAME,NAME)=$P(RECORD,"^",1),ADDR=$P(RECORD,"^",2)
        S CITY=$P(RECORD,"^",3)
        S STATE=$P(RECORD,"^",4),ZIP=$P(RECORD,"^",5)
        S PHONE=$P(RECORD,"^",6)
        S LCD=$P(RECORD,"^",7)
        I LCD'="" S YDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,2,3)+1700)
        I LCD="" S YDATE=""
NAME    ;
        W !,"NAME: ",$S(NAME="":"",1:NAME_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" ADDR
        I INDATA'="@",INDATA'?1U.U1","1U.UP!($L(INDATA)>30)!(INDATA["?")
        I  W !,"Enter the name of the desired entry. "
        I  W "Enter last name,first name.",! G NAME
        I INDATA="@" S OK=0 D DELETE G EXIT:OK,NAME
        S NAME=INDATA
ADDR    ;
        W !,"ADDRESS: ",$S(ADDR="":"",1:ADDR_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" CITY
        I INDATA'="@",INDATA'?.ANP!($L(INDATA)>25)!(INDATA["?")
        I  W !,"Address must not exceed 25 characters.",!,$C(7) G ADDR
        I INDATA="@" D DELFLD I INDATA'="" G ADDR
        S ADDR=INDATA
CITY    ;
        W !,"CITY: ",$S(CITY="":"",1:CITY_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" STATE
        I INDATA'="@",INDATA'?.ANP!($L(INDATA)>20)!(INDATA["?")
        I  W !,"City must not exceed 20 characters.",!,$C(7) G CITY
        I INDATA="@" D DELFLD I INDATA'="" G CITY
        S CITY=INDATA
STATE   ;
        W !,"STATE: ",$S(STATE="":"",1:STATE_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" ZIP
        I INDATA'="@",INDATA'?2U W !,"State must be a 2 character "
        I  W "abbreviation.",!,$C(7) G STATE
        I INDATA="@" D DELFLD I INDATA'="" G STATE
        S STATE=INDATA
ZIP     ;
        W !,"ZIP: ",$S(ZIP="":"",1:ZIP_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" PHONE
        I INDATA'="@",INDATA'?5N&(INDATA'?9N) W !,"Zip must be five or "
        I  W "nine digits, no hyphen.",!,$C(7) G ZIP
        I INDATA="@" D DELFLD I INDATA'="" G ZIP
        S ZIP=INDATA
PHONE   ;
        W !,"PHONE: ",$S(PHONE="":"",1:PHONE_"//") R INDATA:DTIME
        I '$T!(INDATA["^") G EDEXIT
        G:INDATA="" LCD
```

Page 24

```
      I INDATA'="@",INDATA'?3N1"-"3N1"-"4N&(INDATA'?3N1"-"4N)
      I  W !,"Phone must be entered with or without area code, using "
      I  W "hyphens.",!,$C(7) G PHONE
      I INDATA="@" D DELFLD I INDATA'="" G PHONE
      S PHONE=INDATA
LCD   ;
      W !,"LAST CONTACT DATE: ",$S(YDATE="":"",1:YDATE_"//")
      R INDATA:DTIME
      I '$T!(INDATA["^") G EDEXIT
      G:INDATA="" DATE
      I INDATA'="@",INDATA'?2N1"/"2N1"/"4N W !,"Enter a date in the "
      I  W "format of MM/DD/YYYY, where MM & DD are each two "
      I  W "digits and YYYY is 4 digits.",!,$C(7) G LCD
      I INDATA="@" D DELFLD I INDATA'="" G LCD
DATE  ;
      S:INDATA'="" LCD=($E(INDATA,7,10)-
1700)_$E(INDATA,1,2)_$E(INDATA,4,5)
EDEXIT      ;
      S
$P(^VECS8G(RECNR,0),"^",1,7)=NAME_"^"_ADDR_"^"_CITY_"^"_STATE_"^"_ZIP_"^"_
PHONE_"^"_LCD
      I OLDNAME'=NAME K ^VECS8G("B",OLDNAME,RECNR)
      I  S ^VECS8G("B",NAME,RECNR)=""
      L -^VECS8G(RECNR,0)
EXIT  ;
      Q
DELFLD       ;
      R !,"Sure you wish to delete ? ",ANS:DTIME
      I '$T!(ANS["^")!(ANS="") GOTO DELFEXIT
      I (ANS="Y")!(ANS="YES") S INDATA=""
      I  W "  ... <FIELD DELETED>"
      E  W "  ... <FIELD NOT DELETED>"
DELFEXIT     ;
      QUIT
DELETE       ;
      W !!,"Sure you want to delete the entire '",NAME,"' MAILING LIST ? "
      R ANS:DTIME I '$T!(ANS["^")!(ANS="") G DELEXIT
      I (ANS'="Y"),(ANS'="YES") W !," ... not deleted !",$C(7),!
      I  G DELEXIT
      K ^VECS8G(RECNR),^VECS8G("B",NAME,RECNR)
      L ^VECS8G(0):5
      I '$T W !,"File is busy, try again later" Q
      S $P(^VECS8G(0),"^",4)=$P(^VECS8G(0),"^",4)-1 L
      W !," '",NAME,"' DELETED !",! S OK=1
DELEXIT      ;
      Q


VECS8MN
VECS8MN      ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
      ;;1
      ;VARIABLE LIST
      ;
      ;SPECIAL VARIABLES USED IN VA:
      ; DTIME.....Delay time (not to be KILLed)
      ; IOF.......contains the codes to start output
      ;    at the top of a page or screen
      ;APPLICATION VARIABLES:
```

```
            ;  OPT.......Option number chosen by the user
            ;  ROUTINE...Routine name for option chosen
            ;  ITEMS.....Number of items in menu
            ;  II........Menu loop counter
            ;  XDESCR.....Text for menu option
MAIN  ;
      D DISMENU
      I OPT=""!(OPT["^") G EXIT
      S ROUTINE=$P($T(OPTIONS+OPT),"^",2,3)
      D @ROUTINE G MAIN
EXIT  ;
      K OPT,ROUTINE,ITEMS,XDESCR,II
      Q
DISMENU      ;
      W @IOF
      W !!!,?20,"MAILING LIST SYSTEM"
      W !!,"OPTIONS     FUNCTIONS"
      F II=1:1 D DISMENU2 Q:XDESCR=""
      S ITEMS=II-1
DISMENU1     ;
      R !!,"ENTER OPTION NUMBER:  ",OPT:DTIME
      Q:OPT=""!('$T)!(OPT["^")
      I (OPT<1)!(OPT>ITEMS) W !!,"OPTION NUMBER MUST BE "
      I  W "BETWEEN 1 AND ",ITEMS
      I  R !!,?10,"Press RETURN to continue",OPT:DTIME G DISMENU1
      Q
DISMENU2     ;
      S XDESCR=$P($T(OPTIONS+II),";;",2)
      I XDESCR'="" W !!,II,$P(XDESCR,"^",1)
      Q
OPTIONS      ;
      ;;.....ENTER OR EDIT MAILING LIST ENTRY^^VECS8ENT
      ;;.....PRINT MAILING LIST ENTRIES^^VECS8PRI

VECS8PRI
VECS8PRI    ;ATL/ACE PROGRAMMER--MAILING LIST SYSTEM; 12/1/90
      ;;1
      ;VARIABLE LIST
      ;RECNR.....Record number assigned in Create
      ;PAGE......Page number counter
      ;IN.......holds reponse:  during display of
      ;ANS.......holds repsonse to "Press enter to continue.."
      ;NODE......contents of ^VECS8G(RECNR,0) node
      ;OUT.......holds response: during display of
      ;  multiple pages of output, user can press
      ;  enter to continue or ^ to stop display
      ;POP.......holds response:  when user is asked to
      ;  enter a device number, they can enter
      ;  a number, press Enter, or ^ to quit.  If
      ;  they enter ^, POP gets set to 1
      ;XDATE.....Holds the display format of the date
      ;LCD.......Holds the internal format of the date
      ;
START ;
      S PAGE=1,OUT=""
      D OPEN G EXIT:POP
      U IO
```

```
      D HEADING
      D ORDER
      D CLOSE
      R !,"Press Enter to go back to the menu",ANS:DTIME
EXIT  ;
      K RECNR,PAGE,IN,ANS,NODE,OUT,POP,LCD,XDATE
      Q
HEADING      ;
      I PAGE>1,($E(IOST,1,2)="C-")
      I  R !,"Press Enter to continue ^ to exit",OUT:DTIME Q:'$T!(OUT["^")
      W @IOF
      W !!,?30,"MAILING LIST FILE LISTING",?60,"PAGE ",PAGE
      S PAGE=PAGE+1
      Q
ORDER ;
      F RECNR=0:0 S RECNR=$O(^VECS8G(RECNR)) Q:RECNR'>0  D DISPLAY
Q:OUT["^"
      Q
DISPLAY      ;LINE1
      Q:'$D(^VECS8G(RECNR,0))
      S NODE=^VECS8G(RECNR,0)
      W !!!,$P(NODE,"^",1)
      W ?40,"PHONE:  ",$P(NODE,"^",6)
LINE2 ;LINE 2
      W !,$P(NODE,"^",2)
LINE3 ;LINE 3
      W !,$P(NODE,"^",3),?$X+2
      W $P(NODE,"^",4),?$X+2
      W $P(NODE,"^",5)
      ;WE WANT THE DATE PRINTED IN DISPLAY FORMAT MM/DD/YYYY
      ;NOT INTERNAL FORMAT YYYMMDD
      S LCD=$P(NODE,"^",7)
      I LCD="" S XDATE=""
      I LCD'="" S XDATE=$E(LCD,4,5)_"/"_$E(LCD,6,7)_"/"_($E(LCD,1,3)+1700)
      W ?40,XDATE
      D:$Y+2>IOSL HEADING
      Q
OPEN  ;
      S %ZIS="M" D ^%ZIS
      Q
      ;
CLOSE ;
      D ^%ZISC
      Q

VECS8SET
VECS8SET     ;LESSON 8
      ;;1
      SET ^VECST1="/AL/AK/AZ/CA/CO/CT/"
      SET ^VECST2="/DE/DC/FL/"
      QUIT

VECS8STA
VECS8STA     ;LCM;STATE ROUTINE
      ;;1
STATE ;
      READ !,"ENTER STATE CODE: ",STATE:DTIME
```

```
        DO CHECK
        IF ERROR GOTO STATE
        QUIT
CHECK   ;
        SET ERROR=0
        SET STATE1="/"_STATE_"/"
        IF ^VECST1[STATE1 QUIT
        IF ^VECST2[STATE1 QUIT
        WRITE !,"STATE CODE NOT VALID!! TRY AGAIN."
        SET ERROR=1
        QUIT
```