Software Preservation

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Why Preserve?

- architecture and its evolution
- data structures and algorithms
- approaches to problems
- attention to communicating with people
- performance and other tradeoffs
- use of and evolution of programming languages
- coding styles, idioms, and their evolution
- influences from other disciplines and genres
- literature of source code
- critical literature

Principles

- Principle of Unbiased Collection

- Principle of Thorough Collection

- Principle of Safekeeping

- Principle of Respect for Ownership

- Principle of Fair Use

- Principle of Transparency

- Principle of Service

Unbiased Collection

- type of software
- programming language
- approach or philosophy behind the work
- identity or nature of the developer or development group
- level of success or failure of the software
- country or region of origin
- purpose the software serves
- architecture, design approach, or development methodology
- time period in which the software was developed
- media in which the artifact is captured

Thorough Collection

🏁 design, requirements, and architectural description documents

🏁 programming language manuals

🏁 whatever may be required to execute the program in the future

Precise Recording and Authentication

- location and time of collection

- name or names of the developers

- the circumstances of its creation

- the chain of possession from creation to collection

Software Preservation

once collected, an artifact should be subject to the best effort for long-term preservation

Respect for Ownership

▨ must be able to gather proprietary, copyrighted, trade secret, or patented software

▨ provisions should be made to keep secret and otherwise protect the contents of the artifact to the satisfaction of its owner until it can be released for study and observation

Fair Use

▨ copies, transcriptions, and descriptions of artifacts should be available for study and to create derived works

▨ no bias about who can access the material or how it can be used

```
JUMPE A,RDL12
JSP T,SPECBIND              ;LIKE KRYPTONITE, IT GLOWS COLD GREEN;
Q%0 B,TYIMAN                ;FORCE TYIMAN TO DO OUR WILL,
Q%0 NIL,TMBBC               ;SO READ FROM READLIST GETS ITS FILL!
0 A,MKNM3
MOVEI A,(B)
PUSHJ P,READ0A
SKIPE T,MKNM3
CAIN T,-1
JRST UNBIND
LERR EMS1;EXTRA CHARS


READ6C:MOVEM A,CORBP
MOVEI T,R6C1
PUSHJ FXP,MKNR6C
JRST RINTERN

R6C1:ILDB A,CORBP
SKIPE A
ADDI A,40
POPJ P,

MKNAM2:SKIPE A,TMBBC
JRST MKNAM7
PUSH FXP,T
PUSH FXP,TT
MKNAM3:SKIPN B,MKNM3
JRST MKNAM6
CAIN B,-1
LERR EMS3
PUSHJ P,MKRL1
JRST PXTTTJ

MKNAM6:MOVEI A,203
HLLOS MKNM3
JRST PXTTTJ

MKNAM7:SETZM TMBBC
TIME
POPJ P,

];END OF IFE QIO


IFN QIO,[
READLIST:JUMPE A,RDL12
MOVEI B,RDLTYI
MOVEI C,RDLUNTYI
JSP T,SPECBIND
    0 A,RDLARG
    0 B,TYIMAN
    0 C,UNTYIMAN
;;   0 AR1,READPMAN
;;   0 AR2A,UNREADMAN
MOVEI A,RDIN
PUSHJ P,READ0A
SKIPE T,RDLARG
CAIN T,-1
JRST UNBIND
LERR EMS1

;;; READLIST PEEK AND
;;; SAVES A,B,C,AR2A;

RDLPEK:JRST RDLPK1
RDLTYI:PUSH P,A
SKIPN A,RDLARG
 JRST RDLTY2
CAIN A,-1
 LERR EMS3
HRRZ AR1,(A)
MOVEM AR1,RDLARG
RDLTY1:HLRZ A,(A)
RDLTY3:JSP T,CHNV1
JRST POPAJ

RDLTY9:SIXBIT \NOT ASC

RDLTY2:HLLOS RDLARG
MOVEI TT,203
JRST POPAJ

RDLPK1:SKIPE TT,RDLARG
 CAIN TT,-1
  JRST M1TTPJ
PUSH P,A
HLRZ A,@RDLARG
JRST RDLTY3                ;ELSE RETURN CHAR, BUT DON'T FLUSH

RDLUNTYI:MOVEI TT,(A)
JSP T,FXCONS
HRRZ B,RDLARG
PUSHJ P,CONS
MOVEM A,RDLARG
```

```
PUSHJ FXP,MKNR6C
SUB FXP,R70+1
JRST RINTERN

R6C1:ILDB TT,-1(FXP)
JUMPE TT,CPOPJ
ADDI TT,40
JRST POPJ1


          LY OUGHT TO ALLOW
          AILING SPACE


          S. (CF. $DEVICE).
          1. RETURNS CHARACTER IN TT.

          I-1 IS FOR PEEKING (SEE TYIP

          EW CHARS


          O-SPACE


          N -1 FOR PEEKING AT "EOF"

          RETURN CHAR, BUT DON'T FLUSH







                    ********

          CALL TO READ
SETZM RDOBCT;OK TO CALL RDINO NOW.
PUSHJ P,READUB;TOP-LEVEL READ
SETOM RRDF;RESTORE FLAG INDICATING READ RECURSION
];END OF IFE QIO
IFN QIO,[
JSP D,INCALL
 QOREAD
READ:MOVEI A,QOREAD;ENABLE TTY PRE-SCAN
HRLM A,BFPRDP
```

Transparency

All aspects of collection should be open to public scrutiny

- the identities of the members of the collection group

- the principles and practices of collection

- the procedures to exercise fair use

- descriptions of all collected items

Software Preservation

```
JUMPE A,RDL12                  ;MKNAM2 IS JUST THE THING:
JSP T,SPECBIND                 ;LIKE KRYPTONITE, IT GLOWS COLD GREEN;
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Q%0 NIL,TMBBC                   ;SO READ FROM READLIST GETS ITS FILL!
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PUSHJ P,READ0A
SKIPE T,MKNM3
CAIN T,-1
JRST UNBIND
LERR EMS1;EXTRA CHARS


READ6C:MOVEM A,CORBP
MOVEI T,R6C1
PUSHJ FXP,MKNR6C
JRST RINTERN

R6C1:ILDB A,CORBP
SKIPE A
ADDI A,40
POPJ P,


MKNAM2:SKIPE A,TMBBC
JRST MKNAM7
PUSH FXP,T
PUSH FXP,TT
MKNAM3:SKIPN B,MKNM3
JRST MKNAM6
CAIN B,-1
LERR EMS3
PUSHJ P,MKRL1
JRST PXTTTJ

MKNAM6:MOVEI A,203
HLLOS MKNM3
JRST PXTTTJ

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MOVEI A,RDIN
PUSHJ P,READ0A
SKIPE T,RDLARG
CAIN T,-1
JRST UNBIND
LERR EMS1

;;; READLIST PEEK AND
;;; SAVES A,B,C,AR2A:

RDLPEK:JRST RDLPK1
RDLTYI:PUSH P,A
SKIPN A,RDLARG
 JRST RDLTY2
CAIN A,-1
 LERR EMS3
HRRZ AR1,(A)
MOVEM AR1,RDLARG
RDLTY1:HLRZ A,(A)
RDLTY3:JSP T,CHNV1
JRST POPAJ

RDLTY9:SIXBIT \NOT ASC

RDLTY2:HLLOS RDLARG
MOVEI TT,203
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                            AILING SPACE

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                            EW CHARS


                            O-SPACE

                            N -1 FOR PEEKING AT "EOF"

                            RETURN CHAR, BUT DON'T FLUSH




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 QOREAD
READ:MOVEI A,QOREAD;ENABLE TTY PRE-SCAN
HRLM A,BFPRDP
```

Service

▨ collection of artifacts should not enrich any
party—neither the collectors, the owners, nor
anyone claiming fair use

Selection Process

- people based

  - diversity of selectors

  - nomination + second

- prioritization

  - no vetoes, only timing and expenditure

  - all selectors vote order when needed

Preservation

▨ let's not bias our preservation choices

▨ let's get moving before it's too late

▨ let's view this as creating a commons

```
(COMMENT  DOCTOR SCRIPT - UPDATED TO /25 NOV /69)

(PUTPROP (QUOTE NONE)
  ((LAMBDA (X)
    (PUTPROP X
     (QUOTE (((0)
(NIL)
(I AM NOT SURE I UNDERSTAND YOU FULLY)
(PLEASE GO ON)
(WHAT DOES THAT SUGGEST TO YOU)
(DO YOU FEEL STRONGLY ABOUT DISCUSSING SUCH THINGS))))
     (QUOTE RULES))
    X)
    (GENSYM))
  (QUOTE LASTRESORT))

(PUTPROP (QUOTE NONE)
  ((LAMBDA (X)
    (PUTPROP X
     (LIST  (LIST (LIST 0)
(LIST NIL)
(GET (QUOTE NONE)
     (QUOTE LASTRESORT))))
     (QUOTE RULES))
   X)
     (GENSYM))
  (QUOTE MEM))


(DEFPROP SORRY 0 PRIORITY)

(DEFPROP SORRY
 (((0) (NIL)
       (PLEASE DON/'T APOLOGIZE)
       (APOLOGIES ARE NOT NECESSARY)
       (WHAT FEELINGS DO YOU HAVE WHEN YOU APOLOGIZE)
       (I/'VE TOLD YOU THAT APOLOGIES ARE NOT REQUIRED)
       (APOLOGIES ARE NOT NECESSARY/, PLEASE GO ON)))
 RULES)

(DEFPROP DONT DON/'T TRANSLATION)

(DEFPROP CANT CAN/'T TRANSLATION)

(DEFPROP WONT WON/'T TRANSLATION)

(DEFPROP REMEMBER 5 PRIORITY)

(DEFPROP REMEMBER
 (((0 YOU REMEMBER 0) (NIL)
       (DO YOU OFTEN THINK OF 4)
       (DOES THINKING OF 4 BRING ANYTHING ELSE TO MIND)
       (WHAT ELSE DO YOU REMEMBER)
       (WHY DO YOU REMEMBER 4 JUST NOW)
       (/HAT IN THE PRESENT SITUATION REMINDS YOU OF 4)
       (WHAT IS THE CONNECTION BETWEEN ME AND 4))
  ((0 DO I REMEMBER 0) (NIL)
       (DID YOU THINK I WOULD FORGET 5)
       (WHY DO YOU THINK I SHOULD RECALL 5 NOW)
       (WHAT ABOUT 5)
       WHAT
       (YOU MENTIONED 5))
  ((0) (NIL) NEWKEY))
 RULES)

(DEFPROP IF 3 PRIORITY)

(DEFPROP IF
 (((0 IF 0 HAD 0) (NIL) (PRE (1 2 3 MIGHT HAVE 5) IF))
  ((0 IF 0) (NIL)
    (DO YOU THINK ITS LIKELY THAT 3)
    (DO YOU WISH THAT 3)
    (WHAT DO YOU THINK ABOUT 3)
    (REALLY IF 3)))
 RULES)

(DEFPROP DREAMT 4 PRIORITY)

(DEFPROP DREAMT
 (((0 YOU DREAMT 0) (NIL)
    (REALLY 4)
    (HAVE YOU EVER FANTASIED 4 WHILE YOU WERE AWAKE)
    (HAVE YOU DREAMT 4 BEFORE)
    DREAM
    NEWKEY)
  ((0) (NIL) DREAM NEWKEY))
 RULES)

(DEFPROP DREAMED DREAMT TRANSLATION)

(DEFPROP DREAMED 4 PRIORITY)

(DEFPROP DREAMED (DREAMT) RULES)

(DEFPROP DREAM 3 PRIORITY)
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```
(DEFPROP WHAT 0 PRIORITY)

(DEFPROP WHAT
 (((WHAT WHERE)
    (NIL)
    BOW)
  ((0 (WHAT WHERE) 0)
    (NIL)
    (TELL ME ABOUT 2 3)
    (2 3)
    (DO YOU WANT ME TO TELL YOU 2 3)
    (REALLY)
    (I SEE)
    NEWKEY))
 RULES)

(DEFPROP ALIKE 10. PRIORITY)

(DEFPROP ALIKE (DIT) RULES)

(DEFPROP SAME 10. PRIORITY)

(DEFPROP SAME (DIT) RULES)

(DEFPROP CERTAINLY 0 PRIORITY)

(DEFPROP CERTAINLY (YES) RULES)

(DEFPROP FEEL T BELIEF)

(DEFPROP THINK T BELIEF)

(DEFPROP BELIEVE T BELIEF)

(DEFPROP WISH T BELIEF)

(DEFPROP BET T BELIEF)

(DEFPROP MY
 (((0 YOUR 1 0)
    (NIL)
    (EARLIER YOU SAID YOUR 3 4)
    (BUT YOUR 3 4)
    (DOES THAT HAVE ANYTHING TO DO WITH YOUR STATEMENT ABOUT 3 4)))
 MEMR)


(DEFPROP PERHAPS 0 PRIORITY)

(DEFPROP PERHAPS
 (((0) (NIL)
       (YOU DON/'T SEEM QUITE CERTAIN)
       (WHY THE UNCERTAIN TONE)
       (CAN/'T YOU BE MORE POSITIVE)
       (YOU AREN/'T SURE)
       (DON/'T YOU KNOW)))
 RULES)

(DEFPROP MAYBE 0 PRIORITY)

(DEFPROP MAYBE (PERHAPS) RULES)

(DEFPROP NAME 15. PRIORITY)

(DEFPROP NAME
 (((0)
    (NIL)
    (I AM NOT INTERESTED IN NAMES)
    (I/'VE TOLD YOU BEFORE I DON/'T CARE ABOUT NAMES /- PLEASE CONTINUE)))
 RULES)

(DEFPROP DEUTSCH 0 PRIORITY)

(DEFPROP DEUTSCH (((0) (NIL) (I AM SORRY/, I SPEAK ONLY ENGLISH))) RULES)

(DEFPROP FRANCAIS 0 PRIORITY)

(DEFPROP FRANCAIS (DEUTSCH) RULES)

(DEFPROP SVENSKA 0 PRIORITY)

(DEFPROP SVENSKA (DEUTSCH) RULES)

(DEFPROP ITALIANO 0 PRIORITY)

(DEFPROP ITALIANO (DEUTSCH) RULES)

(DEFPROP ESPANOL 0 PRIORITY)

(DEFPROP ESPANOL (DEUTSCH) RULES)

(DEFPROP HELLO 0 PRIORITY)

(DEFPROP HELLO (((0) (NIL) (HOW DO YOU DO/. PLEASE STATE YOUR PROBLEM)))
 RULES)
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(DEFPROP MACHINES 50. PRIORITY)

(DEFPROP MACHINES (COMPUTER) RULES)

(DEFPROP COMPUTERS 50. PRIORITY)

(DEFPROP COMPUTERS (COMPUTER) RULES)

(DEFPROP AM 0 PRIORITY)

(DEFPROP AM ARE TRANSLATION)

(DEFPROP AM
 (((0 ARE YOU 0) (NIL)
  (DO YOU BELIEVE YOU ARE 4)
  (WOULD YOU WANT TO BE 4)
  (YOU WISH I WOULD TELL YOU YOU ARE 4)
  (WHAT WOULD IT MEAN IF YOU WERE 4)
  HOW)
   ((0) (NIL) (WHY DO YOU SAY /'AM/') (I DON/'T UNDE
 RULES)

(DEFPROP ARE 0 PRIORITY)

(DEFPROP ARE
 (((0 THERE ARE 0 YOU 0) (NIL) (PRE (1 2 3 4) ARE))
  ((0 THERE ARE 1 0) (NIL)
    (WHAT MAKES YOU THINK 2 3 4 5)
    (DO YOU USUALLY CONSIDER 4 5)
    (DO YOU WISH 2 WERE 4 5))
  ((0 THERE ARE 0) (NIL) NEWKEY)
  ((0 ARE I 0) (NIL)
    (WHY ARE YOU INTERESTED IN WHETHER I AM 4 OR
    (WOULD YOU PREFER IF I WEREN/'T 4)
    (PERHAPS I AM 4 IN YOUR FANTASIES)
    (DO YOU SOMETIMES THINK I AM 4)
    HOW)
  ((ARE 0) (NIL) HOW)
  ((0 ARE 0) (NIL)
    (DID YOU THINK THEY MIGHT NOT BE 3)
    (WOULD YOU LIKE IT IF THEY WERE NOT 3)
    (WHAT IF THEY WERE NOT 3)
    (POSSIBLY THEY ARE 3)))
 RULES)
```