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; CAT.ASM (Retro Unix 8086 v1 - /bin/cat - concatenate files)

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; RETRO UNIX 8086 (Retro Unix == Turkish Rational Unix)

; Operating System Project (v0.1) by ERDOGAN TAN (Beginning: 11/07/2012)

; Retro UNIX 8086 v1 - /bin/cat file

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; [ Last Modification: 16/07/2015 ]

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; Derivation from UNIX Operating System (v1.0 for PDP-11)

; (Original) Source Code by Ken Thompson (Bell Laboratories, 1971-1972)

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; Derived from 'cat.s' file of original UNIX v1

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; CAT2.ASM, 16/07/2015

; CAT1.ASM, 02/12/2013

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.8086

; UNIX v1 system calls

\_rele equ 0

\_exit equ 1

\_fork equ 2

\_read equ 3

\_write equ 4

\_open equ 5

\_close equ 6

\_wait equ 7

\_creat equ 8

\_link equ 9

\_unlink equ 10

\_exec equ 11

\_chdir equ 12

\_time equ 13

\_mkdir equ 14

\_chmod equ 15

\_chown equ 16

\_break equ 17

\_stat equ 18

\_seek equ 19

\_tell equ 20

\_mount equ 21

\_umount equ 22

\_setuid equ 23

\_getuid equ 24

\_stime equ 25

\_quit equ 26

\_intr equ 27

\_fstat equ 28

\_emt equ 29

\_mdate equ 30

\_stty equ 31

\_gtty equ 32

\_ilgins equ 33

sys macro syscallnumber, arg1, arg2, arg3

; Retro UNIX 8086 v1 system call.

ifnb <arg3>

mov dx, arg3

endif

ifnb <arg2>

mov cx, arg2

endif

ifnb <arg1>

mov bx, arg1

endif

mov ax, syscallnumber

int 20h

endm

; Retro UNIX 8086 v1 system call format:

; sys systemcall (ax) <arg1 (bx)>, <arg2 (cx)>, <arg3 (dx)>

;ibuf equ offset bss

;obuf equ offset bss + 512

;fin equ offset bss + 1024

; 16/07/2015

iobuf equ offset bss

fin equ offset bss + 512

UNIX SEGMENT PUBLIC 'CODE'

assume cs:UNIX,ds:UNIX,es:UNIX,ss:UNIX

START\_CODE:

;; / cat -- concatinate files

sys \_write, 1, nl, 2

pop bp

pop dx

mov si, fin

;mov di, obuf

dec bp

jnz short @f

;AX = 2 (written byte count)

xor al, al

jmp short cat\_3

;;mov (sp)+,r5

;;tst (sp)+

;;mov $obuf,r2

;;cmp r5,$1

;;beq 3f

cat\_1:

;;loop:

dec bp

;jz short cat\_6

; 16/07/2015

jnz short @f

sys \_exit

@@:

pop bx

cmp byte ptr [BX], '-'

jne short cat\_2

xor ax, ax ; 0

mov word ptr [SI], ax ;0

jmp short cat\_3

;;dec r5

;;ble done

;;mov (sp)+,r0

;;cmpb (r0),$'-

;;bne 2f

;;clr fin

;;br 3f

cat\_2:

;;2:

; bx = file name offset

xor cx, cx ; 0

sys \_open

jc short cat\_1

mov word ptr [SI], ax

;;mov r0,0f

;;sys open; 0:..; 0

;;bes loop

;;mov r0,fin

cat\_3:

;;3:

sys \_read, ax, iobuf, 512 ; 16/07/2015

;sys \_read, ax, ibuf, 512

jc short cat\_5

; NOTE: If input file is a tty (keyboard)

; only 1 byte will be read, by ignoring

; byte count (512).

; Retro UNIX 8086 v1 kernel ('rtty')

; has been modified fot that.

; Erdogan Tan (16/07/2015)

;

and ax, ax ; AX = 1 for tty (keyboard)

jz short cat\_5

; push si

;mov si, ibuf

; mov si, cx ; offset ibuf

; mov cx, ax

;;mov fin,r0

;;sys read; ibuf; 512.

;;bes 3f

;;mov r0,r4

;;beq 3f

;;mov $ibuf,r3

; 16/07/2015

; mov dx, ax

; ;add dx, obuf

;cat\_4:

; ;;4:

; lodsb

;call putc

; 16/07/2015

sys \_write, 1, iobuf, ax

jc short cat\_5

;

; loop cat\_4

; pop si

@@:

mov ax, word ptr [SI]

jmp short cat\_3

;;movb (r3)+,r0

;;jsr pc,putc

;;dec r4

;;bne 4b

;;br 3b

cat\_5:

;;3:

mov bx, word ptr [SI]

or bx, bx

jz short cat\_1

sys \_close

jmp short cat\_1

;;mov fin,r0

;;beq loop

;;sys close

;;br loop

;cat\_6:

; ;;done:

; sub di, obuf

; jz short cat\_7

; sys \_write, 1, obuf, di

;;sub $obuf,r2

;;beq 1f

;;mov r2,0f

;;mov $1,r0

;;sys write; obuf; 0:..

;cat\_7:

; ;;1:

; sys \_exit

;;sys exit

;putc:

; ;;putc:

; stosb

; cmp di, dx ; 16/07/2015

;cmp di, obuf + 512

; jb short @f

; push cx

; 16/07/2015

; mov di, obuf

; sub dx, di ; byte (char) count

;

; sys \_write, 1, obuf

;sys \_write, 1, obuf, 512

;mov di, obuf

;;movb r0,(r2)+

;;cmp r2,$obuf+512.

;;blo 1f

;;mov $1,r0

;;sys write; obuf; 512.

;;mov $obuf,r2

; pop cx

;@@:

;;1:

; retn

;;rts pc

nl: db 0Dh, 0Ah, 0

EVEN

bss:

;ibuf: db 512 dup(0)

;obuf: db 512 dup(0)

;fin: dw 0

;;.bss

;;ibuf: .=.+512.

;;obuf: .=.+512.

;;fin: .=.+2

;;.text

UNIX ends

end START\_CODE