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Proceedings of the First Ashurbanipal Library Computer Conference

Topic

Assyrian Word Processing

May 27, May 28
1989, 6739

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The Ashurbanipal Library Press
Chicago
August 1989, 6739

Recommendations

The *First Ashurbanipal Library Computer Conference* makes the following recommendations to all computer manufacturers and software vendors. It is hoped that the standards set forth by the Conference will be implemented uniformly across all platforms, and in doing so to establish a foundation upon which future developments and implementations will be based.

The *Conference* makes the following recommendations:

1. All computer manufacturers and software vendors should implement the *Extended Syriac Codes for Information Interchange,* (ESCII, Appendix B).

2. All computer manufacturers and software vendors should implement the *Syriac Standard Keyboard Layout* (SSKL, Appendix C) and the *Syriac Phonetic Keyboard Layout* (SPKL, Appendix D). It is recommended that both SSKL and SPKL be implemented, with an option to allow the user to use one or the other; SSKL must be the default layout. if only one keyboard layout can be implemented then it should be SSKL.

3. All computer manufacturers and software vendors should implement Contextual Analysis. If Contextual Analysis cannot be implemented then the recommendations set forth in appendix E should be followed.

4. All computer manufacturers and software vendors should implement the font standards set forth in Appendix E.

Appendix A
Contextual Analysis

The concept of Contextual Analysis is a development made possible by the computer. Very simply put, Contextual Analysis is the ability of the computer to automatically place the correct shape of a letter into a word. For example, the word  requires the following Contextual Analysis:

Key pressed	Computer shows
SPACE	SPACE
SPACE	SPACE, but then the computer returns to the final in the word and automatically changes it to a

Thus all a typist needs to type is one letter and the computer determines which shape of that letter to place in the word; this means that there would be only 22 letter keys on the Assyrian keyboard.

The availability of Contextual Analysis

Contextual Analysis is very easy to implement on a computer; it is, therefore, recommended that all Assyrian computer programs have this feature. However, in the unlikely event that Contextual Analysis cannot be implemented, it is recommended that the programmer follow the guidelines in appendix E.

Appendix B
ESCII

This appendix lists the *Extended Syriac Codes for Information Interchange* (ESCII) beginning from 128 and ending at 190. Codes 0 to 127 have the same meaning as in ASCII (*American Standard Code for Information Interchange)*, and are not listed here. ESCII is, therefore, a superset of ASCII.

To insure that data can be transferred from one word processor to another, and from one computer to another, all vendors should use ESCII faithfully. ESCII provides a broad, fundamental foundation upon which all applications will be developed, such as database management, lexical analysis, spelling checkers, and so forth.

If an application requires additional, non-standard codes it may define the unused ESCII codes (from 191 on); ligatures are a good example of this. However, these non-standard codes must be used in such a way as not to interfere with the Standard codes. For example, the often used ligature in Eastern Assyrian ܬ must be stored internally as 149 and 128 (Taw and Allap), because it is composed of these two letters; it must not be assigned its own code. In general, each standard ESCII code defines one, and only one, object (it is said to be atomic), and any additional codes that may be defined must also be atomic; this is crucial in applications which perform lexical operations (such as alphabetical sorting).

ESCII	Character	Description
128	܀	
129	܁	
130	܂	
131	܃	
132	܄	

ESCII	Character	Description
133	◌	
134	◌	
135	◌	
136	◌	
137	◌	
138	◌	
139	◌	
140	◌	
141	◌	
142	◌	
143	◌	
144	◌	
145	◌	
146	◌	
147	◌	
148	◌	
149	◌	
150	◌	◌
151	◌	◌
152	◌	◌

ESCII	Character	Description
153		
154		
155		
156		
157		
158		
159		
160		
161		
162		
163		
164		(for silent letters)
165		
166		
167		
168		(connector)
169-190		reserved for middle and final form of letters (see appendix E)
191-255		unused

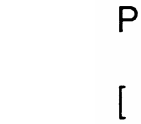
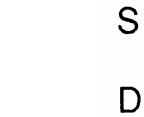
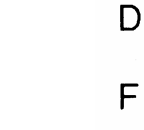
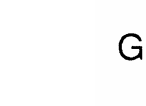
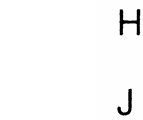
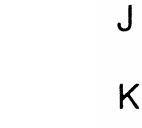
It is recommended that codes 240 to 254 should be reserved as additional control codes. Code 255 has a special meaning in multi-lingual processing, it signals a change of language; it should never be used as anything else.

Appendix C
SSKL
Syriac Standard Keyboard Layout

This appendix lists the complete definition of the Syriac Standard Keyboard Layout (SSKL). SSKL was designed based on the frequency of use of each Assyrian letter; the most frequently used letters are placed in the center of the keyboard, and the letters least frequently used are placed on either side; see *a Proposed Syriac Computer Keyboard Layout* for other factors in designing SSKL. Note that the final form of SSKL, contained in this appendix, differs considerably from the initial form proposed by George Kiraz in his above mentioned paper.

The following specification assumes contextual analysis (appendix A); keys are listed from top row to bottom row, from left to right. The following key combinations are defined in SSKL.

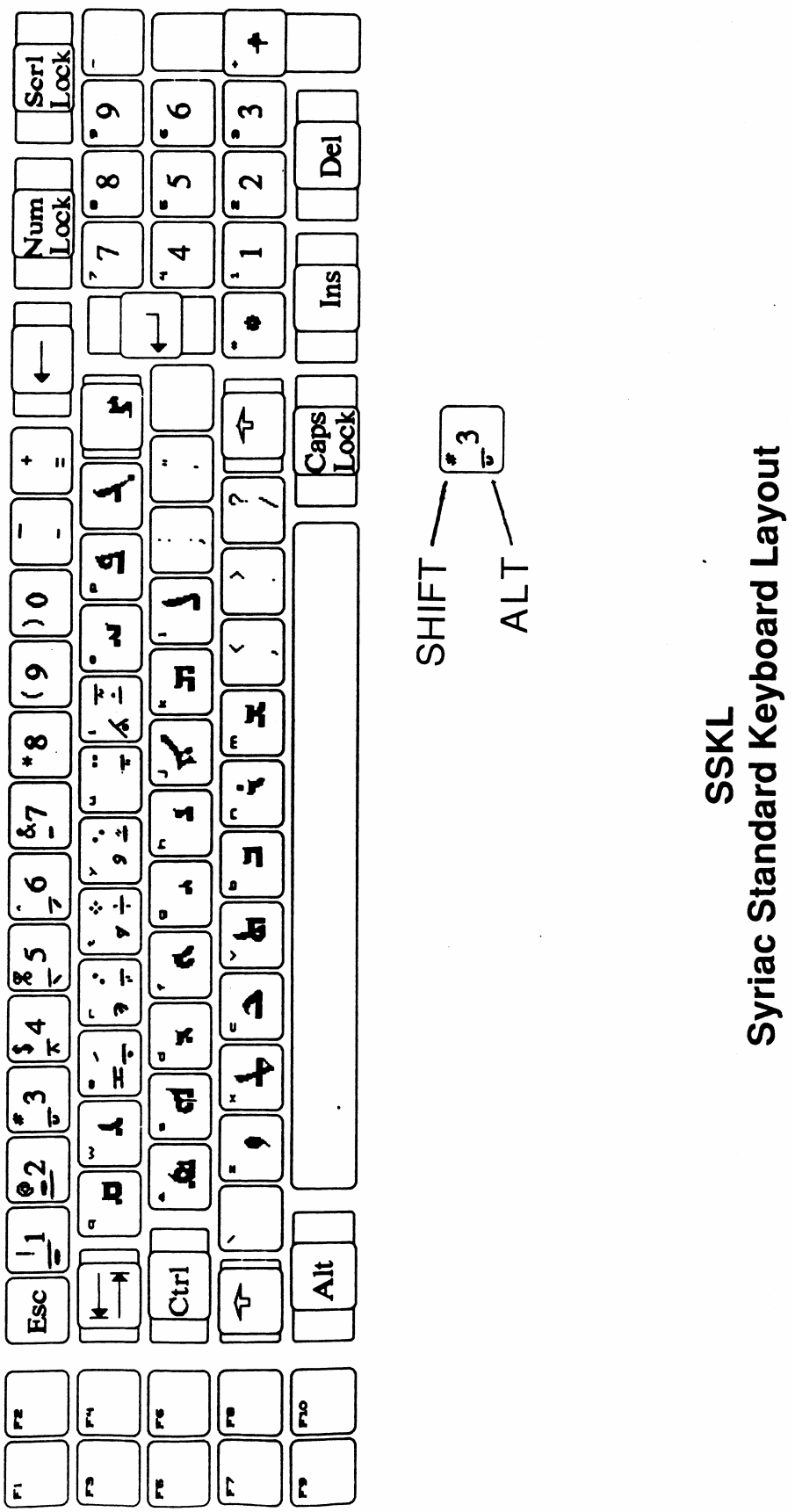
Key	Symbol	Description
1	1	
2	2	
3	3	
4	4	
5	5	
6	6	
7	7	
8	8	
9	9	
0	0	
-	-	
=	=	
Q	ܛ	
W	ܠ	
E	◌ܵ .	ܙܩܦܐ، ܩܡܨܐ، ܙܘܩܦܐ

Key	Symbol	Description
R		
T		
Y		
U		
I		
O		
P		
[		
]		
A		
S		
D		
F		
G		
H		
J		
K		
L		
;		

Key	Symbol	Description
'	'	apostrophe
Z	،	
X	ﺏ	
C	ﺩ	
V	ﻫ	
B	ﺑ	
N	ﻧ	
M	ﻣ	
,	‘	
.	.	period
/	/	
SHIFT 1	!	
SHIFT 2	@	
SHIFT 3	#	
SHIFT 4	$	
SHIFT 5	%	
SHIFT 6	^	circumflex (carrot)
SHIFT 7	&	
SHIFT 8	*	
SHIFT 9	(	
SHIFT 0	)	
SHIFT -	_	underscore
SHIFT =	+	
SHIFT Q	reserved, see appendix E	
SHIFT W	reserved, see appendix E	
SHIFT E	´	ﻫﻠﺼﻜﺮ (for silent letters)
SHIFT R	̇	

Key	Symbol	Description
SHIFT T	❖	
SHIFT Y	⁖	
SHIFT U	¨	هشت
SHIFT I	~	هیلت
SHIFT O	reserved, see appendix E	
SHIFT P	reserved, see appendix E	
SHIFT [	reserved, see appendix E	
SHIFT]	reserved, see appendix E	
SHIFT A	reserved, see appendix E	
SHIFT S	reserved, see appendix E	
SHIFT D	reserved, see appendix E	
SHIFT F	reserved, see appendix E	
SHIFT G	reserved, see appendix E	
SHIFT H	reserved, see appendix E	
SHIFT J	reserved, see appendix E	
SHIFT K	reserved, see appendix E	
SHIFT L	reserved, see appendix E	
SHIFT ;	:	colon
SHIFT '	"	quote
SHIFT Z	reserved, see appendix E	
SHIFT X	reserved, see appendix E	
SHIFT C	reserved, see appendix E	
SHIFT V	reserved, see appendix E	
SHIFT B	reserved, see appendix E	
SHIFT N	reserved, see appendix E	
SHIFT M	reserved, see appendix E	
SHIFT ,	<	
SHIFT .	>	
SHIFT /	?	
ALT 1	⁼	
ALT 2	⁼	
ALT 3	⁼	معه

Key	Symbol	Description
ALT 4		
ALT 5		
ALT 6		
ALT 7	.	 (connector)



SSKL
Syriac Standard Keyboard Layout

Appendix D
SPKL
Syriac Phonetic Keyboard Layout

This appendix lists the complete definition of the Syriac Phonetic Keyboard Layout (SPKL). SPKL was designed based on the phonetic value of each letter; it assigns each Assyrian letter to its phonetic equivalent on the English keyboard. See *a Proposed Syriac Computer Keyboard Layout* for other factors in designing SPKL. Note that the final form of SPKL, contained in this appendix, differs a little from the initial form proposed by George Kiraz in his above mentioned paper.

The following specification assumes contextual analysis (appendix A); keys are listed from top row to bottom row, from left to right. The following key combinations are defined in SPKL.

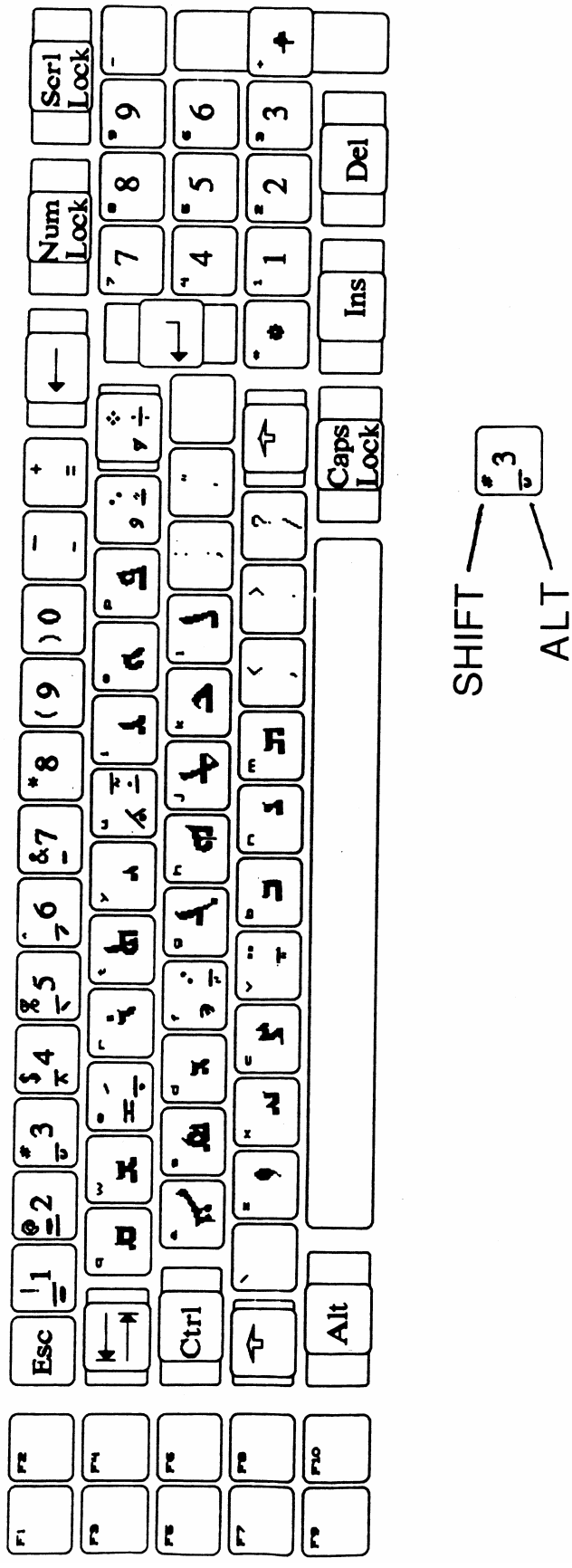
Key	Symbol	Description
1	1	
2	2	
3	3	
4	4	
5	5	
6	6	
7	7	
8	8	
9	9	
0	0	
-	-	
=	=	
Q	ܩ	
W	ܘ	
E	ܙ .	ܪܒܨܐ، ܣܡܟܐ، ܪܘܒܚܐ

Key	Symbol	Description
R		
T		
Y		
U		
I		
O		
P		
[		
]		
A		
S		
D		
F		
G		
H		
J		
K		
L		
;		
'		apostrophe
Z		

Key	Symbol	Description
X	ܫ	
C	ܟ	
V	̈	ܝܠ̈ܬܐ ܦܫ̈ܩܐ
B	ܒ	
N	ܢ	
M	ܬ	
,	،	
.	.	
/	/	
SHIFT 1	!	
SHIFT 2	@	
SHIFT 3	#	
SHIFT 4	$	
SHIFT 5	%	
SHIFT 6	^	circumflex (carrot)
SHIFT 7	&	
SHIFT 8	*	
SHIFT 9	(	
SHIFT 0	)	
SHIFT -	_	underscore
SHIFT =	+	
SHIFT Q	reserved, see appendix E	
SHIFT W	reserved, see appendix E	
SHIFT E	ܰ	ܡܒܛܠܢܐ (for silent letters)
SHIFT R	reserved, see appendix E	
SHIFT T	reserved, see appendix E	
SHIFT Y	reserved, see appendix E	

Key	Symbol	Description
SHIFT U	̰	ܡܒܛܠܢܐ
SHIFT I	reserved, see appendix E	
SHIFT O	reserved, see appendix E	
SHIFT P	reserved, see appendix E	
SHIFT [	܄	
SHIFT]	܀	
SHIFT A	reserved, see appendix E	
SHIFT S	reserved, see appendix E	
SHIFT D	reserved, see appendix E	
SHIFT F	܅	
SHIFT G	reserved, see appendix E	
SHIFT H	reserved, see appendix E	
SHIFT J	reserved, see appendix E	
SHIFT K	reserved, see appendix E	
SHIFT L	reserved, see appendix E	
SHIFT ;	:	colon
SHIFT '	"	quote
SHIFT Z	reserved, see appendix E	
SHIFT X	reserved, see appendix E	
SHIFT C	reserved, see appendix E	
SHIFT V	̈	ܣܝܡܐ (plural sign)
SHIFT B	reserved, see appendix E	
SHIFT N	reserved, see appendix E	
SHIFT M	reserved, see appendix E	
SHIFT ,	<	
SHIFT .	>	
SHIFT /	?	
ALT 1	̄̄	
ALT 2	̠̄	
ALT 3	̄ ̮	ܡܩܦܐ
ALT 4	̄ ̂	
ALT 5	̄ ̀	
ALT 6	̄ ́	

Key	Symbol	Description
ALT 7	-	 (connector)



SPKL
Syriac Phonetic Keyboard Layout

Appendix E
Font Standards

With Contextual Analysis

Every Assyrian font must have four shapes for each letter

1. free letter is not connected on either side.
2. initial letter is not connected on right side and is connected on the left side.
3. middle letter is connected on both sides.
4. final letter is connected on right side and is not connected on the left side.

Contextual Analysis will automatically place the correct shape of the letter into the word.

Without Contextual Analysis

It is strongly recommended that Contextual Analysis be implemented. However, when it cannot be implemented the following must be done. Every Assyrian font must provide two shapes for each letter

1. free and initial — letter is not connected on either side or is not connected on right side and is connected on left side.
2. middle and final — letter is connected on both sides or is connected on right side and is not connected on left side.

Given the above, pressing a key by itself will give the middle and final form of a letter; pressing the same key with SHIFT will give the free and initial form of a letter