



Bell Laboratories

subject: UNIX Users Seminar

date: January 2, 1973

from: M. D. McIlroy

A meeting is scheduled for Monday, January 15, 1973 in conference room 1D-451 at Murray Hill starting at 10:00 a.m. This is an information exchange meeting which will start with an overview of the internal operation of the UNIX System for the PDP-11/20 by T. R. Bashkow, and a description of some new documentation for this system by J. DeFelice.

K. L. Thompson will then discuss the evolution to the PDP-11/45 version of UNIX. The latter system is being written in a new system language called 'C', which will be discussed by D. M. Ritchie.

This notice is also a solicitation to the attendees to come prepared to discuss their modifications to, new uses of, and problems encountered with UNIX, with particular emphasis on new peripheral support. Finally B. A. Tague will review the possibilities of establishing a UNIX user group and the nature of the continuing support of UNIX by Bell Laboratories.

Please extend this invitation to your colleagues.

MH-8234-TRB-dh

M. D. McIlroy

Copy to

Messrs. M. L. Almquist
T. R. Bashkow
J. DeFelice
P. Denes
B. Julesz
A. E. Kaplan
J. Massery
L. E. McMahon
J. A. Norton
T. O'Connell
J. Ossanna

← Messrs. THIS COPY FOR →

H. Pierson
M. A. Pilla
D. Ritchie
C. S. Roberts
B. A. Tague
K. L. Thompson
J. Whipple
J. S. Wilkinson

UNIX talk 15 Jan 73
Overview

- Layout of drum Fig 1 VU graph mention how many
- Core & priority Fig 2 ?
- File system I/O Fig 3 VU graph.
- Transmission of data blocks Fig 4b
- Flow chart of block I/O Fig 5a VU graph.
very brief
- ≤ 10 min tty input Fig 8b
- " output Fig 9b
- Creation of process Fig 12 not detailed show only gross
details
- System calls SYSI det etc Fig 14
- Sup start up Fig 15
- State diagram Fig 16
- Fig 17 ? if time.

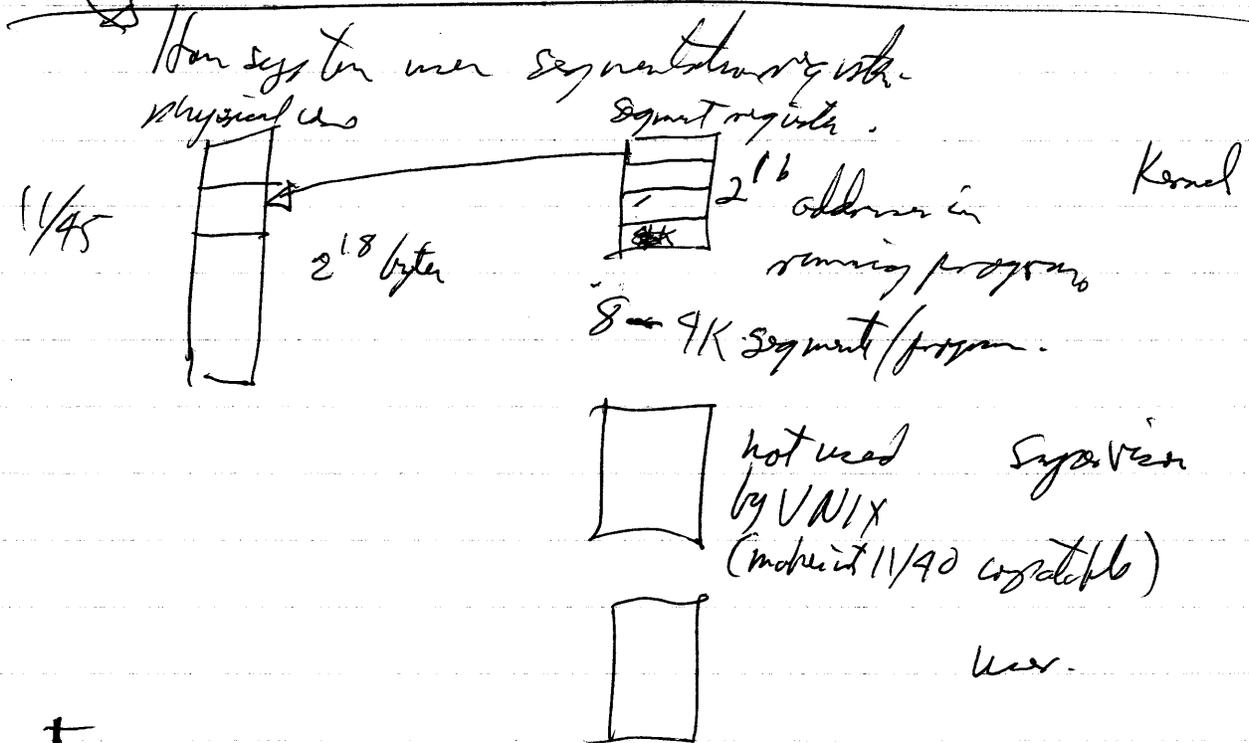
Short for 15 - 30 min.

Ken Thompson

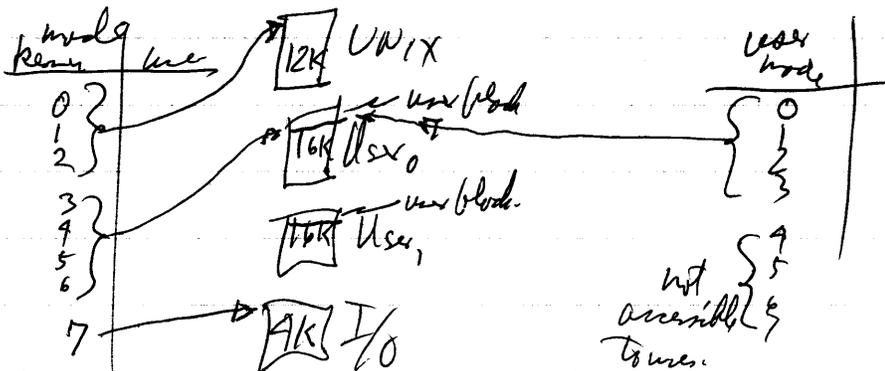
①

2 PDP11/45 system
 I evolved from 11/20 system
 II new design for 11/45.

11/45 44K 4 RK03 3 RS11
 Segmentation Dec Tape Mag Tape
 12 DC11 lines.



I Current system



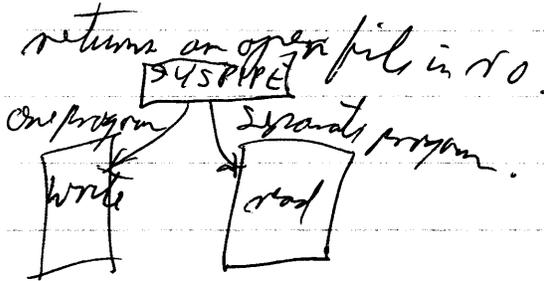
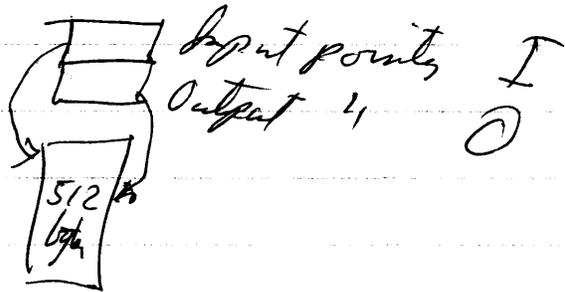
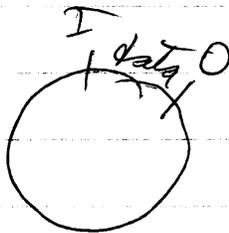
extension of 11/20 system

New features:

2 new SYS 'rums'

SYS PIPE SYS DUP

allocates a disk block
& sets up set of registers

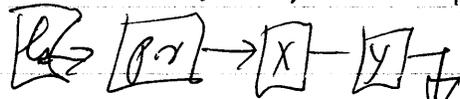


2 SYS TASKS
& SYS EXEC'S.

requires a new SHELL syntax.

ls > x > x > y > z

sets up by SYS FORKS these pipes



a pipe with
input & output
they call 'filters'

so now system has pipes

pr
opr
cat
crypt

~~pr~~ pr u? > opr >

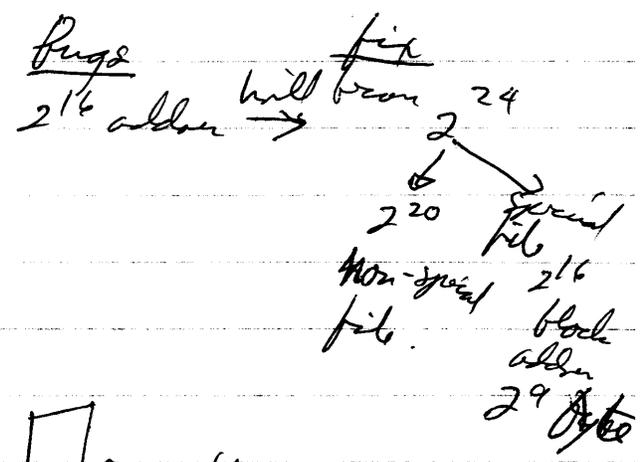
for experts
give you output
file list of the
system: u0 - ux

Don't buy MOS memory: 'breaks' about once a month.

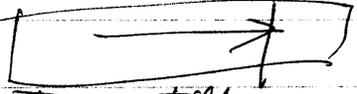
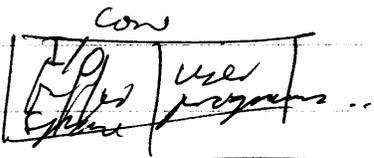
Don't get ^{old style} 11/20 extension paper for 11/40 or 11/48

II newly designed system written in 'C'

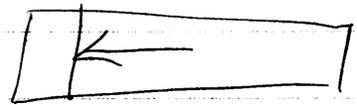
11/45
 Pure procedure
 Shared code
 New calling sequence
 Kernel & supervisor modes
 only - 11/40 way at the .



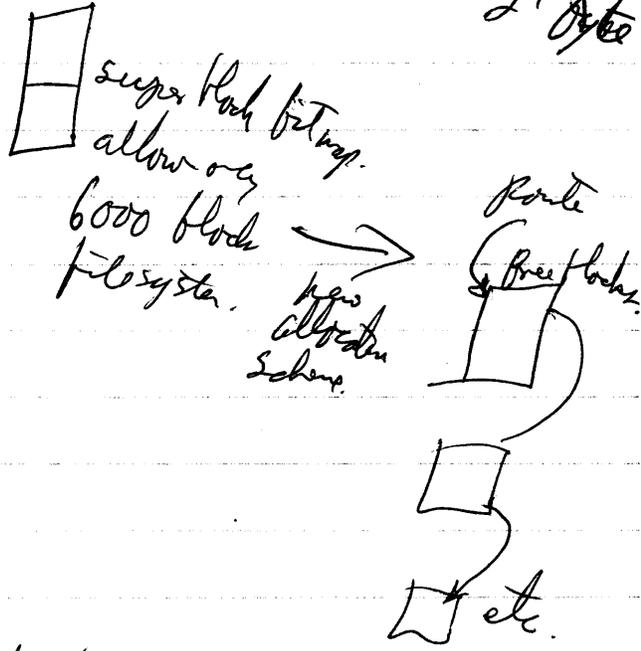
scheduling algorithm
 no longer round robin.



throw out user until no more requests for I/O



diminish I/O space
 as more users come in.



What happens when hit a detete
 only tty & know you find it, too info in case. So make up everybody & each asks 'my tty? get the detete? etc.

will put tty attach to process into process tables

more control of children by parent

variety of things

How big an I/O needs for 11/45 system.

System may need 20K memory

Compiler needs 16K user space.

Max user space allowed is 32K.

Pennis Richie

'C'

'B' is an interpreted language on PDP7 - still available? - available?

no types

C has 2 passes & is true compiler.

produce any code to be processed by as and loader.

~~was produce~~ ^{assembly} program ~ 1 1/2 times handcode version in space

name can be in one of 3 storage classes like C

static - defined elsewhere
automatic - on stack

can be one of following types

- int integer 16 bit?
- char byte
- float single prec float, pt
- double double " " "

e.g. int a, b, c;

int *ip;
↑
pointer

*cp = 5
**cpp = 'a'

char **cpp;

(5)

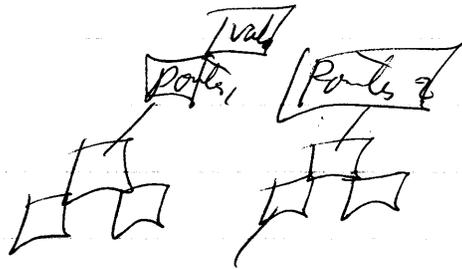
int la[5]; array of 5 integers
int (*cap)[5]; array of 5 pointers to integers.

Structures

struct C
type declaration list. int first;
) a, b, c; float s;

b.s picks out s??

Ex struct tree (
int value
struct tree *p1, *p2;
) x1, x2



etc.

DEC special hardware very late delivery
 DJS11 32 lines 9600 baud (to run printer?)
 3-1100 lpm printer.
 like VM11 in some ways.
 "King's group" Charlotte NC
 very poor maintenance

Ron Silacci