```
" db

    narg = ..+07777
    lac i narg
    sad d4
    jmp start
    lac narg
    tad d5
    dac rcorep
    dac wcorep
    lac i narg
    sad d8
    jmp start
    sad d12
    skp
    jmp error
    lac narg
    tad d9
    dac nlnamep
    "
start:
    lac nlbufp
    cma
    tad o17777
    cll
    idiv
    6
    cll
    lacq
    mul
    6
    lacq
    dac namesize
    sys open; nlnamep: nlname; 0
    dac symindex
    sma
    jmp 1f
2:
    dzm nlcnt
    lac nlbufp
    dac nlsize
    jmp 3f
1:
    sys read; nlbuff; namesize:0
    spa
    jmp 2b
    dac nlcnt
    tad nlbufp
    dac nlsize
3:
    lac symindex
    sys close
    sys open;
wcorep: corename; 1
    dac wcore
    sys open; rcorep: corename; 0
    dac rcore
    spa
    jmp error
    "
    lac o52012
    jms wchar
```

```
        lav dotdot
        dac nsearch
        jms nlsearch
        jmp mloop
        lac value
        dac relocval
        cma
        tad d1
        dac mrelocv
        dzm systlag
    mloop:
        -1
        dac nwords
    ml1:
        jms rch
        dac nchar1
        sad o52
        skp
        jmp 1f
        dzm nchar1
        dac indflg
    1:
        jms getexp
        lac errf
        sna
        jmp cmd
    error:
        dzm indflg
        lac o40
        dac rator
        dzm errf
        lac d1
        sys write; errmes; 1
        jmp mloop
    cmd:
        lacq
        sad o41
        jmp patch
        lac opfound
        sna
        jmp 1f
        lac comflg
        dzm comflg
        sza
        jmp 1f
        lac curval
        dac curdot
        lac curreloc
        dac dotrel
    1:
        lacq
        sad o42
        jmp ascii
        sad o12
        jmp newln
        sad o77
        jmp symbol
        sad o47
        jmp saddress
        sad o75
        jmp address
```

```
        sad o57
        jmp octal
        sad o72
        jmp decimal
        sad o136
        skp
        jmp 1f
        dac sysflag
        jmp mloop
1:
        sad o45
        skp
        jmp 1f
        dzm sysflag
        jmp mloop
1:
        sad d1
        sys exit
        sad o54
        skp
        jmp error
        " comma
        jms getexp
        lac errf
        sza
        jmp error
        law
        dac comflg
        lac curreloc
        sza
        jmp 1f
        lac value
        cma
        dac nwords
        jmp cmd
1:
        lac reldot
        sna
        jmp error
        lac curval
        cma
        tad curdot
        sma
        jmp error
        dac nwords
        jmp cmd
        "
saddress:
        lac curdot
        dac 9f
        dzm curdot
        lac reldot
        sza
        lac relocval
        tad 9f
        jms prsym
        lac o12
        jms wchar
        lac 9f
        dac curdot
        jmp mloop
```

```
9:0
	"
symbol:
	lav prsym
	dac type
	jmp print
	"
octal:
	lav proct
	dac type
	jmp print
	"
ascii:
	lav prasc
	dac type
	jmp print
	"
decimal:
	lav prdec
	dac type
	jmp print
	"
address:
	lac curdot
	jms octw
	5
	lac curreloc
	sza
	jmp 1f
	lac o12
	jms wchar
	jmp mloop
1:
	lac o162012
	jms wchar
	jmp mloop
	"
print:
	lac sysflag
	sza
	jmp 2f
	lac reldot
	sza
	jmp 1f
	lac curdot
	dac addr
	jmp sprint
2:
	lac curdot
	dac addr
	jmp sprint
1:
	lav inbuf
	dac addr
	lac curdot
	dac 1f
	lac rcore
	sys seek; 1:0; 0
	spa
	jmp error
	lac rcore
```

```
    sys read; inbuf; 64
    spa
    jmp error
    sna
    jmp error
    "
sprint:
    lac indflg
    sna
    jmp 2f
    dzm indflg
    lac i addr
    and o17777
    dac curdot
    dzm reldot
    tad mrelocv
    spa
    jmp print
    dac curdot
    lac d1
    dac reldot
    jmp print
    "
2:
    lac o40
    jms wchar
    lac addr
    dac 3f
    lac i addr
    jms i type
    lac 3f
    dac addr
    isz addr
    law prasc
    sad type
    jmp 1f
    lac nl
    jms wchar
1:
    isz nwords
    jmp 1f
    law prasc
    sad type
    skp
    jmp mloop
    lac nl
    jms wchar
    jmp mloop
1:
    isz curdot
    nop
    lac nwords
    spa
    jmp print
    jmp 2b
3:0
    "
prdec:      "temp
proct:0
    jms octw
    6
```

```
        jmp i proct
        "
patch:
        lac opfound
        sna
        jmp error
        lac curreloc
        sna
        jmp 1f
        lac curval
        tad relocval
        skp
1:
        lac curval
        dac inbuf
        lac sysflag
        sna
        jmp 1f
        lac inbuf
        dac i curdot
        jmp bump
1:
        lac reldot
        sna
        jmp error
        lac curdot
        dac 2f
        lac wcore
        spa
        jmp error
        sys seek; 2:0; 0
        spa
        jmp error
        lac wcore
        sys write; inbuf; 1
        spa
        jmp error
bump:
        -1
        dac nwords
        isz curdot
        jmp print
        "
newln:
        lac opfound
        sna
        jmp bump
        jmp print
        "
getexp;0
        dzm errf
        lac o40
        dac rator
        dzm curval
        dzm curreloc
        dzm reloc
        dzm value
        dzm opfound
xloop:
        jms rch
        lmq
```

```
        sad o044
        skp
        jmp 1f
        jms getspec
        jms oprand
        jmp xloop
    1:
        tad om60
        spa
        jmp 1f
        tad om10
        sma
        jmp 1f
        lacq
        jms getnur
        jms oprand
        jmp xloop
    1:
        lacq
        sad o56
        jmp 1f
        tad om141
        spa
        jmp 2f
        tad om32
        sma
        jmp 2f
    1:
        lacq
        jms getsym
        jms oprand
        jmp xloop
    2:
        lacq
        tad om101
        spa
        jmp 1f
        tad om32
        spa
        jmp 1b
    1:
        lacq
        sad o74
        skp
        jmp 1f
        jms rch
        alss 9
        dac value
        dzm reloc
        jms oprand
        jmp xloop
    1:
        sad o40
        jmp xloop
        sad o55 "-
        skp
        jmp 1f
    2:
        lac o40
        sad rator
        skp
```

```
        jmp error
        lacq
        dac rator
        jmp xloop
    1:
        sad o53 "+
        jmp 2b
        lac curreloc
        sna
        jmp 1f
        sad d1
        skp
        dac errf
    1:
        lac o40
        sad rator
        jmp i getexp
        dac errf
        jmp i getexp
        "
getspec: 0
        jms rch
        sad o141
        jmp spcac
        sad o161 "q
        jmp spcmq
        sad o151 "i
        jmp spcic
        lmq
        tad om60
        spa
        jmp 2f
        tad om10
        sma
        jmp 2f
        lacq
        jms getnum
        jmp spcai
    2:
        law
        dac errf
        jmp getspec i
spcac:
        cla
        jmp 1f
spcmq:
        lac d1
        jmp 1f
spcic:
        lac d10
        jmp 1f
spcai:
        lac value
        tad dm6

    1:
        tad o10000
        dac value
        lac d1
        dac reloc
        jmp i getspec
```

```
    "
getsym:0
    lmq
    law symbuf
    dac symbufp
    dzm symbuf
    -8
    dac symcnt
    dzm nchar1
    lac nopcom
    dac skipt
    skp
storech:
    lmq
    lac i symbufp
    and o177000
    sna
    jmp 1f
    omq
    dac i symbufp
    isz symbufp
    dzm i symbufp
    jmp 2f
1:
    llss 27
    dac i symbufp
    "
2:
    isz symcnt
    skp
    jmp endsym
skipt:
    nop " or jmp fill
    jms rch
    sad o76
    skp
    jmp 1f
    lac symbuf
    lrss 9
    and o177
    dac value
    dzm reloc
    jmp i getsym
1:
    sad o56
    jmp storech
    dac nchar1
    tad om60
    spa
    jmp fill
    tad m10
    spa
    jmp 2f
    lac nchar1
    tad om141
    spa
    jmp 1f
    tad om32
    spa
    jmp 2f
1:
```

```
        lac nchar1
        tad om101
        spa
        jmp fill
        tad om32
        sma
        jmp fill
    2:
        lac nchar1
        dzm nchar1
        jmp storech
        "
    fill;
        lac trafill
        dac skipt
        lac o40
        jmp storech
        "
    endsym;
        lac symbuf
        sad o56040
        jmp dotsym
        law symbuf
        dac nsearch
        jms nlsearch
        jmp undef
        dzm nsearch
        jmp i getsym
        "
    dotsym;
        lac curdot
        dac value
        lac dotrel
        dac reloc
        jmp i getsym
        "
    undef;
        dzm nsearch
        law
        dac errf
        jmp i getsym
        "
    getnum;0
        dzm reloc
        dzm value
    num1;
        tad om60
        lmq
        lac value
        alss 3
        omq
        dac value
        jms rch
        dac nchar1
        sad o162
        jmp nrel
        tad om60
        spa
        jmp i getnum
        tad om10
        sma
```

```
        jmp i getnum
        lac nchar1
        dzm nchar1
        jmp num1
    nrel:
        dzm nchar1
        lac d1
        dac reloc
        jmp i getnum
        "
    oprand;0
        lac rator
        sad o53
        jmp opplus
        sad o40
        jmp opor
        sad o55
        jmp opminus
    opplus:
        lac value
        tad curval
        dac curval
    1:
        lac curreloc
        tad reloc
        dac curreloc
        jmp retop
        "
    opor:
        lac value
        lmq
        lac curval
        omq
        dac curval
        jmp 1b
        "
    opminus:
        lac curval
        cma
        tad value
        cma
        dac curval
        lac reloc
        cma
        tad d1
        tad curreloc
        dac curreloc
    retop:
        lac o40
        dac rator
        dac opfound
        jmp i oprand
        "
    prasc:0
        jms wchar
        jmp i prasc
        "
    prsym:0
        dac word
        dzm relflg
        dzm relocflg
```

```
        dzm nsearch
        and o760000
        sad o760000
        jmp plaw
        sad o20000
        jmp pcal
        and o740000
        sad o640000
        jmp peae
        sad o740000
        jmp popr
        sad o700000
        jmp piot
        sna
        jmp poct
        jms nlsearch
        jmp poct
        jms wrname
        lac o40
        jms wchar
        lac word
        and o20000
        sna
        jmp 1f
        lac o151040
        jms wchar
        lac word
        xor o20000
        dac word
    1:
    symadr:
        lac d1
        dac relflg
        dac relocflg
        lac word
        and o17777
        tad mrelocv
        sma
        jmp 1f
        tad relocval
        dzm relocflg
    1:
    pradr:
        dac addr
        jms nlsearch
        jmp octala
    pr1:
        dzm relflg
        jms wrname
        lac value
        sad addr
        jmp i prsym
        cma
        tad d1
        tad addr
        sma
        jmp 1f
        cma
        tad d1
        dac addr
        lac o55
```

```
        jms wchar
        jmp 2f
    1:
        dac addr
        lac o53
        jms wchar
    2:
        lac addr
        jms octw
        1
        jmp i prsym
        "
    plaw;
        lac d1
        dac relocflg
        lac word
        and o17777
        tad mrelocv
        sma
        jmp 1f
        tad relocval
        dzm relocflg
    1:
        dac addr
        law
        dac relflg
        lac addr
        jms nlsearch
        jmp poct
        dac symindex
        law laws
        jms wrname
        lac o40
        jms wchar
    3:
        lac symindex
        jmp pr1
    2:0
    9:0
        "
    peae;
        lac word
        jms nlsearch
        jmp 1f
        jms wrname
        jmp i prsym
    1:
        lac word
        and o777700
        jms nlsearch
        jmp 1f
        jms wrname
        lac o40
        jms wchar
        lac word
        and o77
        jms octw
        1
        jmp i prsym
    1:
        law eaes
```

```
        dac addr
        jmp nfnd
        "
popr:
        law oprs
        jmp 1f
piot:
        law iots
1:
        dac addr
        lac word
        jms nlsearch
        jmp 1f
        jms wrname
        jmp i prsym
1:
nfnd:
        lac addr
        jms wrname
octala:
        dzm relflg
        lac o40
        jms wchar
        lac word
        and o37777
        lmq
        lac relocflg
        sna
        jmp 1f
        lacq
        tad mrelocw
        lmq
1:
        lacq
        jms octw
        1
        lac relocflg
        sna
        jmp i prsym
        lac o162
        jms wchar
        dzm relocflg
        jmp i prsym
        "
poct:
        lac word
        jms octw
        6
        jmp i prsym
        "
pcal:
        lac word
        sna
        jmp poct
        and o17777
        jms nlsearch
        jmp 1f
        dac addr
        law syss
        jms wrname
        lac o40
```

```
    jms wchar
    lac addr
    jms wrname
    jmp i prsym
    "
1:
    lac word
    and o20000
    sza
    jmp poct
    jmp symadr
    "
wrname;0
    tad dm1
    dac 1f
    -4
    dac 3f
1:
    lac i 1f
    dac 2f
    lmq
    cla
    llss 9
    sad o40
    jmp i wrname
    jms wchar
    lac 2f
    and o177
    sad o40
    jmp i wrname
    jms wchar
    isz 3f
    jmp 1b
    jmp i wrname
2:0
3:0
    "
nlsearch:0
    dac match
    lac brack
    dac best
    dzm minp
1:
    lac nlbufp
    tad dm6
    dac cnlp
nloop:
    lac cnlp
    tad d6
    dac cnlp
    lmq
    cma
    tad nlsize
    spa
    jmp nlend
    lac nsearch
    sza
    jmp testn
    lacq
    tad d3
    dac np
```

```
        lac i np
        sna
        jmp nloop
        isz np
        lac i np
        dac treloc
        sad relocflg
        skp
        jmp nloop
        isz np
        lac i np
        dac tvalue
        sad match
        jmp nlok
        lac relocflg
        sna
        jmp nloop
        lac relflg
        sna
        jmp nloop
        -1
        tad tvalue
        cma
        tad match
        spa
        jmp nloop
        dac 2f
        tad mbrack
        sma
        jmp nloop
        lac best
        cma
        tad d1
        tad 2f
        sma
        jmp nloop
        lac 2f
        dac best
        lac tvalue
        dac value
        lac treloc
        dac reloc
        lac cnlp
        dac minp
        jmp nloop
        "
2;0
        "
testn:
        lacq
        dac minp
        -4
        dac value
        lac match
        dac inbuf
1:
        lac i minp
        sad i inbuf
        skp
        jmp nloop
        isz minp
```

```
        isz inbuf
        isz value
        jmp 1b
        lac i minp
        dac treloc
        isz minp
        lac i minp
        dac tvalue
        jmp nlok
        "
    nlend:
        lac relflg
        sna
        jmp i nlsearch
        lac dotrel
        sad relocflg
        skp
        jmp 1f
        -1
        tad curdot
        cma
        tad match
        spa
        jmp 2f
        cma
        tad d1
    2:
        tad brack
        spa
        jmp 1f
        tad mbrack
        tad best
        spa
        jmp 1f
        lac curdot
        dac value
        lac dotrel
        dac reloc
        law o56040
        dac minp
    1:
        lac minp
        sza
        isz nlsearch
        jmp i nlsearch
    nlok:
        lac tvalue
        dac value
        lac treloc
        dac reloc
        lac cnlp
        isz nlsearch
        jmp i nlsearch
        "
    nlerr:
        law
        dac errf
        jmp i nlsearch
        "
    rch;0
        lac nchar1
```

```
        dzm nchar1
        sza
        jmp i rch
    1:
        lac nchar
        dzm nchar
        sza
        jmp i rch
        cla
        sys read; char; 1
        lac char
        and o177
        dac nchar
        lac char
        lrss 9
        sna
        jmp 1b
        jmp i rch
        "
    wchar:0
        dac char
        lac d1
        sys write; char; 1
        jmp i wchar
        "
    octw; 0
        isz octw
        lmq
        cla cll
        llss 3
        alss 6
        llss 3
        tad o60060
        dac obuf
        cla
        llss 3
        alss 6
        llss 3
        tad o60060
        dac obuf+1
        cla
        llss 3
        alss 6
        llss 3
        tad o60060
        dac obuf+2
        lac d1
        sys write; obuf; 3
        jmp i octw
    m10; -10
        "
        "
    o54;054
    d6;6
    o52012;052012
    d5;5
    d9;9
    d12;12
    d8;8
    d3;3
    o177;0177
```

```
o136: 0136
o45: 045
sysflag: 0
char:0
d2:2
o162012:0162012
mrelocv:-010000
relocval:010000
nwords:0
errf:0
rator:0
d1:1
errmes:077012
o12:012
curval:0
curreloc:0
curdot:0
reldot:
dotrel:0
value:0
reloc:0
o77:077
o57:057
o72:072
o50:050
type:proct
o162:0162
nl:012
om100:-0100
d2:2
symbuf: .=.+5
inbuf:.=.+64
o100:0100
opfound:0
wcore:0
symindex:0
rcore:0
o56:056
om60:-060
om10:-010
o56:056
om141:-0141
o141: 0141
o044: 044
o151: 0151
o161: 0161
om101: -0101
om32:-032
o40:040
o55:055
o53:053
symbufp:0
symcnt:0
nopcom:nop
dm6: -6
d10: 10
trafill: jmp fill
nchar1:0
nchar:0
o177000:0177000
o56040:056040
```

```
nsearch:0
word:0
relflg:0
relocflg:0
o740000:0740000
o640000:0640000
o700000:0700000
o17777:017777
o20000:020000
o10000: 010000
o151040:0151040
eaes:0145141;0145040
laws: 0154141;0167040
oprs:0157160;0162040
iots:0151157;0164040
syss:0163171;0163040
corename:0143157;0162145;040040;040040
nlname:0156056;0157165;0164040;040040
dotdot: <..>; 040040; 040040; 040040
addr:0
o37777:037777
dm1:-1
match:0
rwdflg:0
nlbufp:nlbuff
nlsize:0
dm6:-6
cnlp:0
o377777:0377777
minp:0
d4:4
np:0
nlcnt:0
obuf:.=.+3
o60060:060060
o75:075
best: 0
o60000:060000
comflg:0
nlbufp:nlbuff
brack: 30
mbrack: -30
o777700:0777700
o41:041
o42:042
o760000:0760000
o40000:040000
tvalue: 0
treloc: 0
o151:0151
o47: 047
o52:052
indflg: 0
o74:074
o76:076
nlbufp: nlbuff
   nlbuff = .
```

```
?* dmabs

    lac o17
    sys creat; punout
    spa
    sys save
    dac fo
    lac 017777
    tad d1
    dac name
    jms space
    100

loop;
    dzm oldsum
    lac initcmd
    dac comand
    lac i 017777
    sad d4
    jmp stop
    tad dm4
    dac i 017777
    lac name
    tad d4
    dac name

dump1;
    lac comand
    xor dactra
    dac tracmd

dump2;
    sys open; name: 0; 0
    spa
    jmp opnerr
    dac fi
    -bootsiz
    dac c1
    lav boot-1
    dac 8
1:
    lac i 8
    jms put
    isz c1
    jmp 1b
    lac bootcmd
    lrs 12
    jms put1
    lac bootcmd
    lrs 6
    jms put1
    lac bootcmd
    and o77
    xor o300
    jms put2

    jms space
    3

dump3;
    -1
    tad bufp
```

```
        dac 8
        -64
        dac c1
    1:
        dzm i 8
        isz c1
        jmp 1b
        lac fi
        sys read; bufp; buf; 64
        sna
        jmp done
        dac count
        -1
        tad bufp
        dac 8
        -64
        dac c1
        cla
    1:
        add i 8
        isz c1
        jmp 1b
        sna
        jmp dump4
        dac newsum
        lac comand
        jms put
        lac count
        jms put
        lac oldsum
        add comand
        add count
        jms put
        lac newsum
        dac oldsum
        jms space
        3
        -1
        tad bufp
        dac 8
        -1
        tad count
        cma
        dac c1
    1:
        lac i 8
        jms put
        isz c1
        jmp 1b
        jms space
        10

    dump4:
        lac comand
        tad count
        dac comand
        jmp dump3

    done:
        lac tracmd
        jms put
```

```
        cla
        jms put
        lac oldsum
        add tracmd
        jms put
        jms space
        20
        lac fi
        sys close
        jmp loop

stop:
        cla
        jms put
        jms space
        100
        sys exit

space: 0
        -1
        tad i space
        cma
        dac c1
        isz space
1:
        lac o400
        jms put2
        isz c1
        jmp 1b
        jmp i space

put: 0
        dac 1f
        lrs 12
        jms put1
        lac 1f
        lrs 6
        jms put1
        lac 1f
        jms put1
        jmp i put
1:0

put1:0
        and o77
        xor o200
        jms put2
        jmp i put1

put2: 0
        dac 1f
        lac fo
        sys write; 1f; 1
        jmp i put2
1: 0

boot:
        org = 017740
2:
        jms get1-boot+org
        dac cmd-boot+org
```

```
        jms get1-boot+org
        cma
        dac cnt-boot+org
        jms get2-boot+org
        xor sum-boot+org
        dzm sum-boot+org
        cla cll sza
        hlt
        isz cnt-boot+org
    1:
        jms get1-boot+org
    cmd; 0
        isz cmd-boot+org
        isz cnt-boot+org
        jmp 1b-boot+org
        jmp 2b-boot+org
    get1; 0
        jms get2-boot+org
        dac get2-boot+org
        add sum-boot+org
        dac sum-boot+org
        lac get2-boot+org
        jmp i get1-boot+org
    get2; 0
        iot 0144
    1:
        iot 0101
        jmp 1b-boot+org
        iot 0112
        jmp i get2-boot+org
    sum; 0
        cnt = sum+1
        bootsiz = .-boot
    bootcmd; jmp org

    opnerr;
        lac name
        dac 1f
        lac d1
        sys write; 1: 0; 4
        lac d1
        sys write; mes; 2
        jmp loop
    mes;
        040;077012

    comand; 0
    tracmd; 0
        d1; 1
    o17777; 017777
    o77; 077
    o200; 0200
    o300; 0300
    i4; 4
    i64; 64
    im4; -4
    o400; 0400
    punout; <pp>;<to>;<ut>;040040
    o17; 017

    fi; 0
```

```
fo: 0
count: 0
oldsum: 0
newsum: 0
daccmd: dac
dactra: dac jmp
initcmd: dac 0
c1: 0
buf:

iot = 0700000
```

```
" ds

    lac 017777 i
    sad d8
    skp
    sys exit
    lac 017777
    tad d5
    dac .+3
    lav 017
    sys creat; ..
    dac fo
    lav 017
    sys creat; scrname
    spa; jms error
    dac fso
    sys open; scrname; 0
    spa; jms error
    dac fsi
    sys chdir; dd
    spa; jms error
    lac d1
    sys write; pass1; 1
    lav fsobuf
    dac fsopt
    dzm nfiles
    lav fbuf
    dac filp
    dzm ndirs
    lav dbuf
    dac dirp
    dzm fsloc
    sys open; dotdot; 0
    spa; jms error
    dac fd
    jms readdir; dotdot
    lav statbuf
    sys status; dotdot; dotdot
    spa; jms error
    lac statbuf+12 " i index
    dac dirp i
    isz dirp
    -1
    tad nfiles
    cma
    dac ddfiles
    lav fbuf
    dac ddfilp

loop:
    -1
    tad ndirs
    cma
    dac c1
    lav dbuf
    dac i1

1:
    isz i1
    lac i1 i
    sad ddfilp i
    jmp 2f
```

```
        isz i1
        isz c1
        jmp 1b

        lac ddfilp
        tad d1
        dac i1
        lac i1 i
        dac .+3
        lac fsi
        sys seek; 0.; 0
        lac fsi
        sys read; scrname; 4
        law statbuf
        sys status; dotdot; scrname
        spa; jms error
        lac statbuf+0 / flags
        and o20
        sna
        jmp 2f
        sys open; scrname; 0
        spa; jms error
        dac fd
        jms readdir; scrname
        lac ddfilp i
        dac dirp i
        isz dirp

    2:
        isz ddfilp
        isz ddfilp
        isz ddfiles
        jmp loop

    / output phase

        lac fso
        sys write; fsobuf; 64
        lac d1
        sys write; pass2; 2
        -500
        dac c1

    1:
        law dbuf+2
        dac i1
        dzm fflg
        law fbuf
        dac i2
        -1
        tad nfiles
        cma
        dac c2

    2:
        lac c1
        tad d501
        sad i2 i
        skp
        jmp 3f
```

```
        -1
        tad i1
        dac i3
        lac i3 i
        dac c3
        law fbuf
        dac i3
    0:
        lac i3 i
        sad c3
        jmp 0f
        isz i3
        isz i3
        jmp 0b
    0:
        lac i3
        tad d1
        dac c3
        lac c3 i
        dac .+3
        lac fsi
        sys seek; ..; 0
        lac fsi
        sys read; scrname; 4
        lac i2
        tad d1
        dac c3
        lac c3 i
        dac .+3
        lac fsi
        sys seek; ..; 0
        lac fsi
        sys read; dd; 4
        lac fflg
        sza
        jmp 0f

        lac nlinkt
        sad nlinka
        skp
        jms fishy
        dzm nlinka
        law 012
        jms putc
        law statbuf
        sys status; scrname; dd
        spa; jms error
        -1
        tad statbuf+9
        cma
        dac nlinkt
        -1
        dac fflg
        jms longout
        law 012
        jms putc
    0:
        isz nlinka
        jms putname; scrname
        jms putname; dd
        law 012
```

```
        jms putc

    3:
        isz i2
        isz i2
        lac i2
        sad i1 i
        skp
        jmp .+3
        isz i1
        isz i1
        isz c2
        jmp 2b

        isz c1
        jmp 1b
        lac nlinkt
        sad nlinka
        skp
        jms fishy

        sys chdir; system
        jmp done

    fishy: 0
        jms asters
        jms asters
        law 012
        jms putc
        lac d1
        sys write; 1f; 1
        jmp fishy i
    1: 052012

    nlinka: 0
    nlinkt: 0

    asters: 0
        -10
        dac c
    1:
        law 052
        jms putc
        isz c
        jmp 1b
        jmp asters i

    longout: 0
        lac statbuf+12 " i
        jms octal; -3
        lac statbuf+0 " flags
        jms octal; -2
        lac statbuf+8 " uid
        jms octal; -2
        -1
        tad statbuf+9 " nlinks
        cma
        jms octal; -2
        lac statbuf+10
        jms octal; -5
        jmp longout i
```

```
readdir: 0
        law 012
        jms putc
        law 012
        jms putc
        jms asters
        lac readdir i
        dac 5f
        dac .+2
        jms putname; ..
        jms asters
        law 012
        jms putc
        law 012
        jms putc
        isz readdir
        isz ndirs
        lac filp
        dac dirp i
        isz dirp
0:
        jms copyz; buf; 64
        lac fd
        sys read; buf; 64
        spa; jms error
        sna
        jmp 4f
        -8
        dac c1
        law buf
        dac i1
1:
        lac i1 i
        sna
        jmp 3f

        isz nfiles
        dac filp i
        isz filp
        lac fsloc
        dac filp i
        tad d4
        dac fsloc
        isz filp
        lac i1
        tad d1
        dac .+4
        law statbuf
        sys status; 5:..; ..
        spa; jms error
        jms longout
        lac i1
        tad d1
        dac .+2
        jms putname; ..
        law 012
        jms putc
        lac i1
        dac 8
        lac 8 i
```

```
        dac fsopt i
        isz fsopt
        lac 8 i
        dac fsopt i
        isz fsopt
        lac 8 i
        dac fsopt i
        isz fsopt
        lac 8 i
        dac fsopt i
        isz fsopt
        law fsobuf+64
        sad fsopt
        skp
        jmp 3f
        lac fso
        sys write; fsobuf; 64
        law fsobuf
        dac fsopt

    3:
        law 8
        tad i1
        dac i1
        isz c1
        jmp 1b
        jmp 0b
    4:
        lac fd
        sys close
        jmp readdir i

    putname: 0
        -1
        tad putname i
        dac 8
        -4
        dac c
    1:
        lac 8 i
        lrss 9
        jms putc
        llss 9
        jms putc
        isz c
        jmp 1b
        isz putname
        jmp putname i

    octal: 0
        lmq
        lac d5
        tad octal i
        cma
        dac c
    1:
        llss 3
        isz c
        jmp 1b
        lac octal i
        dac c
```

```
    1:
        ecla llss 3
        tad o60
        jms putc
        isz c
        jmp 1b
        lav 040
        jms putc
        isz octal
        jmp octal i

    error: 0
        -1
        tad error
        hlt
        sys save

    copyz: 0
        -1
        tad copyz i
        dac 8
        isz copyz
        -1
        tad copyz i
        cma
        dac 2f
        isz copyz
    1:
        dzm 8 i
        isz 2f
        jmp 1b
        jmp copyz i
    2: 0

    done:
        lac noc
        sna
        sys exit
        and d1
        sna cla
        jmp 1f
        jms putc
        jmp done
    1:
        lac noc
        rcr
        dac 1f
        lac fo
        sys write; obuf; 1:..
        sys exit

    putc: 0
        and o177
        dac 2f+1
        lac opt
        dac 2f
        add o400000
        dac opt
        spa
        jmp 1f
        lac 2f i
```

```
        xor 2f+1
        jmp 3f
    1:
        lac 2f+1
        alss 9
    3:
        dac 2f i
        isz noc
        lac noc
        sad d128
        skp
        jmp putc i
        lac fo
        sys write; obuf; 64
        lac iopt
        dac opt
        dzm noc
        jmp putc i
    2: 0;0
    opt; obuf
    iopt; obuf
    noc; 0
    fo: 1

    d1: 1
    o177: 0177
    o400000: 0400000
    d128: 128
    d4: 4
    d5: 5
    d8: 8
    o60: 060
    o20: 020
    d501: 501

    dd:
        <dd>; 040040; 040040; 040040
    dotdot:
        056056; 040040; 040040; 040040
    system:
        <sy>;<st>;<em>; 040040
    scrname:
        <*s>;<rc>;040040;040040
    pass2:
        <i
    pass1:
        <i 012

    fso; .=.+1
    fsi; .=.+1
    fsloc; .=.+1
    nfiles; .=.+1
    fflg; .=.+1
    buf; .=.+64
    obuf; .=.+64
    fd; .=.+1
    filp; .=.+1
    ddfilp; .=.+1
    ddfiles; .=.+1
    statbuf; .=.+13
    c; .=.+1
```

```
i1: .=.+1
i2: .=.+1
i3: .=.+1
c1: .=.+1
c2: .=.+1
c3: .=.+1
ndirs: .=.+1
dirp: .=.+1
fsopt: .=.+1
fsobuf: .=.+64
dbuf: .=.+100
fbuf:
```

```
" dsksav

    iof
    hlt
    dzm track
    -640
    dac c1
1:
    lac track
    jms dskrd1

    lac track
    jms dskwr0

    lac track
    tad d10
    dac track
    isz c1
    jmp 1b

    hlt
    sys exit

track; 0
c1: 0
d10; 10
```

```
" dskres

    iof
    hlt
    dzm track
    -640
    dac c1
1;
    lac track
    jms dskrd0

    lac track
    jms dskwr1

    lac track
    tad d10
    dac track
    isz c1
    jmp 1b

    hlt
    sys exit

track; 0
c1: 0
d10; 10
```

```
" dskio

dskrd0; 0
    dzm side
    jms dskio; 02000
    jmp i dskrd0

dskwr0; 0
    dzm side
    jms dskio; 03000
    jmp i dskwr0

dskrd1; 0
    lmq
    lac o200000
    dac side
    lacq
    jms dskio; 02000
    jmp i dskrd1

dskwr1; 0
    lmq
    lac o200000
    dac side
    lacq
    jms dskio; 03000
    jmp i dskwr1


dskio; 0
    cll; idiv; 80
    dac 2f
    lacq
    idiv; 10
    dac 3f
    lls 22
    xor 3f
    als 8
    dac 3f
    lac 2f
    idiv; 10
    dac 2f
    lls 22
    xor 2f
    xor 3f
    xor side
    dac 2f
    -10
    dac 3f
1:
    dscs
    -640
    dslw
    lac dskbufp
    dslm
    lac 2f
    dsld
    lac dskio i
    dsls
    dssf
    jmp .-1
    dsrs
```

```
        sma
        jmp  1f
        isz  3f
        jmp  1b
        hlt
    1:
        isz dskio
        jmp i dskio
    2: 0
    3: 0

    o200000: 0200000
    iskbufp: dskbuf

    wide: .=.+1
    iskbuf: .=.+640
```

```
" dsv

    lac djmp
    dac .-1
    oas cla
    cma
    tad d1
    dac t1
    sys open; dd; 0
1;
    lac d2
    sys read; dir; 8
    sna
    sys exit
    lac dir
    sna
    jmp 1b
    isz t1
    jmp 1b

wr;
    lac d1
    sys write; dir+1; 4
    lac d1
    sys write; o12; 1
    sys save
io;
    sys unlink; dir+1
    sys exit

i1; 1
i2; 2
o12; 012
t1; 0
djmp; jmp do
dd; 056056;040040;040040;040040
dir; .=.+8
```

```
" init

    -1
    sys intrp
    jms init1
    jms init2
1:
    sys rmes
    sad pid1
    jmp 1f
    sad pid2
    jms init2
    jmp 1
1:
    jms init1
    jmp 1

init1: 0
    sys fork
    jmp 1f
    sys open; ttyin; 0
    sys open; ttyout; 1
    jmp login
1:
    dac pid1
    jmp init1 i

init2: 0
    sys fork
    jmp 1f
    sys open; keybd; 0
    sys open; displ; 1
    jmp login
1:
    dac pid2
    jmp init2 i

login:
    -1
    sys intrp
    sys open; password; 0
    lac d1
    sys write; m1; m1s
    jms rline
    lac ebufp
    dac tal
1:
    jms gline
    law ibuf-1
    dac 8
    law obuf-1
    dac 9
2:
    lac 8 i
    sad o12
    lac o72
    sad 9 i
    skp
    jmp 1b
    sad o72
    skp
    jmp 2b
```

```
        lac 9 i
        sad o72
        jmp 1f
        -1
        tad 9
        dac 9
        lac d1
        sys write; m3; m3s
        jms rline
        law ibuf-1
        dac 8
    2:
        lac 8 i
        sad o12
        lac o72
        sad 9 i
        skp
        jmp error
        sad o72
        skp
        jmp 2b
    1:
        dzm nchar
        law dir-1
        dac 8
    1:
        lac 9 i
        sad o72
        jmp 1f
        dac char
        lac nchar
        sza
        jmp 2f
        lac char
        alss 9
        xor o40
        dac 8 i
        dac nchar
        jmp 1b
    2:
        lac 8
        dac nchar
        lac nchar i
        and o777000
        xor char
        dac nchar i
        dzm nchar
        jmp 1b
    1:
        dzm nchar
    1:
        lac 9 i
        sad o12
        jmp 2f
        tad om60
        lmq
        lac nchar
        cll; als 3
        omq
        dac nchar
```

```
        jmp 1b
    2:
        lac nchar
        sys setuid
        sys chdir; dd
        sys chdir; dir

        lac d2
        sys close
        sys open; sh; 0
        sma
        jmp 1f
        sys link; system; sh; sh
        spa
        jmp error
        sys open; sh; 0
        spa
        jmp error
        sys unlink; sh
    1:
        law 017700
        dac 9
        law boot-1
        dac 8
    1:
        lac 8 i
        dac 9 i
        sza
        jmp 1b
        jmp 017701

    boot:
        lac d2
        lmq
        sys read; 4096; 07700
        lacq
        sys close
        jmp 4096
        0

    rline: 0
        law ibuf-1
        dac 8
    1:
        cla
        sys read; char; 1
        lac char
        lrss 9
        sad o100
        jmp rline+1
        sad o43
        jmp 2f
        dac 8 i
        sad o12
        jmp rline i
        jmp 1b
    2:
        law ibuf-1
        sad 8
        jmp 1b
        -1
```

```
        tad 8
        dac 8
        jmp 1b

    gline: 0
        law obuf-1
        dac 8
    1:
        jms gchar
        dac 8 i
        sad o12
        jmp gline i
        jmp 1b

    gchar: 0
        lac tal
        sad ebufp
        jmp 1f
        ral
        lac tal i
        snl
        lrss 9
        and o777
        lmq
        lac tal
        add o400000
        dac tal
        lacq
        sna
        jmp gchar+1
        jmp gchar i
    1:
        lac bufp
        dac tal
    1:
        dzm tal i
        isz tal
        lac tal
        sad ebufp
        skp
        jmp 1b
        lac bufp
        dac tal
        lac d2
        sys read; buf; 64
        sna
        jmp error
        jmp gchar+1

    error:
        lac d1
        sys write; m2; m2s
        lac d1
        sys smes
        sys exit

    m1:
        012;<lo>;<ei>;<n;<:;<
    m1s = .-m1
    m2:
        <?; 012
```

```
m2s = .-m2
m3:
    <pa>;<ss>;<wo>;<rd>;<: 040
m3s = .-m3
dd:
    <dd>;040040;040040;040040
dir:
    040040;040040;040040;040040

ttyin:
    <tt>;<yi>;<n 040;040040
ttyout:
    <tt>;<yo>;<ut>; 040040
keybd:
    <ke>;<yb>;<oa>;<rd>
displ:
    <di>;<sp>;<la>;<y 040
sh:
    <sh>; 040040;040040;040040
system:
    <sy>;<st>;<em>; 040040
password:
    <pa>;<ss>;<wo>;<rd>

d1: 1
o43: 043
o100: 0100
o400000: 0400000
d2: 2
o12: 012
or60: -060
d3: 3
ebufp: buf+64
bufp: buf
o777: 0777
o777000: 0777000
o40: 040
o72: 072

ibuf: .=.+100
obuf: .=.+100
tal: .=.+1
buf: .=.+64
char: .=.+1
nchar: .=.+1
pid1: .=.+1
pid2: .=.+1
```