

PROGRAM PROLOGUE

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LOC OBJECT CODE ADDR1 ADDR2 STMT SOURCE STATEMENT

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2 *****
3 * MICHAEL BEAVER *
4 * CS 310, SPRING 2013 *
5 * PROGRAM 6 *
6 * DUE: APRIL 22,2013 *
7 * *
8 * DESCRIPTION: *
9 * THIS PROGRAM EXPECTS AS INPUT A FILE CONTAINING ANYWHERE BETWEEN*
10 * 1 AND 30 (INCLUSIVE) DATA LINES. EACH DATA LINE SHOULD CONTAIN *
11 * ONE GRADE (INTEGER) PER LINE. EACH GRADE SHOULD BE BETWEEN *
12 * 0 TO 100 (INCLUSIVE). INVALID VALUES ARE IGNORED. THE PROGRAM *
13 * DISPLAYS THE DATA IN THE ORDER IN WHICH IT WAS ORIGINALLY READ. *
14 * THEN THE PROGRAM SORTS THE DATA IN DESCENDING ORDER. FINALLY, *
15 * THE PROGRAM PRINTS THE SORTED DATA. *
16 * *
17 * SUBROUTINES: *
18 * DATAREAD: READS DATA FROM FILE AND STORES INTO DATA TABLE *
19 * PRINTTAB: PRINTS THE DATA TABLE *
20 * SORTDATA: SORTS THE DATA IN THE TABLE (DESCENDING ORDER) *
21 *****
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MAIN PROGRAM

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
				23	*****
				24	* REGISTER KEY: *
				25	* REG1: USED TO PASS PARAMETER LIST TO SUBROUTINES *
				26	* REG14: USED TO BRANCH TO SUBROUTINES *
				27	* REG15: PROVIDES ADDRESS OF SUBROUTINES TO BE BRANCHED TO *
				28	*****
000000				29	MBPROG6 START
000000	90EC D00C		0000C	30	STM 14,12,12(13) BEGINNING HOUSEKEEPING
000004	05C0			31	BALR 12,0
000006				32	USING MAINHERE,12
000006	50D0 C042		00048	33	MAINHERE ST 13,MAINSAVE+4
00000A	41D0 C03E		00044	34	LA 13,MAINSAVE
00000E	4110 C112		00118	36	LA 1,PARMLIST
000012	58F0 C122		00128	37	L 15,=V(DATAREAD) READ DATA FROM FILE INTO TABLE
000016	05EF			38	BALR 14,15
000018	4110 C112		00118	40	LA 1,PARMLIST
00001C	58F0 C126		0012C	41	L 15,=V(PRINTTAB) PRINT THE TABLE
000020	05EF			42	BALR 14,15
000022	4110 C112		00118	44	LA 1,PARMLIST
000026	58F0 C12A		00130	45	L 15,=V(SORTDATA) SORT THE DATA IN THE TABLE
00002A	05EF			46	BALR 14,15
00002C	4110 C112		00118	48	LA 1,PARMLIST
000030	58F0 C126		0012C	49	L 15,=V(PRINTTAB) PRINT THE TABLE--BIZARRE ERROR
000034	41FF 0000		00000	50	LA 15,0(15) IN ASSIST/I IF LA IS NOT USED
000038	05EF			51	BALR 14,15
00003A	58D0 C042		00048	53	L 13,MAINSAVE+4 ENDING HOUSEKEEPING
00003E	98EC D00C		0000C	54	LM 14,12,12(13)
000042	07FE			55	BR 14
000044				56	MAINSAVE DS 18F
00008C				57	DATATAB DS 30F
000104				58	LASTVAL DS 1F
000108	40			59	CARRIAGE DC C' '
000109				60	OUTLINE DS CL12
000118	0000008C			61	PARMLIST DC A(DATATAB)
00011C	00000104			62	DC A(LASTVAL)
000120	00000108			63	DC A(CARRIAGE)

64

000128 00000000
00012C 00000000
000130 00000000

LTORG
=V(DATAREAD)
=V(PRINTTAB)
=V(SORTDATA)

DATA READ: READ DATA INTO TABLE

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
				66	*****
				67	* REGISTER KEY: *
				68	* REG1: USED TO OBTAIN PARAMETERS FROM MAIN *
				69	* REG2: LOOP TABLE INDEX POINTER (FOR TRAVERSAL) *
				70	* REG3: DATA GRABBED ON LINE FROM DATA FILE *
				71	* REG4: POINTER TO LAST FILLED SPOT IN TABLE *
				72	* REG5: LOWER GRADE BOUND *
				73	* REG6: UPPER GRADE BOUND *
				74	* REG8: LOOP STEP SIZE *
				75	* REG9: TERMINAL VALUE FOR LOOP *
				76	* REG14: USED TO RETURN TO CALLER *
				77	*****
000134				78	DATA READ CSECT
000138	90EC D00C		0000C	79	STM 14,12,12(13) BEGINNING HOUSEKEEPING
00013C	05C0			80	BALR 12,0
00013E				81	USING READHERE,12
00013E	50D0 C062		001A0	82	READHERE ST 13,READSAVE+4
000142	41D0 C05E		0019C	83	LA 13,READSAVE
000146	4150 0000		00000	85	LA 5,0
00014A	4160 0064		00064	86	LA 6,100
00014E	5841 0004		00004	88	L 4,4(1) LAST SPOT IN TABLE
000152	5821 0000		00000	89	L 2,0(1) TOP OF THE TABLE
000156	4180 0004		00004	90	LA 8,4
00015A	4192 0074		00074	91	LA 9,116(2) BOTTOM OF THE TABLE
00015E	E000 C0A6 0050 001E4			93	READTOP XREAD CARD,80 LOOP THRU FILE & STORE DATA
000164	4740 C04A		00188	94	BC B'0100',ENDSUB1 EOF=> EXIT LOOP
000168	5330 C0A6		001E4	95	XDECI 3,CARD
00016C	1935			97	CR 3,5 CHECK LOWER BOUND
00016E	4740 C03A		00178	98	BL KEEPSLOT
000172	1936			99	CR 3,6 CHECK UPPER BOUND
000174	47D0 C042		00180	100	BNH STOREVAL
000178	5B20 C0FA		00238	101	KEEPSLOT S 2,=F'4' DO NOT LEAVE EMPTY TABLE SLOTS
00017C	47F0 C046		00184	102	B ENDREAD
000180	5032 0000		00000	103	STOREVAL ST 3,0(2)
000184	8728 C020		0015E	105	ENDREAD BXLE 2,8,READTOP

000188 5B20 C0FA
00018C 5024 0000
000190 58D0 C062
000194 98EC D00C
000198 07FE
00019C
0001E4

000238 00000004

00238 107 ENDSUB1 S 2,=F'4'
00000 108 ST 2,0(4)
001A0 109 L 13,READSAVE+4
0000C 110 LM 14,12,12(13)
111 BR 14
112 READSAVE DS 18F
113 CARD DS CL80
114 LTORG
=F'4'

LOC OF LAST VALUE IN TABLE

ENDING HOUSEKEEPING

PRINTTAB: PRINT THE TABLE DATA

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
				116	*****
				117	* REGISTER KEY: *
				118	* REG1: USED TO GRAB PARAMETERS FROM MAIN *
				119	* REG2: TABLE INDEX POINTER USED IN LOOP TRAVERSAL *
				120	* REG3: HOLDS VALUE LOADED FROM TABLE *
				121	* REG8: STEP SIZE FOR LOOP *
				122	* REG9: TERMINAL VALUE FOR LOOP (ADDR OF LAST VALUE IN TABLE) *
				123	* REG14: USED TO BRANCH BACK TO CALLER *
				124	*****
00023C				125	PRINTTAB CSECT
000240	90EC D00C		0000C	126	STM 14,12,12(13) BEGINNING HOUSEKEEPING
000244	05C0			127	BALR 12,0
000246				128	USING PRNTHERE,12
000246	50D0 C04A		00290	129	PRNTHERE ST 13,PRNTSAVE+4
00024A	41D0 C046		0028C	130	LA 13,PRNTSAVE
00024E	E020 C08E 001A 002D4			132	XPRNT PRNTSTRT,26
000254	41A1 0008		00008	134	LA 10,8(1) POINTER TO CARRIAGE CONTROL
000258	5821 0000		00000	136	L 2,0(1) TOP OF THE TABLE
00025C	4180 0004		00004	137	LA 8,4
000260	5891 0004		00004	138	L 9,4(1) LAST VALUE IN THE TABLE
000264	5899 0000		00000	139	L 9,0(9)
000268	5832 0000		00000	141	TOPPRNT L 3,0(2) LOOP & PRINT THE TABLE DATA
00026C	523A 0001		00001	142	XDECO 3,1(10)
000270	E02A 0000 000D 00000			143	XPRNT 0(10),13
000276	8728 C022		00268	145	BXLE 2,8,TOPPRNT
00027A	E020 C0A8 001F 002EE			147	XPRNT PRNTEND,31
000280	58D0 C04A		00290	149	L 13,PRNTSAVE+4 ENDING HOUSEKEEPING
000284	98EC D00C		0000C	150	LM 14,12,12(13)
000288	07FE			151	BR 14
00028C				152	PRNTSAVE DS 18F
0002D4	F1D7D9C9D5E3C9D5			153	PRNTSTRT DC C'1PRINTING DATA FROM TABLE:'
0002EE	40C4D6D5C540D7D9			154	PRNTEND DC C' DONE PRINTING DATA FROM TABLE.'
				155	LTORG

SORTDATA: SORT THE DATA IN THE TABLE IN DESC. ORDER

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LOC	OBJECT CODE	ADDR1	ADDR2	STMT	SOURCE STATEMENT
				157	*****
				158	* REGISTER KEY: *
				159	* REG1: USED TO GRAB PARAMETERS FROM MAIN *
				160	* REG3: TEMPORARY STORAGE FOR DATA VALUE SWAP IN OUTER LOOP *
				161	* REG4: STEP SIZE FOR BOTH INNER AND OUTER LOOPS *
				162	* REG5: LOCATION OF LAST VALUE IN TABLE (LOOP TERMINAL VALUES) *
				163	* REG6: VALUE AT INDEX (TO BE COMPARED) *
				164	* REG7: LARGEST FOUND VALUE *
				165	* REG8: 'TOP OF SEARCH' POINTER *
				166	* REG9: SEARCH POINTER *
				167	* REG10: POINTER TO LARGEST FOUND VALUE *
				168	* REG14: USED TO BRANCH BACK TO CALLER *
				169	*****
000310				170	SORTDATA CSECT
000310	90EC D00C		0000C	171	STM 14,12,12(13) BEGINNING HOUSEKEEPING
000314	05C0			172	BALR 12,0
000316				173	USING SORTHERE,12
000316	50D0 C052		00368	174	SORTHERE ST 13,SORTSAVE+4
00031A	41D0 C04E		00364	175	LA 13,SORTSAVE
00031E	58A1 0000		00000	177	L 10,0(1) TOP OF TABLE
000322	4140 0004		00004	178	LA 4,4
000326	5851 0004		00004	179	L 5,4(1) TERMINAL LOCATION IN TABLE
00032A	5855 0000		00000	180	L 5,0(5)
00032E	188A			181	LR 8,10
000330	1898			183	OLOOPTOP LR 9,8 RESET SEARCH PTR
000332	18A8			184	LR 10,8 RESET 'LARGEST FOUND' PTR
000334	587A 0000		00000	185	L 7,0(10) SET INITIAL LARGEST VALUE
000338	5869 0000		00000	187	ILOOPTOP L 6,0(9) FIND LARGEST VALUE
00033C	1967			188	CR 6,7
00033E	47C0 C030		00346	189	BC B'1100',ILOOPEX
000342	1876			190	LR 7,6 COPY NEW LARGEST VALUE
000344	18A9			191	LR 10,9 MOVE 'LARGEST FOUND' PTR
000346	8794 C022		00338	192	ILOOPEX BXLE 9,4,ILOOPTOP
00034A	5838 0000		00000	194	SWAPVALS L 3,0(8) ORIGINAL VALUE
00034E	503A 0000		00000	195	ST 3,0(10) SAVE ORIGINAL VALUE TO NEW LOC
000352	5078 0000		00000	196	ST 7,0(8) OVERWRITE WITH LARGEST VALUE

000356 8784 C01A 00330 198 OLOOPEND BXLE 8,4,OLOPTOP

00035A 58D0 C052	00368	200	L	13, SORTSAVE+4	ENDING HOUSEKEEPING
00035E 98EC D00C	0000C	201	LM	14, 12, 12(13)	
000362 07FE		202	BR	14	
000364		203	SORTSAVE DS	18F	
		204	LTORG		
		205	END	MBPROG6	

*** 0 STATEMENTS FLAGGED - 0 WARNINGS, 0 ERRORS

*** PROGRAM EXECUTION BEGINNING -
ANY OUTPUT BEFORE EXECUTION COMPLETE MESSAGE IS PRODUCED BY USER PROGRAM ***

PRINTING DATA FROM TABLE:

37
49
92
36
68
18
25
35
86
65
2
57
83
22
47
81
65
84
83
0
54
41
82
2
13
59
19
39
85
82

DONE PRINTING DATA FROM TABLE.

PRINTING DATA FROM TABLE:

92
86
85
84
83
83
82
82
81
68
65
65
59
57
54
49
47
41
39
37
36
35
25
22
19
18
13
2
2
0

DONE PRINTING DATA FROM TABLE.

*** EXECUTION COMPLETED ***

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