

PROCESS SWAPPER
STORAGE ALLOCATION.

COMPASS - VER 2.

10/06/71 22.35.59.

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ADDRESS	LENGTH
0	250
250	

BINARY CONTROL CARDS.

IDENT	SWAP
END	

BLOCKS	TYPE	ADDRESS	LENGTH
ABSOLUTE*	ABSOLUTE	0	167
PROGRAM*	LOCAL	0	250
SWAP	COMMON	0	37

ENTRY POINTS.

S.FSWAP	-	0	SWAPOUT	-	45	KPROC	-	240	L.KPROC	-	37
FORSWAP	-	20	SWAPIN	-	137	E.KPROC	-	0			

EXTERNAL SYMBOLS.

I.LOCK	S.USERA	S.CHARG	S.IDLTM	S.CMFL	DESCHED	I.WAIT	EVENT1
S.RETU	S.USRBI	S.OLDTM	S.USRTH	S.ECSRA	DELOBJ	TOSPROC	S.INTIM
E.MOT	S.SAVE1	S.SWPTM	CLKWAIT	S.ECSFL	REFER	E.ERROR	MAPOUT
PRODUCE	S.SAVE2	S.QUANT	PACKBUF	SYSRET	DISASTR	ENVIORN	E.ECS

IDENT SWAP

```

*
* NO SYSTEM ACTIONS ARE HEREIN
*
* EXTERNAL ROUTINES HEREIN (NON ARE TRUE SUBROUTINES)
*   FORSWAP WHEN THE CONTROLLING BP DISCOVERS THAT THE
*           QUANTUM HAS EXPIRED. IT XJES HERE
*   SWAPOUT THE ROUTINE SWAPS OUT THE PROCESS CURRENTLY IN
*           CORE AND THEN SEQUENCES TO SWAPIN
*   SWAPIN  (AS FAR AS I KNOW, THIS ROUTINE IS CALLED ONLY TO
*           FIRE UP THE INITIAL PROCESS AT SYSTEM INITIALIZATION
*           TIME) INTERNALLY, IT IS ENTERED FROM SWAPOUT AND LOOPS
*           ASKING THE SCHEDULER FOR A PROCESS. WHEN IT GETS ONE,
*           IT SWAPS IT IN.
*
* THERE ARE NO INTERNAL SUBROUTINES
*

```

```

RECS    MACRO      A
+        RE        A
          RJ        *XE.ECS
RECS    ENDM
RECS    MACRO      A
+        WE        A
          RJ        *XE.ECS
RECS    ENDM

```

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PROCESS SWAPPER
THIS ENTRY IS USED TO SWAP AT QUANTUM OVERFLOW

EXT I.LOCK

INTSYS XTEXT
ECSMAC XTEXT
CBLOCK MICRO
PROCSYM XTEXT
ERRNUMS XTEXT

EXT S.RETU
EXT F.NOT.PRODUCE
EXT S.USERB,S.USERBI
EXT S.SAVEI,S.SAVER
EXT S.CHARG,S.OLDTM,S.SWDTM,S.QUANT
EXT S.IDLTM
EXT S.USRTM
EXT CLKWAIT,PACKOUT
EXT S.CMFL,S.ECSRA,S.ECSFL

*****
QUANTUM CLOCK DOES NOT INCREMENT IF IT EQUALS ZERO
OR IF THE HIGH ORDER BYTE EQUALS 4000H
WHEN THE CLOCK IS ZERO, THE PPU WILL ATTEMPT A MEU+
TO PACKAGE AT +S.FSWAP+

*****
FORCED SWAP ... QUANTUM RAN OUT

ENTRY S.FSWAP

EXCHANGE PACKAGE USED BY PPU TO FORCE A SWAPOUT

S.FSWAP BSSZ 1, P-COUNTER ETC. SET IN +INITL+

*****
ENTRY FORSWAP

FORSWAP SA1 S.USERBI GET BI FOR THE USER
SB1 XI
SA1 S.CHARG UPDATE USER TIME
SA2 S.OLDTM
SA3 BI+P.USRTIM • USER TIME LOCAL TO PROCESS
BX6 XI
SA6 A2 • UPDATE OLD TIME
IX5 XI-X2 • ELAPSED TIME
IX7 X5+X3

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PROCESS SWAPPER
SWAPOUT FORCED BY PP BECAUSE OF QUANTUM

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24 54730 5140000000 X
36654
54640

SA4 S.USRTM • GLOBAL SWAP TIME
SA7 A2 • UPDATE LOCAL USER TIME
IX6 X5+X4
SA6 A4 • UPDATE GLOBAL USER TIME

STOP QUANTUM CLOCK CHECKING

25 5160000000 X 43601

MX6 T • SET 4000B IN UPPER PART OF
SA6 S.QUANT • QUANTUM CLOCK

MOVE USER EXCHANGE PACKAGE

26 5100000000 + 7100000000 X
27 0120000020
30 5101000140
31 0110000020

SX0 PACKBUF
SA0 S.FSWAP
RECS 1A
SA0 B1+P.XPACK
RECS 1A

RESTORE OWN EXCHANGE PACKAGE
FORSWAP P-COUNTER

32 7160000020 + 26644
33 5160000000 + 13646
34 5066000001 6150000044
35 5110000000 X 22651
36 5066000001 5110000000 X
37 22651 5066000002
40 5110000000 X 22651
41 5066000001

SX6 FORSWAP
LX6 3A
SA6 S.FSWAP
BX6 X4-X6 RA
SA6 A4+1
SBS 3A
SA1 S.CMFL
LX6 X1-B5
SA6 A4+1
SA1 S.ECSRA
LX6 X1-B5
SA6 A4+2
SA1 S.ECSFL
LX6 X1-B5
SA6 A4+1

SET UP TOP OF STACK

42 53111 5111000162 43604 11161 43601
43 20670 12161 5121000140
44 21244 12621 54610

SA1 B1+P.STACK • STACK POINTER
SA1 B1+X1 • TOP OF STACK, WORD 0
MX6 4 • PRESERVE FLAGS
BX1 X4+X1
MX6 1
LX6 60-SF.PCQ1
BX1 X4+X1 • TURN ON ABOUT TO EXECUTE BIT
SA2 B1+P.XPACK • MOVE P-COUNTER
AX2 3A
BX6 X2+X1 • IPLIST, F-RET COUNT ARE A
SA6 A1 • SET NEW TOS
SEQUENCE INTO +SWAPOUT+ *****

			ENTRY	SWAPOUT	
45	13666	SWAPOUT	BX6	X6=X6	STOP PPU CHECKING OF RA+1
	6170000051 +		SB7	SWAPOUT1	CALL SCHEDULER FOR NEXT PROCESS
46	5160000000 X		SA6	S.USERA	
	7160000001		SX6	1	SET INTERRUPT LOCKOUT FOR SCHEDULER
47	5160000000 X		SA6	I.LOCK	
	5160000002		SA6	S.FNFLAG	SET SWAP FLAG
50	0200000000 X		JP	PRODUCE	CALL SCHEDULER
		*			
51	13666	SWAPOUT1	BX6	X6=X6	CLEAR PPU LOCK OUT
	5160000000 X		SA6	I.LOCK	
52	5131000126		SA3	B1+P.ROHEAD	
	20352		LX3	6+36	
	43647		MX6	39	
53	7203000000		SX0	X3+0	READ NOT OF CURRENT PROCESS
	5101000000		SA0	B1+0	
54	0110000001		RECS	1	
55	54300		SA3	A0	
	15636		BX6	=X6*X3	
	10711		BX7	X1	SAVE STUFF ABOUT NEW PROCESS
56	5161000050		SA6	B1+P.SCR2	* SAVE ECS ADDR. OF CURRENT PROC
	5170000000 X		SA7	S.SAVE1	
57	10622		BX6	X2	
	43701	*	MX7	T	* SET HIGH ORDER OF TIMER = 4000B TO
		*			STOP PPU INCREMENTING IT
	5160000000 X		SA6	S.SAVE2	SAVE NEW QUANTUM
60	5170000000 X		SA7	S.QUANT	
		*			
		*			SWAPOUT ALL MAPS
		*			
	5111000164		SA1	B1+P.MAPGIN	
61	6170000063 +		SB7	SWAPOUT3	ASSUME B7 PRESERVED BY +MAPOUT+
	6130000000		SB3	SD.MAP	* CONSTANT. ASSUME MAPOUT PRESERVES B3
62	63211	SWAPOUT2	SB2	B1+X1	* ABSOLUTE A(SUBP DESCRIPTOR)
	56523		SA5	B2+B3	* MAP WORD FOR MAPOUT
	0400000000 X		EQ	=XMAPOUT	* MOVE THE SUBP OUT
63	0306000066 +	SWAPOUT3	ZR	X6+SWAPOUT4	* WHEN, NO HASSLE WITH MAP
	0334000066 +		NG	X6+SWAPOUT4	* THAT MAP WAS OFF
64	56120		SA1	B2	* SUBP FLAG WORD
	43601		MX6	1	
	20673		LX6	60-SD.FMPE	
	12616		BX6	X1+X6	* FLAG SUBP WITH PENDING MAP ERROR
65	54610		SA6	A1	* FOR FILE MISSING
66	5132000004	SWAPOUT4	SA3	B2+SD.PIRS	* MAP CHAIN WORD
	43652		MX6	42	* CLEAR FLAG
	11663		BX6	X6*X3	
67	54630		SA6	A3	
	73130		SX1	X3	* ISOLATE FLAG
	0321000062 +		PL	X1+SWAPOUT2	
		*			WRITE OUT READ/WRITE DESCRIPTOR
		*			
		*			


```

SA1      R1+P.SCR2      • RECOVER ECS ADDR OF PROC
SX2      P.PROCRO
IX0      X1+X2          ADD LEN OF R/O DESCRIPTOR
SA0      B1+P.RWHEAD
WECS     P.PROCRW

WRITE OUT PROCESS VARIABLE DESCRIPTOR

SA3      B1+P.ROHEAD+1
SB2      X2
LX3      6+36
SX3      X2
IX0      X1+X3
SA3      B1+P.STACK
LX3      20-18
SA0      B1+X3
WECS     B2

DO PROCESS READ ONLY DESCRIPTOR

SX6      1              LOCK OUT PPU INTERRUPTS
SA6      1.LOCK

CHECK THE TIMER IN THIS PROCESS AND DESCHEDULE
THE PROCESS AND SEND A MESSAGE IF THE TIMER IS OUT
OF TIMER FROM ECS

SA0      B1+P.TIMER
SX2      P.TIMER-P.ROHEAD
IX0      X1+X2
RECS     1
SA2      S.CHARG        • CURRENT CHARGE TIME
SA4      =XS.INTIM      • WHEN THIS PROCESS CAME IN
IX3      X2-X3          • HOW MUCH HE JUST CONSUMED
SA4      A0             • HIS TIMER
IX6      X4-X3          • DECREMENTED
MX7      0              • MULTI DESCHED FLAG
PL       X2-SWAPOUT6    • STILL HAS TIME
SA2      B1+P.MESSG     • GET MESSAGE MECHANISM
ZR       X2-SWAPOUT6    • NO MESSAGE, JUST DESCHED HIM

FIND THE MESSAGE EVENT CHANNEL AND SEND THE EVENT IF
THE CHANNEL STILL EXISTS

MX6      39
SX0      X2
SA0      B1
RECS     1              • READ MOT OF ALLEGED EVCH
SA3      A0
BX4      X3-X2          • CHECK OUT UNIQUE NAMES
BX4      X4-X4

```

112 0314000116 +
15136
113 5131000126
21322
15636
114 5131000136
15733
66600
115 6170000116 +
0400000000 X
116 5111000126 SWAPOUT6
21122
73110
117 6170000120 +
0400000000 X
120 43701 SWAPOUT8
20764
5111000050
121 10011 SWAPOUT5
43201
20266
56010
122 0110000001
123 54300
15632
12667
54600
124 0120000001
*
*
*
125 5110000000 X
5120000000 X
126 5131000133
15611
54620
127 37512
36753
5140000000 X
130 54730
36654
54640
131 5130000000 X
37373
132 5141000134
37643
54640
*
*
*

NZ
BX1
SA3
AX3
BX6
SA3
BX7
SB6
SB7
EQ
SA1
AX1
SX1
SB7
EQ
MX7
LX7
SA1
BX0
MX2
LX2
SA0
RECS
SA3
BX6
BX6
SA6
WECS
SA1
SA2
SA3
BX6
SA6
SA6
WECS
SA1
SA2
SA3
BX6
SA6
IX5
IX7
SA4
SA7
IX6
SA6
SA3
IX3
SA4
IX6
SA6
SX2
IX0
SA0

X4+SWAPOUT6
-X6+X3
B1+P.ROHEAD
1B
-X6+X3
B1+P.MESS+I
X2
B1
SWAPOUT6
=XEVENT1
B1+P.ROHEAD
1B
X1
SWAPOUT8
=XDESCHED
1
62-PT.S
B1+P.SCR2
X1
1
62-PT.C
B1
1
A3
-X2+X3
X4+X7
A3
1
S.CHARG
S.OLDIM
B1+P.SWPTIM
X1
A3
X1-X2
X5+X3
S.SWPTIM
A3
X5+X4
A4
=XS.INTIM
X1-X3
B1+P.TIMER
X1-X3
A4

- EVCH GONE, FORGET IT
- A(EVCH)
- MOT OF PROCESS
- MESSAGE
- DONT CARE ABOUT THE RESULT
- RETURN LINK FROM EVENT CODE
- GO PUT THE EVENT ON THE CHANNEL
- DESCHEDULE PROCESS
- RETLINK
- SET UP TIMER OUT FLAG
- RECOVER ECS A(PROCESS)
- CLEAR +INCORE+ FLAG
- ADD TIMEOUT FLAG IF SET ABOVE
- CURRENT CHARGE TIME
- LAST CHARGE TIME
- USER TOTAL SWAP TIME
- UPDATE LAST CHARGE TIME
- CHARGE INCREMENT
- INCREMENT USER SWAP TIME
- SYSTEM TOTAL SWAP TIME
- INCREMENT SYSTEM SWAP TIME
- NOW REALLY INCREMENT THE
- PROCESS TIMER

WRITE OUT USER CLOCKS

133 7120000003
36002
134 5101000131

P.USRTIM-P.ROHEAD
X0+X2
B1+P.USRTIM

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SWAPOUT

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135 0120000004
136 13666
5160000000 X

WECS
BX6
SA6

P.CLOX
XA-X6
I.LOCK

. CLEAR INTERRUPT LOCKOUT

END OF SWAP OUT STUFF.....

*****SEQUENCE TO SWAPIN *****


```

*
*
*
*
ENTRY
EXT
*
*
*
137 5110000000 X 10611 SWAPIN SA1 S.OLDTM * INITIALIZE TIME IN FOR THIS PROC
140 5160000000 X 5110000000 X SA6 SXS.INITM RECOVER SAVED QUANTUM
SA1 S.SAVE2
*
*
*
141 5130000000 X 0303000222 SA3 S.SAVE1 RECOVER SAVED ECS ADDR OF PROC
142 5100000000 X 10033 SA0 X3.NOPROC JP IF NO PROCESS TO RUN
143 5160000000 X 14611 SA0 S.SAVE2 USE S.SAVE2 AS SCRATCH
SA6 X2
SA1 S.QUANT SET INTERVAL TIMER
*
*
*
144 5160000000 X 7160000001 SX6 I LOCK OUT PPU INTERRUPTS
145 0110000001 SA6 I.LOCK
146 54100 43601 RECS I READ 1ST NO OF PROCESS DESCRIPTOR
147 54600 20666 SA1 A3 SET INCORE, NOW IN ECS
148 0120000001 MX6 I
149 13666 12616 LX6 60+PF.C
SA6 X1+X6
RECS A3
150 5160000000 X 5160000000 X SA6 X6-X6 RELEASE PPU INTERRUPT LOCKOUT
SA6 I.LOCK
*
*
*
152 5120000000 X 63210 SB2 X1 COMPUTE B1 FOR PROCESS
153 76610 63150 SA2 S.CMFL
154 5160000000 X 67112 SB1 X2
155 5121000127 63220 SB1 B1+BR
SA6 B1 SAVE USER B1 IN CASE OF QUANTUM INT
SA6 S.USERB1 SET IN SYSTEM CELLS
*
*
*
154 5101000126 SA0 READ IN PROC READ ONLY AND PROC READ/WRITE DESCRIPT
155 0110000041 RECS B1+P.ROHEAD
P.PROCRO+P.PROCRW
*
*
*
156 5121000127 SA2 B1+P.ROHEAD+1
63220 SB2 X2 LEN OF PROC VAR DESC
20252 LX2 6+36

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PROCESS SWAPPER
 SWAP IN - READ PROCESS DESCRIPTOR

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157 7222000000
 36062
 160 5121000162
 20252
 53021
 161 0112000000
 162 13666
 5060777776

SX2	X2+0	ORIG OF VAR DESC IN ECS
IX0	X0+X2	
SA2	B1+P.STACK	. COMPUTE ADR(VAR DESC)
LX2	60-18	
SA0	R1+X2	
RECS	B2	READ IT IN
BX6	X6-X6	
SA6	A0-1	. SET 0 AT END OF FULL C-TABLE

163 5160000000 X
20100 10611

164 0321000177 +
20104

165 0331000240 +
20103

166 0331000243 +

167 5110000000 X

170 5101000126 10011

171 5160000000 X 7160000001

172 0110000001

173 54100

7120006636

20260

174 15612

54600

175 0120000001

176 13666 5160000000 X

SWPIN19

BX6
SA6
LX1

PL
LX1
NG
LX1
NG

SA1
BX6
SA0

SX6
SA6

RECS

SA1
SX2

LX2

BX6

SA6

WECS

BX6

SA6

XI
S.SAVE2
BT.P

XI.SWAPIN0
PF.D-PF.P
XI.SWPIN13
PF.V-PF.D
XI.SWPIN20
S.SAVE1
XI
BT+P.ROHEAD

1
I.LOCK

1
AD

PF.SWPN
CA+12

-X2*X1

AD

1

X6-X6

I.LOCK

• SAVE FLAGS FOR LATER

• JUMP IF NOTHING PENDING

• DESTROY THIS PROCESS

• YES. GO DO IT

• DID AN EVENT ARRIVE

• YES. FIX P-COUNTER MODIFIER

RESET FLAGS IN ECS

ECS ADDR PROCESS

SET INTERRUPT LOCK OUT

CLEAR INTERRUPT LOCK OUT

```

177          *
          * SWAPIN0 BSS 0
          *
          * BRING IN FULL PATH
          *
177 7160777773          SX6      -SD.PTRS      . CLEAR MAPSIN CHAIN FOR ENVIORN
          5161000164          SA6      R1+P.MAPSIN
200 6160000202          SB6      SWAPIN4      . ERROR RETURN FROM ENVIORN
          6170000210          SB7      SWAPIN5      . NORMAL RETLINK
201 0400000000 X          EQ      =XENVIORN
          * (X7 = ERROR NUMBER)
          *
          * ERROR TRYING TO GET ENVIORN
          *
202 5110000000 X          SWAPIN4 SA1      S.CHARG      . TURN OFF THE SWAP CLOCKS
          5120000000 X          SA2      S.OLDTM
203 5131000133          SA3      B1+P.SWPTIM
          10611          BX6      X1
          54620          SA6      A2
204 37512          IX5      X1-X2
          36653          IX6      X2+X3
          5140000000 X          SA4      S.SWPTIM
205 54630          SA6      A3
          36654          IX6      X2+X4
          54640          SA6      A4
206 0000000000          PATCH1 PS
207 7160000005          SX6      E.PROC      . RESTORE ERROR CLASS
          0400000000 X          EQ      =XE.ERROR
          *
          * INCREMENT CLOCKS
          *
210 5110000000 X          SWAPIN5 SA1      S.CHARG
          5120000000 X          SA2      S.OLDTM
211 5131000133          SA3      B1+P.SWPTIM      USER TOTAL SWAP TIME
          10611          BX6      X1
          54620          SA6      A2
212 37512          IX5      X1-X2
          36753          IX7      X2+X3
          5140000000 X          SA4      S.SWPTIM      SYSTEM TOTAL SWAP TIME
213 54730          SA7      A3
          36654          IX6      X2+X4
          54640          SA6      A4
          *
          * IF NOTHING HAPPENED WHILE THE PROCESS WAS OUT, WE CAN RETURN TO
          * THE USER BY A SIMPLE XJ
          *
214 5110000000 X          SA1      S.SAVE2      . EXHUME STATE FLAGS
          20100          LX1      PF.P
215 0321000000 X          PL      X1+S.RETU      . NOTHING HAPPENED
          *
          * IF PCQ = IN MIDDLE, HE WAS HUNG ON AN EVENT CHANNEL AND
          * AN INTERRUPT ARRIVED BEFORE HE GOT THE EVENT. WE SET PCQ =
          * ABOUT TO SO THAT IF AND WHEN CONTRO RETURNS TO THIS STACK

```

* ENTRY, HE WILL REHANG ON THE EVENT CHANNEL(S). TOSPROC WILL
 * LOOK FOR A PRIORITY INTERRUPT - IF IT DOESNT FIND ONE, THE PROCESS
 * WILL REHANG RIGHT AWAY
 *

216 53111 5111000162
 20104
 217 43601 0331000000 X
 12616
 20101
 220 0331000000 X
 20667
 54610
 221 0400000000 X

SA1	BI+P.STACK	• TOX POINTER
SA1	BI+X1	• TOP OF STACK
LX1	SF.PCQ1	
NG	XI=XTOSPROC	• NOT IN MIDDLE OF INST
MX6	1	
BX6	XI+X6	• SET PCQ = ABOUT TO
LX1	SF.PCQ2-SF.PCQ1	
NG	XI=XTOSPROC	• NOT IN MIDDLE OF INST
LX6	60-SF.PCQ2	• RESTORE (NEW) TOS WORD
SA6	A1	
EQ	=XTOSPROC	

PROCESS SWAPPER
IDLE LOOP - NO PROCESS SCHEDULED

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222	7160000004	NOPROC	SX6	4	*****SET TO IDLE*****
	5160000002		SA6	S.FNFLAG	
223	13666		BX6	X6-X6	. UNLOCK INTERRUPTS
	5160000000 X		SA6	XI-LOCK	
224	6160000454		SB6	I-PAUSE	PAUSE TIME FOR PPU INTERRUPTS
225	6166777776	NOPROC2	SB6	B3-1	
	0460000237 +		EQ	B3-B0, NOPROC3	INTERRUPTS HAVE TO HAPPEN FAST
226	5110000000 X		SA1	XI-WAIT	. SEE IF IT HAPPENED
	0311000225 +		NZ	X1, NOPROC2	NOT YET
227	7160000001		SX6	1	LOCK OUT INTERRUPTS FOR SCHEDULER
	5160000000 X		SA6	I-LOCK	
230	6170000231 +		SB7	NOPROC1	. RETLINK FOR SCHEDULER
	0200000000 X		JP	PRODUCE	
231	0301000222 +	NOPROC1	ZR	XI, NOPROC	
	10611		BX6	XI	GOT A PROCESS
	10722		BX7	X2	
232	5160000000 X		SA6	S.SAVE1	
	5170000000 X		SA7	S.SAVE2	
	*				UPDATE IDLE TIME CLOCK
233	5110000000 X		SA1	S.CHARG	
	5120000000 X		SA2	S.OLDTH	
234	5130000000 X		SA3	S.IDLTH	
	10611		BX6	XI	
	54620		SA6	AN	
235	37512		IX5	XI-X2	
	36735		IX7	X3+X5	
	54750		SA7	A3	
236	0400000137 +		JP	SWAPIN	

237 0100000000 X NOPROC3 RJ EXDISASTR . INTERRUPT DIDNT RUN IN TIME.

PROCESS SWAPPER
DESTROY THIS PROCESS

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EXT DESCHED
EXT DELOBJ
*
* DESTROY THIS PROCESS
*
240 SWPIN13 BSS 0
0 ECSSUB 0
L 450 5111000126 20152 73110 SA1 BI+P.ROHEAD DESCHEDULE THIS PROCESS
LX1 6+36
SX1 X1
SB7 SWPIN130
SX6 1 SET INTERRUPT LOCK
L 452 5160000000 X SA6 I.LOCK
0200000000 X JP DESCHED
*
L 453 13666 SWPIN130 BX6 X6-X6 RELEASE INTERRUPT LOCK
5160000000 X SA6 I.LOCK
*
* RESET REFERENCE COUNTS OF ALL MAPS
*
EXT REFER
L 454 5111000163 SA1 BI+P.SUBPDT
L 455 7261000003 LX1 6+36
SX6 X1+3 1ST SUBP +3
SA6 BI+P.TEMP1 SAVE CURRENT SUBP
L 456 53161 SA1 BI+X6
20152 LX1 6+36
7261777774 SX6 X1-3
L 457 5161000057 SA6 BI+P.TEMP2 SAVE CURRENT LOG MAP POINTER
61400000461 SB4 SWPIN133
L 460 66640 SB6 B4
66740 SB7 B4
43573 MX5 50 DECREMENT REFERENCE COUNTS
*
L 461 5111000057 SWPIN133 SA1 BI+P.TEMP2
7211000003 SX1 X1+3
L 462 53211 SWPIN134 SA2 BI+X1
0312000465 NZ X2-SWPIN135 JP IF GET SWAP DIRECTIVE
L 463 0332000467 NG X2-SWPIN136 JP IF END OF LOG MAP
7211000003 SX1 X1+3 INCREMENT LOG MAP POINTER
L 464 0200000462 JP SWPIN134
L 465 7140377777 SWPIN135 SX4 377777B SET HUGE FL
10611 BX6 X1
54610 SA6 A1
L 466 0200000000 X JP REFER
*
L 467 5111000056 SWPIN136 SA1 BI+P.TEMP1 MUST DO NEXT SUBP
72110000010 SX1 X1+8
L 470 5121000163 SA2 BI+P.SUBPDT
20230 LX2 6+18
SX2 X2 LAST SUBP+9
L 471 37221 IX2 X2-X1
0332000475 NG X2-SWPIN137 JP IF DONE
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PROCESS SWAPPER
DESTROY THIS PROCESS

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L	472	54610	10611	BX6	XI	
		53111		SA6	AI	
		20152		SA1	BI+X1	GET POINTER TO LOG MAP
L	473	7261777774		LX1	6+36	
		5161000057		SX6	XI-3	
L	474	0200000461		SA6	BI+P.TEMP2	SAVE LOG MAP SWP DIR PTR
				JP	SWPIN133	
L	475	5111000126		SWPIN137	SA1	BI+P.ROHEAD
		20152		LX1	6+36	CONSTRUCT WD 2 OF
		73010		SX0	XI	CAPABILITY TO DESTROY OBJECT
L	476	59010		SA0	BI	
L	477	0110000001		RECS	1	
L	500	54200		SA2	AI	NOT ENTRY FOR THIS PROCESS
		43647		MX6	36	
		11542		BX5	X4+X2	
		12550		BX5	X4+X0	
L	501	6170000502		SB7	SWPIN131	
		0200000000 X		JP	DELOBJ	DESTROY THE PROCESS
L	502	7160000001		SWPIN131	SX6	1
		5160000000 X		SA6	I LOCK	CALL SCHEDULER
L	503	6170000504		SB7	SWPIN132	
		0200000000 X		JP	PRODUCE	
L	504	13666		SWPIN132	BX6	X4-X8
		5160000000 X		SA6	I LOCK	
		10611		BX6	XI	SAVE NEW PROCESS NAME
L	505	10722		BX7	X4	SAVE NEW PROCESS QUANTUM
		5160000000 X		SA6	S.SAVE1	
L	506	5170000000 X		SA7	S.SAVE2	
		0200000137 +		JP	SWPIN	
L	507			ENDSUB	XPROC.BUFA	

PROCESS SWAPPER
SWAP IN - PROCESS HAS GOT AN EVENT

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```

243 5111000162          SWPIN20
      531111          43201
244 20267
      12612
      54610
      20104
245 0331000247 +
      20101
246 0321000167 +
247 0100000000 X
250

```

```

SA1
SA1
MX2
LX2
BX6
SA6
LX1
NG
LX1
PL
RJ
*
END

```

```

BT+P,STACK
BT+X1
1
60-SF.PCQ2
X1+X2
AI
SF.PCQ1
X1,SWPIN21
SF.PCQ2-SF.PCQ1
X1,SWPIN19
=XDISASTR

```

```

• GET TOP OF STACK
• SET PCQ = ALMOST FINISHED
• ABOUT TO>>>
• WHEW, HE WAS IN THE MIDDLE
• OH DEAR, HE SHOULD HAVE BEEN
• IN THE MIDDLE

```

36406 STORAGE USED
6600 ASSEMBLY

1017 STATEMENTS
5.977 SECONDS

302 SYMBOLS
246 REFERENCES

PROCESS SWAPPER SYMBOLIC REFERENCE TABLE.

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BUFA	450		15/08	16/38	16/38	16/38				
CLKWAIT	0	EXTERNAL*								
DELOBJ	0	EXTERNAL*	16/23							
DESCHED	0	EXTERNAL*	7/15	15/14						
DISASTR	0	EXTERNAL*	14/34	17/11						
ENVIORN	0	EXTERNAL*	12/10							
EVENT1	0	EXTERNAL*	7/10							
E.ECS	0	EXTERNAL*	4/16	6/06	6/51	8/02	9/47	11/22		
			4/18	6/18	7/24	9/27	10/07	16/16		
			5/18	6/34	7/29	9/33	11/16	16/38		
E.ERROR	0	EXTERNAL*	12/28							
E.KPROC	0	SWAP	15/07 L							
E.MOT	0	EXTERNAL*								
E.PROC	5		12/27							
FORSWAP	20	PROGRAM*	3/43 E	3/45 L	4/20					
I.LOCK	0	EXTERNAL*	5/06 S	6/22 S	9/25 S	11/14 S	14/04 S	15/13 S	16/26 S	
			5/11 S	8/03 S	9/34 S	11/23 S	14/11 S	15/17 S	16/31 S	
I.PAUSE	454		14/05							
I.WAIT	0	EXTERNAL*	14/08							
KPROC	240	PROGRAM*	16/38 L							
L.KPROC	37		16/38 D	16/38						
MAPOUT	0	EXTERNAL*	5/27							
NOPROC	222	PROGRAM*	9/18	14/01 L	14/14					
NOPROC1	231	PROGRAM*	14/12	14/14 L						
NOPROC2	225	PROGRAM*	14/06 L	14/09						
NOPROC3	237	PROGRAM*	14/07	14/34 L						
PACKBUF	0	EXTERNAL*	4/13							
PATCH1	206	PROGRAM*	12/26 L							
PF.C	6		7/21	9/29						
PF.O	4		11/06	11/08						
PF.P	0		11/06	11/06	12/48					
PF.S	10		7/17							
PF.SWRN	6635		11/17							
PF.V	7		11/08							
PRODUCE	0	EXTERNAL*	5/08	14/13	16/26					
P.CLOX	4		8/01							
P.MAPSIN	164		5/32	12/07 S						
P.MESG	135		6/41	7/06						
P.PROCRO	12		6/22	9/46						
P.PROCRW	27		6/05	9/46						
P.ROHEAD	126		5/12	6/31	7/11	9/45	11/12	16/11		
			6/09	7/03	7/51	9/51	15/08			
P.RWHEAD	140		6/04							
P.SCR2	50		5/21 S	6/01	7/18					
P.STACK	162		4/38	6/14	10/03	13/05	17/01			
P.SUBPDT	163		15/22	15/49						
P.SWPTIM	133		7/34	12/17	12/34					
P.TEMP1	56		15/25 S	15/47						
P.TEMP2	57		15/29 S	15/35	16/06 S					
P.TIMER	134		6/30	6/31	7/45					
P.USRTIM	131		3/49	7/51	7/53					
P.XPACK	140		4/16	4/45						
REFER	0	EXTERNAL*	15/45							

PROCESS SWAPPER
SYMBOLIC REFERENCE TABLE.

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SD.FMPE	1		5/42					
SD.MAP	6		5/34					
SD.PTRS	4		5/45	12/06				
SF.PCQ1	4		4/43	13/07	13/11	17/07	17/09	
SF.PCQ2	5		13/11	13/13	17/04	17/09		
SWAPIN	137	PROGRAM*	9/05 E	9/10 L	14/28	16/36		
SWAPIN0	177	PROGRAM*	11/05	12/02 L				
SWAPIN4	202	PROGRAM*	12/08	12/15 L				
SWAPIN5	210	PROGRAM*	12/09	12/32 L				
SWAPOUT	45	PROGRAM*	5/01 E	5/02 L				
SWAPOUT1	51	PROGRAM*	5/03	5/10 L				
SWAPOUT2	62	PROGRAM*	5/35 L	5/50				
SWAPOUT3	63	PROGRAM*	5/33	5/38 L				
SWAPOUT4	66	PROGRAM*	5/38	5/39	5/45 L			
SWAPOUT5	121	PROGRAM*	6/40	7/19 L				
SWAPOUT6	116	PROGRAM*	6/42	7/01	7/09	7/11 L		
SWAPOUT8	120	PROGRAM*	7/14	7/16 L				
SWPIN13	240	PROGRAM*	11/07	15/06 L				
SWPIN130	453		15/11	15/16 L				
SWPIN131	502		16/22	16/25 L				
SWPIN132	534		16/27	16/30 L				
SWPIN133	461		15/30	15/35 L	16/07			
SWPIN134	462		15/37 L	15/41				
SWPIN135	465		15/38	15/42 L				
SWPIN136	467		15/39	15/47 L				
SWPIN137	475		15/50	16/11 L				
SWPIN19	167	PROGRAM*	11/10 L	17/10				
SWPIN20	243	PROGRAM*	11/09	17/01 L				
SWPIN21	247	PROGRAM*	17/08	17/11 L				
SYCRET	0	EXTERNAL*						
S.CHARG	0	EXTERNAL*	3/47	6/34	7/32	12/15	12/32	14/20
S.CMFL	0	EXTERNAL*	4/26	9/38				
S.FCSFL	0	EXTERNAL*	4/32					
S.FCSRA	0	EXTERNAL*	4/29					
S.FNFLG	2		5/07 S	14/02 S				
S.FSWAP	0	PROGRAM*	13/35 E	3/39 L	4/14	4/22 S		
S.IDLTM	0	EXTERNAL*	14/22					
S.INTIM	0	EXTERNAL*	6/25	7/43	9/12 S			
S.OLDTM	0	EXTERNAL*	3/48	7/33	9/10	12/16	12/33	14/21
S.QUANT	0	EXTERNAL*	4/00 S	5/28 S	9/22 S			
S.RETU	0	EXTERNAL*	12/49					
S.SAVE1	0	EXTERNAL*	5/22 S	9/17	11/10	14/17 S	16/34 S	
S.SAVE2	0	EXTERNAL*	5/27 S	9/13	9/19	11/02 S	12/47	14/18 S 16/35 S
S.SWPTH	0	EXTERNAL*	7/39	12/22	12/39			
S.USERA	0	EXTERNAL*	5/04 S					
S.USRBI	0	EXTERNAL*	3/45	9/42 S				
S.USRTM	0	EXTERNAL*	4/01					
TOSPROC	0	EXTERNAL*	13/08	13/12	13/15			