

SCHED
STORAGE ALLOCATION.

COMPASS - VER 2. 08/24/71 18.00.19.

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ADDRESS LENGTH

BINARY CONTROL CARDS.

0 175
175

IDENT SCHED
END

BLOCKS TYPE ADDRESS LENGTH

ABSOLUTE* ABSOLUTE 0 167
PROGRAM* LOCAL 0 175

ENTRY POINTS.

SCHED - 14 RESCHED - 10 PRODUCE - 74 DESCHED - 126

EXTERNAL SYMBOLS.

DISASTR E.ECS

	RECS	IDENT MACRO RE RJ ENDM	SCHED OPERAND OPERAND E.ECS	
	WECS	MACRO WE RJ ENDM	OPERAND OPERAND E.ECS	
*	INTSYS PROCSYM	XTEXT XTEXT		
*				
0	00000000000000000000	S.SCHDX	DATA	• CURRENT PROCESS QUEUE (INDEX=0 OR 1)
1	00000000000000000000	S.SCHDX1	DATA	• SAME AS ABOVE, USED BY ↑DESCHED↑
2	00000000000000000000	S.SCHDT	DATA	• TEMPORARY CELL FOR SCHEDULER
3	00000000000000000000	S.BURP	DATA	• BURP COUNTER
4	00000000000000000000	S.NXTPRC	DATA	• NOT INDEX OF NEXT PROCESS, OR ZERO
5	00000000000000000000		DATA	• NOT INDEX OF NEXT PROCESS (LOW PRIORITY LONG QUANTUM QUEUE) OR ZERO
*				
*				
*				
6	000000000000127710	P.QUANT	DATA	• 0.045 SEC QUANTUM
7	00000000000303240	BURP.VAL	DATA EQU	• 0.100 SEC QUANTUM
17		*		• NUMBER OF CONSECUTIVE HIGH PRIORITY PROCESSES TO RUN BEFORE BURPING
		EXT	DISASTER	
		EXT	E.ECS	

THIS ROUTINE ADDS A PROCESS TO THE SCHEDULING QUEUE

PARAMETERS x1 = NOT INDEX OF PROCESS TO SCHEDULE
B7 = RETURN LINK

REGISTERS NOT USED... B1, B2, B3, B4, B6

ENTRY SCHED+RESCHED

RESCHEDULE A PROCESS FROM THE HI PRIORITY, SMALL QUANTUM QUEUE TO THE LOW PRIORITY, LARGE QUANTUM QUEUE. DON'T BOTHER IF PROCESS IS ALREADY IN SECOND (LOW PRIORITY) QUEUE.

10 716000001 516000000 + RESCHED SX6 1 • CURRENT PROCESS QUEUE
SA6 S+SCHDX
SX4 X6+0 • FOR USE IN +SCHED+ CODE

CODE TO TRAP SCHEDULER DISASTER 30 JULY 71

12 5120000171 + 7176000004
no trouble, no problems
13 0312000172 + 5072000000
got it
14 76400 10644 516000000 + SCHED SX4 80
BX6 X4 • CURRENT PROCESS QUEUE
SA6 S+SCHDX

CODE TO TRAP SCHEDULER DISASTER 30 JULY 71

15 717000001 5120000171 +
16 5072000000 0312000172 +
SX7 1 • ACTIVE FLAG
SA2 ✓ SCHDFLG • PICK UP CURRENT STATUS
SA7 A2+0 • SET ACTIVE FLAG: RESCHEDULING
NZ X2,CULPRIT . GOTCHA YA LITTLE SO
SCHED0 . SEQUENCE INTO +SCHED+ CODE

SCHED PLACES A PROCESS IN THE SMALL QUANTUM, HI PRIORITY QUEUE (INDEX=0)

17 510000002 + 7201000000 SCHED0 SA0 S+SCHDT • TEMPORARY CELL
SX0 X1+0 • NOT POINTER TO NEW PROCESS
RECS 1
SA2 A0+0
SX5 P+SCHED-P.ROHEAD • OFFSET OF CHAINING WORD
NO 0
MX7 39
BX0 -X7+X2
IX0 X0+X5 • LINK WORD OF NEW PROCESS
RECS 1
SA3 A0+0

	0314000057 +	NZ	X4,RESCHED1	• THIS PROCESS WANTS TO BE RESCHEDULED--SEE IF IT IS NECESSARY
25	0313000051 +	SCHED2	X3,SCHDERR	. DISASTER
	5234000004 +		S,NXTPRC+X4	
26	0303000052 +		X3,SCHED1	
	7203000000		X3+0	• MOT POINTER TO NEXT PROCESS
27	0110000001	RECS	1	
30	54400	SA4	A6	
	15047	BX0	-x7*X4	
	36065	IX0	X0+X5	• LINK WORD OF NEXT PROC
	43636	MX6	30	
31	0110000001	RECS	1	
32	54400	SA4	A6	
	20436	LX4	30	
	63560	SB5	X4	• BACK LINK TO LAST PROC
	11664	BX6	X6*X4	
33	12616	BX6	X1+X6	• SUBSTITUTE LINK TO NEW PROCESS
	20636	LX6	30	
	5146000000 +	SA4	S,SCHDX	• FETCH CURRENT QUEUE INDEX,
34	20473	LX4	60-1	• LEFT JUSTIFY IT AND ADD TO
	12646	BX6	X4+X6	QUEUING WORD
	5066000000	SA6	A6+0	
35	0120000001	WECS	1	
36	46000	NO	0	
	7105000000	SX0	86+0	
37	0110000001	RECS	1	
40	54400	SA4	A6	
	15047	BX0	-x7*X4	
	36065	IX0	X0+X5	• LINK WORD OF LAST PROCESS
	43636	MX6	30	
41	0110000001	RECS	1	
42	54400	SA4	A6	
	11664	BX6	X6*X4	
	12641	BX6	X6+X1	• SUBSTITUTE LINK TO NEW PROCESS
	54640	SA6	A4	
43	0120000001	WECS	1	
44	7165000000	SX6	B6+0	
	5116000000 +	SA1	S,SCHDX	• FETCH CURRENT QUEUE INDEX (ONE OR ZERO)
45	20173	LX1	59	• LEFT JUSTIFY IT AND ADD TO QUEUING WORD
	20636	LX6	30	
	12641	BX6	X6+X1	
	12663	BX6	X6+X3	
46	54600	SA6	A6	
	15027	BX0	-x7*X2	
	46060	NO	0	
	36005	IX0	X0+X5	• LINK WORD OF NEW PROCESS
47	0120000001	WECS	1	
50	0200000173 +	JP	X7T	
51	0100000000 X	RJ	DTSASTR	
52	7261000000	SX6	X1+0	
	5063000000	SA6	A3+0	• UPDATE S.NXTPRC(X4) WITH MOT INDEX
53	20636	LX6	30	

	12661 5120000000 +	BX6 SA2 LX2 BX6 SA6 WECS JP	X6+X1 S•SCHDX 60-1 X6+X2 A0+0 1 XT	• FETCH CURRENT QUEUE INDEX • LEFT JUSTIFY IT • ADD IT TO THE NEW PROCESS QUEUE WORD	
54	20273 12662 5060000000				
55	0120000001				
56	0200000173 +				
57	0303000060 +	RESCHED1	ZR	X3,RESCHD10 ..QUEUE WD=0==>ALREADY DESCHEDULED: DONE BY EVCH CODE	
		*			
		*			
60	0200000173 +	RESCHD10	PL	X3,RESCHD11 ..JP IF PROCESS NEEDS RESCHEDULING	
61	66670 75700 617000064 +	RESCHD11	JP SB6 SX7 SB7 RESCHED2	YIT B7 B0 X1+0 SCHDFLG RESCHED	DONT BOTHER • DESCHEDULE PROCESS FROM FIRST QUEUE
62	6251000000 517000171 +		SBS SA7 JP	X1+0 CLEAR SCHED FLAG SO WE WONT GET A	
63	0200000126 +			DISASTR WHEN ↑RESCHED↑ RUNS. (SAVE X1,T00)	
64	7170000004 517000171 +	RESCHED2	SX7 SA7 SB7 SX4	X1+0 SCHDFLG B6 1	
65	66760 7140000001			.. RESTORE X4 AND ALL THE OTHER NEAT THINGS WHICH ↑RESCHED↑ CLOBBERED	
		*			
		*			
66	5100000002 +	SA0 SX0 BX1 RECS	S•SCHDT B5 X0 1 A0+0		
	76050 10100			RESTORE M0T	
67	0110000001				
70	5020000000 7150000004		SA2 SX5 NO MX7 BX0 IX0		
71	46000 43747 15057 36005			P•SCHED-P,ROHEAD	
72	0110000001	RECS	X0+X5 1		
73	54300 0200000005 +	SA3 JP	A0 SCHED2	READ QUEUE WORD	

THIS ROUTINE RETURNS A PROCESS TO RUN

PARAMETERS ... B7 = RETURN LINK

RETURNS ... X1 = ZERO (NO PROCESS TO RUN) OR
ABS ECS ADDRESS OF PROCESS TO RUN
X2 = QUANTUM TO RUN THE PROCESS

REGISTERS NOT USED .. B1 THRU B6, A3 THRU A6, AND
X3 THRU X6

ENTRY PRODUCE

74	510000002 + 717000003	PRODUCE	SA0 SX7 SA2 NZ	S.SCHDT . TEMPORARY CELL S.BURP . ACTIVE! PRODUCING FLAG SCHDFLG . PICK UP CURRENT STATUS X2,CULPRIT . GOT HIM
75	5120000171 + 0312000172 *			
76	7130000000 515000003 +		SX3 SAS	S . INITL PROCESS QUEUE INDEX=0
77	7255777760 616000106 +		SX5 SB6 NG	S.BURP X5-BURP,VAL PROD,REG X5,PRODUCED
100	0335000115 +			X . CONTINUE IF NOT TIME TO BURP
		BURP		WE MUST RUN ONE PROCESS FROM THE LOW PRIORITY QUEUE. OTHERWISE GOSSIPING DISK SYSTEM PROCESSES WILL HANG IN HIGH PRIORITY QUEUE TALKING TO EACH OTHER OVER EVENT CHANNELS.
101	714000001 616000102 + 020000115 *		SX3 SB6 JP	I . SEARCH LOW PRIORITY QUEUE PROD,BRP PRODUCED
102	0311000104 + 713000000	PROD,BRP	NZ SX3 SB6	X1,LO,FIN . JP IF FOUND A PROCESS TO BURP UP! XIT . DONT NEED TO INCREMENT S.BURP, ITS ALREADY = BURP,VAL
103	6160000173 + 020000115 *		JP	PRODUCED . SEE IF WE CAN RUN A HIGH PRIORITY PROCESS
104	512000006 + 717000000	LO,FIN	SA2 SX7 SA7 JP	S.QUANT . USE HIGH PRIORITY QUANTUM (SHORT ONE) S.BURP . ZERO BURP COUNTER XIT
105	517000003 + 020000173 *			
106	0301000111 + 515000003 +	PROD,REG	ZR SAS SX7	X1,PROD,REG1 . JP IF NOTHING IN LO QUEUE S.BURP X5+1 . INCREMENT S.BURP
107	727500001			

	5075000000				
110	0200000173 +	SA7 JP	55+0 XIT		
	*	*			
111	6160000113 +	PRD•REG1	PRD•REG2		
	7130000001	SX6 SX3 JP	SEARCH SECOND QUEUE		
112	0200000115 +		PRODUCE0		
	*				
113	0301000173 +	PRD•REG2	ZR SX7 SA7	• JP IF NO PROCESS FOUND. • ZERO S.BURP SINCE WE A RUNNING A LOW	
	7170000000			PRIORITY PROCESS	
114	5170000003 +				
	*				
	0500000173 +	JP	XIT		
	*	*			
115	5213000004 +	PRODUCE0	SA1	S•NXTPRC•X3	
	0311000117 +		NZ	X1, PRODUCE1	
116	0260000000		JP	R6	
117	46000	PRODUCE1	NO	RSC	
	7201000000		SX0	X1+0	
120	0110000001		RECS	R1	
121	5010000000		SA1	A0+0	
	7100000002		SX0	P•SCHED-P•ROHEAD	
122	46000		NO	R0	
	43247		MX2	39	
	15112		SX1	X2*X1	
	36001		IX0	X0+X1	• LINK WORK OF NEW PROCESS
123	0110000001		RECS	1	
124	54200		SA2	A0	
	73720		SX7	X2	• NEW VALUE FOR S•NXTPRC(X3)
	5273000004 +		SA7	S•NXTPRC•X3	
125	5223000006 +		SA2	S•QUANT•X3	
	0260000000		JP	R6	

THIS ROUTINE REMOVES A PROCESS FROM THE SCHEDULING QUEUE

PARAMETERS .. X1 = NOT INDEX OF PROCESS TO REMOVE
X7 = RETURN LINK

REGISTERS NOT USED... B1 THRU B6

126 5100000002 *

ENTRY DESCHED

SA0 S.SCHD0T • TEMPORARY CELL

CODE TO TRAP SCHEDULER DISASTER 30 JULY #71

127 5120000171 *

SX7 • ACTIVE:DESCHEDULING FLAG

5072000000

SA2 SCHDFLG • PICK UP CURRENT STATUS

130 0312000172 *

SA7 A2+0 • SET ACTIVE:DESCHEDULING

X2,CULPRIT . AHAS

131 10644 7146000000

SX4 • INITL QUEUE INDEX (ZERO TO BEGIN)

5160000001 *

BX6 X4 S.SCHDX1 • SAVE CURRENT QUEUE INDEX

73010

• NOT POINTER TO OLD PROCESS

132 0110000001

RECS

133 54200

SA2

43747

MX7

134 46000 7150000002

SX5

15027

NO

36085

BX0

135 0110000001

IX0

0308000157 *

RECS

136 5020000000

SA2

0308000157 *

ZR

137 13666

X6-X6

54600

A0

0338000143 *

X2,DESCHED1

37331

S,NXTPRC+X4

141 0313000146 *

IX3

142 0200000146 *

NZ

143 7140000001

X3,DESCHED2

7264000000

SX4

144 46000

SX6

5160000001 *

NO

145 0200000140 *

SA6

0120000001

JP

146 37316

DESCHED0

0303000170 *

WECS

43136

IX3

150 46000

ZR

MX1

NO

X1 • NOT POINTER TO OLD PROCESS

AN • FETCH NOT ENTRY

30 • FETCH WORD OF OLD PROCESS

P,SCHED-P,ROHEAD • OFFSET OF CHAINING WORD

X0+X2 • X0=ECS ADDR OF PROCESS

X6+X5 • LINK WORD OF OLD PROCESS

1 • FETCH QUEUE WORD OF PROCESS TO BE DESCHEDULED

X2+DSCHDERR • DISASTER

X6-X6 • PREPARE TO ZERO QUEUE WORD IN ECS

A0 • JP IF PROCESS IN 2ND QUEUE

X2,DESCHE01 • SEE IF DESCHEDULING NEXT PROCESS

X2-X1 • NO

X2,DESCHE02 • YES, USE FORWARD PTR OF OLD PROCESS

A2 • UPDATE S,NXTPRC

1 • PROCESS IS IN THE SECOND QUEUE

X4+0 • UPDATE CURRENT QUEUE INDEX

DESCHED0 • ZERO PROCESS QUEUE WORD

1 • SEE IF DESCHEDULING ONLY PROCESS

X7-X6 • YES

11412	*	BX4	X1*X2	• X2=LINK WORD ON DESCHEDULED PROCESS • X4=BACK PTR OF DESCHEDULED PROCESS • NOT POINTER TO NEXT PROCESS
		SX0	X2+0	
151 0110000001	7205000000	RECS	1	
152 5030000000	15637	SA3	A0+0	
	36005	BX0	-X7*X3	
153 0110000001	15331	IX0	X0+X5	• LINK WORD OF NEXT PROCESS
154 5030000000	12643	RECS	1	
	20373	SA3	A0+0	
155 5130000001	12636	BX3	-X1*X3	• UPDATE FORWARD PTR ON NEXT PROCESS
+		BX6	X4+X3	• SUBSTITUTE NEW BACK LINK
156 46000	5060000000	SA3	5.SCHDX1	• FETCH CURRENT QUEUE INDEX AND ADD IT
157 0120000001	15637	LX3	60-1	• LEFT JUSTIFIED, OF COURSE,
160 46000	20436	BX6	X3+X6	• TO BACK POINTER
	7204000000	NO		
161 0110000001	36005	SA6	A0+0	
162 54300	73220	WECS	1	• UPDATE QUEUE WORD ON NEXT PROCESS
	11313	NO		
163 0110000001	12632	LX4	30	• RIGHT JUSTIFY THE OLD BACK PTR
164 54300	54600	SX0	X4+0	• NOT POINTER TO LAST PROCESS
		RECS	1	
165 0120000001		SA3	A0	• REAT NOT OF LAST PROCESS
166 0200000173	*	BX0	-X7*X3	• ISOLATE PCS ADDR OF PROCESS
167 0100000000	X	IX0	X0+X5	• LINK WORD TO LAST PROCESS
170 13666	DSCHDERR	SX2	X2	• ISOLATE OLD FORE PTR (ON DESCHEDULED PROC)
		RECS	1	
165 0120000001		SA3	A0	• FETCH QUEUE WD ON LAST PROCESS
166 0200000173	*	BX3	X1*X3	• MASK OUT CURRENT FORWARD PTR
167 0100000000	X	BX6	X3+X2	• SUBSTITUTE NEW FORWARD LINK
170 13666	DESCHEDS	SA6	A0	
	54630	WECS	1	• UPDATE LAST PROCESS QUEUE WORD
	0200000173	JP	X7T	
	*	RJ	DTSASTR	
	*	BX6	X6-X6	
	*	SA6	A0	• ZERO OUT S.NXT.PRC
	*	JP	X7T	
	*			CODE INSERTED TO TRAP SCHEDULER DISASTER 30 JULY #71
171 00000000000000000000	SCHDFLG	DATA	0	
172 0100000000	CULPRIT	RJ	DISASTR	
	*			• SET NON-ZERO WHEN SCHED ACTIVE
	*			• SCHED ALREADY ACTIVE WHEN ENTERED
	*			X2= FUNCTION ALREADY IN PROGRESS
	*			X7= FUNCTION JUST CALLED
	*			1=SCHEDULING
	*			2=DESCHEDULING
	*			3=PRODUCING
	*			4=RESCHEDULING
	*			• CLEAR ACTIVE FLAG AND EXIT
173 43700	XIT	MX7	0	
	5170000171	SA7	SCHDFLG	
174 0270000000		JP	87	
	*			
	*			
175	END			

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35250 STORAGE USED
 6600 ASSEMBLY

507 STATEMENTS
2.728 SECONDS

119 SYMBOLS
141 REFERENCES

**SCHED
SYMBOLIC REFERENCE TABLE.**

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