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/TITLE MLTREE
/
REDAC SOFTWARE LIMITED
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/1 SUITE : P.C.B. LAYOUT
/2 PROGRAM TITLE : REDAL3 MK5
/3 ROUTINE TITLE : MLTREE
/
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AUTHORISATION FROM THE DIRECTORS OF REDAC SOFTWARE LIMITED.
/4 AUTHOR:
/5 DATE : DEC 1974
/6 PURPOSE: SCAN CONNECTIONS AND WHERE POSSIBLE REPLACE BY ANOTHER
OF SHORTER LENGTH. LENGTH IS MEASURED BY MOD(X)+MOD(Y).
/7 CALLING SEQUENCE AND DESCRIPTION OF PARAMETERS
/
CALL MLTREE(COMP(1),EOCOMP,CONN(1),EOCONN,LIB(1),EOLIB,TRAK(1))
COMP COMPONENTS ARRAY
CONN CONNECTIONS ARRAY
LIB LIBRARY ARRAY
EOCOMP FORTRAN TYPE POINTER TO FIRST FREE WORD IN COMP
EOCONN " " " " " " " " " CONN
EOLIB " " " " " " " " " LIB
TRAK TRACK WIDTH ASSIGNMENTS ARRAY
/8 LOCAL GLOBALS
.GLOBL MLTREE
/
/9 EXTERNAL GLOBALS
.GLOBL TREE,ADDCON,SUBCON,SUBNOD,.DA
.EJECT

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PAGE	2	MLTREE	SRC	MLTREE
40		00000	R 740040 A	MLTREE XX
41		00001	R 121665 E	JMS* .DA
42		00002	R 600012 R	JMP .+1+7
43		00003	R 000000 A	COMPAD 0
44		00004	R 000000 A	EOCOMP 0
45		00005	R 000000 A	CONNAD 0
46		00006	R 000000 A	EOCONN 0
47		00007	R 000000 A	LIBAD 0
48		00010	R 000000 A	EOLIB 0
49		00011	R 000000 A	TRAKAD 0
50		00012	R 200003 R	LAC COMPAD
51		00013	R 040255 R	DAC ARG3
52		00014	R 040324 R	DAC ARG7
53		00015	R 040351 R	DAC ARG13
54		00016	R 040470 R	DAC ARG15
55		00017	R 200004 R	LAC EOCOMP
56		00020	R 040256 R	DAC ARG4
57		00021	R 040325 R	DAC ARG8
58		00022	R 200007 R	LAC LIBAD
59		00023	R 040330 R	DAC ARG11
60		00024	R 040352 R	DAC ARG14
61		00025	R 200010 R	LAC EOLIB
62		00026	R 040331 R	DAC ARG12
63		00027	R 200006 R	LAC EOCONN
64		00030	R 040260 R	DAC ARG6
65		00031	R 040327 R	DAC ARG10
66		00032	R 200005 R	LAC CONNAD
67		00033	R 040257 R	DAC ARG5
68		00034	R 040326 R	DAC ARG9
69		00035	R 040471 R	DAC ARG16
70		00036	R 360006 R	TAD* EOCONN
71		00037	R 341666 R	TAD (-1
72		00040	R 041631 R	DAC ENDCON#
73		00041	R 200005 R	MAINLP LAC CONNAD
74		00042	R 041651 R	DAC STOR#
75		00043	R 541631 R	SAD ENDCON
76		00044	R 620000 R	JMP* MLTREE
77		00045	R 221651 R	LAC* STOR
78		00046	R 501667 R	AND (???
79		00047	R 740001 A	CMA
80		00050	R 041627 R	DAC COUNT#
81		00051	R 221651 R	LAC* STOR
82		00052	R 640511 A	LRS 11
83		00053	R 501667 R	AND (???
84		00054	R 041647 R	DAC PTR1#
85		00055	R 441651 R	NXTCON ISZ STOR
86		00056	R 441627 R	ISZ COUNT
87		00057	R 600062 R	JMP .+3
88		00060	R 201651 R	LAC STOR
89		00061	R 600042 R	JMP MAINLP+1
90		00062	R 221651 R	LAC* STOR
91		00063	R 640511 A	LRS 11

PAGE	3	MLTREE SRC	MLTREE
92		00064 R 501667 R	AND (777
93		00065 R 041650 R	DAC PTR2#
94		00066 R 221651 R	LAC* STOR
95		00067 R 640506 A	LRS 6
96		00070 R 501670 R	AND (7
97		00071 R 041653 R	DAC WIDTH#
98		00072 R 660706 A	ALSS 6
99		00073 R 041654 R	DAC WIDTSH# / WIDTH PACKED AND SHIFTED
100		00074 R 221651 R	LAC* STOR
101		00075 R 501671 R	AND (77
102		00076 R 041643 R	DAC PIN1#
103		00077 R 441651 R	ISZ STOR
104		00100 R 221651 R	LAC* STOR
105		00101 R 501671 R	AND (77
106		00102 R 041644 R	DAC PIN2#
107		00103 R 221651 R	LAC* STOR
108		00104 R 652000 A	LMQ
109		00105 R 441651 R	ISZ STOR
110		00106 R 221651 R	LAC* STOR
111		00107 R 744010 A	RCL
112		00110 R 742010 A	RTL
113		00111 R 501672 R	AND (3
114		00112 R 640614 A	LLS 14
115		00113 R 740200 A	SZA
116		00114 R 600055 R	JMP NXTCON / CONNEX ROUTED
117		00115 R 221651 R	LAC* STOR
118		00116 R 501673 R	AND (100000
119		00117 R 740200 A	SZA
120		00120 R 600055 R	JMP NXTCON / CONNEX ALREADY DONE
121		00121 R 221651 R	LAC* STOR
122		00122 R 501674 R	AND (77777
123		00123 R 041630 R	DAC DISNO#
124		00124 R 341673 R	TAD (100000
125		00125 R 061651 R	DAC* STOR
126		00126 R 201650 R	LAC PTR2
127		00127 R 541647 R	SAD PTR1
128		00130 R 741000 A	SKP
129		00131 R 100361 R	JMS ADD1 / FIND OTHER END AND MARK
130		00132 R 201647 R	LAC PTR1
131		00133 R 660711 A	ALSS 11
132		00134 R 341643 R	TAD PIN1
133		00135 R 341654 R	TAD WIDTSH
134		00136 R 040476 R	DAC PP
135		00137 R 201675 R	LAC (PP
136		00140 R 040472 R	DAC FRED
137		00141 R 201650 R	LAC PTR2
138		00142 R 660711 A	ALSS 11
139		00143 R 341644 R	TAD PIN2
140		00144 R 041641 R	DAC NOTT#
141		00145 R 777324 A	LAW -454
142		00146 R 041626 R	DAC CNTR#
143		00147 R 100463 R	JMS TREFND

PAGE	4	MLTREE	SRC	MLTREE
144		00150	R 201626 R	LAC CNTR
145		00151	R 341675 R	TAD (PP
146		00152	R 040472 R	DAC FRED
147		00153	R 041632 R	DAC EOF11#
148		00154	R 201626 R	LAC CNTR
149		00155	R 341676 R	TAD (-1130
150		00156	R 041626 R	DAC CNTR
151		00157	R 201641 R	LAC NOTT
152		00160	R 341654 R	TAD WIDTSH / SET TREE WIDTH FOR TREE
153		00161	R 060472 R	DAC* FRED
154		00162	R 200476 R	LAC PP
155		00163	R 041641 R	DAC NOTT
156		00164	R 100463 R	JMS TREFND
157		00165	R 201677 R	LAC (PP-1
158		00166	R 041645 R	DAC POINT1#
159		00167	R 141634 R	DZM FLAG#
160		00170	R 200476 R	LAC PP
161		00171	R 100335 R	JMS XY
162		00172	R 041656 R	DAC X1#
163		00173	R 641002 A	LACQ
164		00174	R 041660 R	DAC Y1#
165		00175	R 220472 R	LAC* FRED
166		00176	R 100335 R	JMS XY
167		00177	R 100406 R	JMS LENGTH
168		00200	R 041637 R	DAC LONG1#
169		00201	R 441645 R	LOOPY1 ISZ POINT1
170		00202	R 201645 R	LAC POINT1
171		00203	R 541632 R	SAD EOF11
172		00204	R 600247 R	JMP OUT
173		00205	R 221645 R	LAC* POINT1
174		00206	R 100335 R	JMS XY
175		00207	R 041656 R	DAC X1
176		00210	R 641002 A	LACQ
177		00211	R 041660 R	DAC Y1
178		00212	R 200472 R	LAC FRED
179		00213	R 341666 R	TAD (-1
180		00214	R 041646 R	DAC POINT2#
181		00215	R 341700 R	TAD (1
182		00216	R 341626 R	TAD CNTR
183		00217	R 041633 R	DAC EOF12#
184		00220	R 441646 R	LOOPY2 ISZ POINT2
185		00221	R 201646 R	LAC POINT2
186		00222	R 541633 R	SAD EOF12
187		00223	R 600201 R	JMP LOOPY1
188		00224	R 221646 R	LAC* POINT2
189		00225	R 100335 R	JMS XY
190		00226	R 100406 R	JMS LENGTH
191		00227	R 041640 R	DAC LONG2#
192		00230	R 740001 A	CMA
193		00231	R 341700 R	TAD (1
194		00232	R 341637 R	TAD LONG1
195		00233	R 741100 A	SPA

PAGE	5	MLTREE	SRC	MLTREE
196		00234	R 600220 R	JMP LOOPY2
197		00235	R 741200 A	SNA
198		00236	R 600220 R	JMP LOOPY2
199		00237	R 201640 R	LAC LONG2
200		00240	R 041637 R	DAC LONG1
201		00241	R 201645 R	LAC POINT1
202		00242	R 041635 R	DAC LIM1#
203		00243	R 201646 R	LAC POINT2
204		00244	R 041636 R	DAC LIM2#
205		00245	R 441634 R	ISZ FLAG
206		00246	R 600220 R	JMP LOOPY2
207		00247	R 201634 R	OUT LAC FLAG
208		00250	R 741200 A	SNA
209		00251	R 600055 R	JMP NXTCON
210		00252	R 121662 E	JMS* SUBCON
211		00253	R 600262 R	JMP .+7
212		00254	R 001630 R	.DSA DISNO
213		00255	R 000000 A	ARG3 0 / COMPAD
214		00256	R 000000 A	ARG4 0 / EOCOMP
215		00257	R 000000 A	ARG5 0 / CONNAD
216		00260	R 000000 A	ARG6 0 / EOCONN
217		00261	R 001701 R	.DSA (0
218		00262	R 100265 R	JMS ADDIT
219		00263	R 100427 R	JMS ADDNO
220		00264	R 600041 R	JMP MAINLP
221		00265	R 740040 A	ADDIT XX
222		00266	R 221635 R	LAC* LIM1
223		00267	R 501671 R	AND (??
224		00270	R 041643 R	DAC PIN1
225		00271	R 221635 R	LAC* LIM1
226		00272	R 640507 A	LRS 7
227		00273	R 501702 R	AND (37??
228		00274	R 041652 R	DAC TEMP#
229		00275	R 744020 A	RCR
230		00276	R 341652 R	TAD TEMP
231		00277	R 340003 R	TAD COMPAD
232		00300	R 341700 R	TAD (1
233		00301	R 040320 R	DAC NAME1
234		00302	R 221636 R	LAC* LIM2
235		00303	R 501671 R	AND (??
236		00304	R 041644 R	DAC PIN2
237		00305	R 221636 R	LAC* LIM2
238		00306	R 640507 A	LRS 7
239		00307	R 501702 R	AND (37??
240		00310	R 041652 R	DAC TEMP
241		00311	R 744020 A	RCR
242		00312	R 341652 R	TAD TEMP
243		00313	R 340003 R	TAD COMPAD
244		00314	R 341700 R	TAD (1
245		00315	R 040322 R	DAC NAME2
246		00316	R 121661 E	JMS* ADDCON
247		00317	R 600334 R	JMP .+15

248	00320	R	000000	A	NAME1 0
249	00321	R	001643	R	.DSA PIN1
250	00322	R	000000	A	NAME2 0
251	00323	R	001644	R	.DSA PIN2
252	00324	R	000000	A	ARG7 0 /COMPAD
253	00325	R	000000	A	ARG8 0 /EOCOMP
254	00326	R	000000	A	ARG9 0 /CONNAD
255	00327	R	000000	A	ARG10 0 /EOCONN
256	00330	R	000000	A	ARG11 0 /LIBAD
257	00331	R	000000	A	ARG12 0 /EOLIB
258	00332	R	001653	R	.DSA WIDTH
259	00333	R	001700	R	.DSA (1
260	00334	R	620265	R	JMP* ADDIT
261	00335	R	740040	A	XY XX
262	00336	R	041652	R	DAC TEMP
263	00337	R	501671	R	AND (77
264	00340	R	041642	R	DAC PINA#
265	00341	R	201652	R	LAC TEMP
266	00342	R	640511	A	LRS 11
267	00343	R	501667	R	AND (777
268	00344	R	041652	R	DAC TEMP
269	00345	R	121663	E	JMS* SUBNOD
270	00346	R	600355	R	JMP .+1+6
271	00347	R	001655	R	.DSA XPIN#
272	00350	R	001657	R	.DSA YPIN#
273	00351	R	000000	A	ARG13 0 /COMPAD
274	00352	R	000000	A	ARG14 0 /LIBAD
275	00353	R	001652	R	.DSA TEMP
276	00354	R	001642	R	.DSA PINA
277	00355	R	201657	R	LAC YPIN
278	00356	R	652000	A	LMQ
279	00357	R	201655	R	LAC XPIN
280	00360	R	620335	R	JMP* XY
281	00361	R	740040	A	ADD1 XX
282	00362	R	744010	A	RCL
283	00363	R	041652	R	DAC TEMP
284	00364	R	744010	A	RCL
285	00365	R	341652	R	TAD TEMP
286	00366	R	340003	R	TAD COMPAD
287	00367	R	041652	R	DAC TEMP
288	00370	R	221652	R	LAC* TEMP
289	00371	R	340005	R	TAD CONNAD
290	00372	R	341666	R	TAD (-1
291	00373	R	341672	R	LUFIT TAD (3
292	00374	R	041652	R	DAC TEMP
293	00375	R	221652	R	LAC* TEMP
294	00376	R	501674	R	AND (77777
295	00377	R	541630	R	SAD DISNO
296	00400	R	600403	R	JMP .+3
297	00401	R	201652	R	LAC TEMP
298	00402	R	600373	R	JMP LUFIT
299	00403	R	341673	R	TAD (100000

PAGE	7	MLTREE	SRC	MLTREE
300		00404	R 061652 R	DAC TEMP
301		00405	R 620361 R	JMP* ADD1
302		00406	R 740040 A	LENGTH XX
303		00407	R 740001 A	CMA
304		00410	R 341700 R	TAD (1
305		00411	R 341656 R	TAD X1
306		00412	R 664000 A	GSM
307		00413	R 741400 A	SZL
308		00414	R 341700 R	TAD (1
309		00415	R 041652 R	DAC TEMP
310		00416	R 641002 A	LACQ
311		00417	R 740001 A	CMA
312		00420	R 341700 R	TAD (1
313		00421	R 341660 R	TAD Y1
314		00422	R 664000 A	GSM
315		00423	R 741400 A	SZL
316		00424	R 341700 R	TAD (1
317		00425	R 341652 R	TAD TEMP
318		00426	R 620406 R	JMP* LENGTH
319		00427	R 740040 A	ADDNO XX
320		00430	R 200005 R	LAC CONNAD
321		00431	R 360006 R	TAD* EOCNN
322		00432	R 341666 R	TAD (-1
323		00433	R 041631 R	DAC ENDCON
324		00434	R 200005 R	LAC CONNAD
325		00435	R 041652 R	LUP1 DAC TEMP
326		00436	R 541631 R	SAD ENDCON
327		00437	R 620427 R	JMP* ADDNO
328		00440	R 221652 R	LAC* TEMP
329		00441	R 501667 R	AND (777
330		00442	R 740001 A	CMA
331		00443	R 041627 R	DAC COUNT
332		00444	R 441652 R	LUP2 ISZ TEMP
333		00445	R 201652 R	LAC TEMP
334		00446	R 441627 R	ISZ COUNT
335		00447	R 741000 A	SKP
336		00450	R 600435 R	JMP LUP1
337		00451	R 341703 R	TAD (2
338		00452	R 041652 R	DAC TEMP
339		00453	R 221652 R	LAC* TEMP
340		00454	R 501674 R	AND (77777
341		00455	R 740200 A	SZA
342		00456	R 600444 R	JMP LUP2
343		00457	R 221652 R	LAC* TEMP
344		00460	R 341630 R	TAD DISNO
345		00461	R 061652 R	DAC* TEMP
346		00462	R 600444 R	JMP LUP2
347		00463	R 740040 A	TREFND XX
348		00464	R 200011 R	LAC TRAKAD
349		00465	R 040475 R	DAC ARG17 /SET UP ARGUMENT
350		00466	R 121664 E	JMS* TREE
351		00467	R 620463 R	JMP* TREFND

PAGE	8	MLTREE	SRC	MLTREE
352		00470	R 000000 A	ARG15 0
353		00471	R 000000 A	ARG16 0
354		00472	R 000000 A	FRED 0
355		00473	R 001641 R	.DSA NOTT
356		00474	R 001626 R	.DSA CNTR
357		00475	R 000000 A	ARG17 0
358		00476	R 000000 A	PP .BLOCK 1130
359			000000 A	.END
		01661	R 001661 E *E	
		01662	R 001662 E *E	
		01663	R 001663 E *E	
		01664	R 001664 E *E	
		01665	R 001665 E *E	
		01666	R 777777 A *L	
		01667	R 000777 A *L	
		01670	R 000007 A *L	
		01671	R 000077 A *L	
		01672	R 000003 A *L	
		01673	R 100000 A *L	
		01674	R 077777 A *L	
		01675	R 000476 R *L	
		01676	R 776650 A *L	
		01677	R 000475 R *L	
		01700	R 000001 A *L	
		01701	R 000000 A *L	
		01702	R 003777 A *L	
		01703	R 000002 A *L	
		SIZE=01705		NO ERROR LINES

ADDCON	01661	38	246				
ADDIT	00265	218	221*	260			
ADDNO	00427	219	319*	327			
ADD1	00361	129	281*	301			
ARG10	00327	65	255*				
ARG11	00330	59	256*				
ARG12	00331	62	257*				
ARG13	00351	53	273*				
ARG14	00352	60	274*				
ARG15	00470	54	352*				
ARG16	00471	69	353*				
ARG17	00475	349	357*				
ARG3	00255	51	213*				
ARG4	00256	56	214*				
ARG5	00257	67	215*				
ARG6	00260	64	216*				
ARG7	00324	52	252*				
ARG8	00325	57	253*				
ARG9	00326	68	254*				
CNTR	01626	142	144	148	150	182	356
COMPAD	00003	43*	50	231	243	286	
CONNAD	00005	45*	66	73	289	320	324
COUNT	01627	80	86	331	334		
DISNO	01630	123	212	295	344		
ENDCON	01631	72	75	323	326		
EOCOMP	00004	44*	55				
EOCONN	00006	46*	63	70	321		
EOFL1	01632	147	171				
EOFL2	01633	183	186				
EOLIB	00010	48*	61				
FLAG	01634	159	205	207			
FRED	00472	136	146	153	165	178	354*
LENGTH	00406	167	190	302*	318		
LIBAD	00007	47*	58				
LIM1	01635	202	222	225			
LIM2	01636	204	234	237			
LONG1	01637	168	194	200			
LONG2	01640	191	199				
LOOPY1	00201	169*	187				
LOOPY2	00220	184*	196	198	206		
LUPIT	00373	291*	298				
LUP1	00435	325*	336				
LUP2	00444	332*	342	346			
MAINLP	00041	73*	89	220			
MLTREE	00000	1	35	40*	76		
NAME1	00320	233	248*				
NAME2	00322	245	250*				
NOTT	01641	140	151	155	355		
NXTCON	00055	85*	116	120	209		
OUT	00247	172	207*				
PINA	01642	264	276				
PIN1	01643	102	132	224	249		
PIN2	01644	106	139	236	251		

PAGE 10 MLTREE CROSS REFERENCE

POINT1	01645	158	169	170	173	201			
POINT2	01646	180	184	185	188	203			
PP	00476	134	135	145	154	157	160	358*	
PTR1	01647	84	127	130					
PTR2	01650	93	126	137					
STOR	01651	74	77	81	85	88	90	94	100
		103	104	107	109	110	117	121	125
SUBCON	01662	38	210						
SUBNOD	01663	38	269						
TEMP	01652	228	230	240	242	262	265	268	275
		283	285	287	288	292	293	297	300
		309	317	325	328	332	333	338	339
		343	345						
TRAKAD	00011	49*	348						
TREE	01664	38	350						
TREFND	00463	143	156	347*	351				
WIDTH	01653	97	258						
WIDTSH	01654	99	133	152					
XPIN	01655	271	279						
XY	00335	161	166	174	189	261*	280		
X1	01656	162	175	305					
YPIN	01657	272	277						
Y1	01660	164	177	313					
.DA	01665	38	41						