

**Title: Finalized Mapping between Characters of ISO 11822 and ISO/IEC 10646-1 (UCS)**  
**Source: The Research Libraries Group, Inc.**  
**Status: L2 Member Contribution**  
**References: ISO/TC46/SC4/WG1 N 253, ISO/TC46/SC4/WG1 N 227 (revised 1998-05-29) and ISO/IEC JTC1/SC2 N3137 (Application for Registration No. 224) as revised 1999-12-17**  
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**Action: For information**  
**Date: 2000-07-02**

### 1. Background

On May 9, 2000, ISO/TC 46/SC 4/WG 1 reviewed documents that compared mappings of the characters of TC 46 character set standards and character sets which were sources for these standards to ISO/IEC 10646. Based on these comparative analyses, WG1 agreed on final mappings for eight of the TC 46 character set standards.

This document is a modification of *Analysis of Proposed Mapping between Characters of ISO 11822 and ISO/IEC 10646-1 (UCS)* prepared for the WG1 meeting (ISO/TC46/SC4/WG1 N 253) and available at <http://www.niso.org>.

### 2. Essential Requirement

Table 1 of ISO 11822 is based upon the Extended Arabic character set of the MARC 21 format for library data (published by the Library of Congress in 1994). This character set was proposed as a TC46 character set for Extended Arabic. **Characters common to these two character sets should have identical mappings.**

### 3. Mapping of Characters

The following table shows the final WG1 decisions and (for information) the two key mapping efforts:

- N 227 is the mapping developed by ISO/TC46/SC4/WG1 (revised 1998-05-29)
- LC/ALA: Unicode/UCS mappings were established by the Library of Congress and the MARBI Committee of the American Library Association for the MARC 21 Extended Arabic character set, available on the Library of Congress' Web site

(<http://lcweb.loc.gov/marc/specifications/specchararabic.html>). This column shows only the **differences** between the mappings in N227 and the LC/ALA work.

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
21	ARABIC LETTER DOUBLE ALEF WITH HAMZAH ABOVE	A1	DOUBLE ALEF WITH HAMZA ABOVE	06FD	.	06FD	
22	ARABIC LETTER ALEF WITH WAVY HAMZAH ABOVE	AA	ALEF WITH WAVY HAMZA ABOVE	0672	.	0672	
23	ARABIC LETTER ALEF WITH WAVY HAMZAH BELOW	A3	ALEF WITH WAVY HAMZA BELOW	0673		0673	
24	ARABIC LETTER TTEH	A4	TTEH	0679		0679	
25	ARABIC LETTER TTEHEH	A5	TTEHEH	067A		067A	
26	ARABIC LETTER BEEH	A6	BBEH	067B		067B	
27	ARABIC LETTER TEH WITH RING	A7	TEH WITH RING	067C		067C	
28	ARABIC LETTER TEH WITH THREE DOTS ABOVE DOWNWARD	A8	TEH WITH THREE DOTS ABOVE	067D		067D	
29	ARABIC LETTER PEH	A9	PEH	067E		067E	
2A	ARABIC LETTER TEHEH	AA	TEHEH	067F		067F	
2B	ARABIC LETTER BEHEH	AB	BEHEH	0680		0680	
2C	ARABIC LETTER HAH WITH HAMZAH ABOVE	AC	HAH WITH HAMZA ABOVE	0681		0681	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
2D	ARABIC LETTER HAH WITH TWO DOTS VERTICAL ABOVE	AD	HAH WITH TWO DOTS VERTICAL ABOVE	0682		0682	
2E	ARABIC LETTER NYEH	AE	NYEH	0683		0683	
2F	ARABIC LETTER DYEH	AF	DYEH	0684		0684	
30	ARABIC LETTER HAH WITH THREE DOTS ABOVE	B0	HAH WITH THREE DOTS ABOVE	0685		0685	
31	ARABIC LETTER TCHEH	B1	TCHEH	0686		0686	
32	ARABIC LETTER TCHEH WITH DOT ABOVE	B2	TCHEH WITH DOT ABOVE	06BF		06BF	
33	ARABIC LETTER TCHEHEH	BB	TCHEHEH	0687		0687	
34	ARABIC LETTER DDAL	B4	DDAL	0688		0688	
35	ARABIC LETTER DAL WITH RING	B5	DAL WITH RING	0689		0689	
36	ARABIC LETTER DAL WITH DOT BELOW	B6	DAL WITH DOT BELOW	068A		068A	
37	ARABIC LETTER DAL WITH DOT BELOW AND TAH ABOVE	B7	DAL WITH DOT BELOW AND SMALL TAH	068B		068B	
38	ARABIC LETTER DAHAL	B8	DAHAL	068C		068C	
39	ARABIC LETTER DDAHAL	B9	DDAHAL	068D		068D	
3A	ARABIC LETTER DUL	BA	DUL	068E		068E	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
3B	ARABIC LETTER DAL WITH THREE DOTS ABOVE DOWNWARD	BB	DAL WITH THREE DOTS ABOVE DOWNWARDS	068F		068F	
3C	ARABIC LETTER DAL WITH FOUR DOTS ABOVE	BC	DAL WITH FOUR DOTS ABOVE	0690		0690	
3D	ARABIC LETTER RREH	BD	RREH	0691		0691	
3E	ARABIC LETTER REH WITH CARON ABOVE	BE	REH WITH SMALL V	0692		0692	
3F	ARABIC LETTER REH WITH RING	BF	REH WITH RING	0693		0693	
40	ARABIC LETTER REH WITH DOT BELOW	C0	REH WITH DOT BELOW	0694		0694	
41	ARABIC LETTER REH WITH CARON BELOW	C1	REH WITH SMALL V BELOW	0695		0695	
42	ARABIC LETTER REH WITH DOT ABOVE AND DOT BELOW	C2	REH WITH DOT ABOVE AND BELOW	0696		0696	
43	ARABIC LETTER REH WITH TWO DOTS ABOVE	C3	REH WITH TWO DOTS ABOVE	0697		0697	
44	ARABIC LETTER JEH	CC	JEH	0698		0698	
45	ARABIC LETTER REH WITH FOUR DOTS ABOVE	C5	REH WITH FOUR DOTS ABOVE	0699		0699	
46	ARABIC LETTER SEEN WITH DOT ABOVE AND DOT BELOW	C6	SEEN WITH DOT BELOW AND DOT ABOVE	069A		069A	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
47	ARABIC LETTER SEEN WITH THREE DOTS BELOW	C7	SEEN WITH THREE DOTS BELOW	069B		069B	
48	ARABIC LETTER SEEN WITH THREE DOTS ABOVE AND THREE DOTS BELOW	C8	SHEEN WITH THREE DOTS BELOW	069C		069C	
49	ARABIC LETTER SHEEN WITH DOT BELOW	C9	SHEEN WITH DOT BELOW	06FA		06FA	
4A	ARABIC LETTER SAD WITH TWO DOTS BELOW	CA	SAD WITH TWO DOTS BELOW	069D		069D	
4B	ARABIC LETTER SAD WITH THREE DOTS ABOVE	CB	SAD WITH THREE DOTS ABOVE	069E		069E	
4C	ARABIC LETTER DAD WITH DOT BELOW	CC	DAD WITH DOT BELOW	06FB		06FB	
4D	ARABIC LETTER TAH WITH THREE DOTS ABOVE	CD	TAH WITH THREE DOTS ABOVE	069F		069F	
4E	ARABIC LETTER AIN WITH THREE DOTS ABOVE	CE	AIN WITH THREE DOTS ABOVE	06A0		06A0	
4F	ARABIC LETTER GHAIN WITH DOT BELOW	CF	GHAIN WITH DOT BELOW	06FC		06FC	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
50	ARABIC LETTER DOTLESS FEH	D0	DOTLESS FEH	06A1		06A1	
51	ARABIC LETTER FEH WITH DOT MOVED BELOW	D1	FEH WITH DOT MOVED BELOW	06A2		06A2	
52	ARABIC LETTER FEH WITH DOT BELOW	D2	FEH WITH DOT BELOW	06A3		06A3	
53	ARABIC LETTER VEH	D3	VEH	06A4		06A4	
54	ARABIC LETTER DOTLESS FEH WITH THREE DOTS BELOW	D4	FEH WITH THREE DOTS BELOW	06A5		06A5	
55	ARABIC LETTER PEHEH	DD	PEHEH	06A6		06A6	
56	ARABIC LETTER QAF WITH DOT ABOVE	D6	QAF WITH DOT ABOVE	06A7		06A7	
57	ARABIC LETTER QAF WITH THREE DOTS ABOVE	D7	QAF WITH THREE DOTS ABOVE	06A8		06A8	
58	ARABIC LETTER KEHEH	D8	KEHEH	06A9		06A9	
59	ARABIC LETTER SWASH CAF	D9	SWASH KAF	06AA		06AA	
5A	ARABIC LETTER KAF WITH RING	DA	KAF WITH RING	06AB		06AB	
5B	ARABIC LETTER CAF WITH DOT ABOVE	DB	KAF WITH DOT ABOVE	06AC		06AC	
5C	ARABIC LETTER NG	DC	NG	06AD		06AD	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
5D	ARABIC LETTER CAF WITH THREE DOTS BELOW	DD	KAF WITH THREE DOTS BELOW	06AE		06AE	
5E	ARABIC LETTER GAF	DE	GAF	06AF		06AF	
5F	ARABIC LETTER GAF WITH RING	DF	GAF WITH RING	06B0		06B0	
60	ARABIC LETTER NGOEH	E0	NGOEH	06B1		06B1	
61	ARABIC LETTER GAF WITH TWO DOTS BELOW	E1	GAF WITH TWO DOTS BELOW	06B2		06B2	
62	ARABIC LETTER GUEH	E2	GUEH	06B3		06B3	
63	ARABIC LETTER GAF WITH THREE DOTS ABOVE	E3	GAF WITH THREE DOTS ABOVE	06B4		06B4	
64	ARABIC LETTER LAM WITH CARON ABOVE	E4	LAM WITH SMALL V	06B5		06B5	
65	ARABIC LETTER LAM WITH DOT ABOVE	E5	LAM WITH DOT ABOVE	06B6		06B6	
66	ARABIC LETTER LAM WITH THREE DOTS ABOVE	EE	LAM WITH THREE DOTS ABOVE	06B7		06B7	
67	ARABIC LETTER LAM WITH THREE DOTS BELOW	E7	LAM WITH THREE DOTS BELOW	06B8		06B8	
68	ARABIC LETTER NOON GHUNNA	E8	NOON GHUNNA	06BA		06BA	

ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
69	ARABIC LETTER RNOON	E9	RNOON	06BB		06BB	
6A	ARABIC LETTER NOON WITH RING	EA	NOON WITH RING	06BC		06BC	
6B	ARABIC LETTER NOON WITH THREE DOTS	EB	NOON WITH THREE DOTS ABOVE	06BD		06BD	
6C	ARABIC LETTER NOON WITH DOT BELOW	EC	NOON WITH DOT BELOW	06B9		06B9	
6D	ARABIC LETTER HEH DOACHASHMEE	ED	HEH DOACHASHMEE	06BE		06BE	
6E	ARABIC LETTER HAMZAH ON HA	EE	HEH WITH HAMZA ABOVE	06C0		06C0	
6F	ARABIC LETTER WAW WITH RING	EF	WAW WITH RING	06C4		06C4	
70	ARABIC LETTER KIRGHIZ OE	F0	KYRGHYZ OE	06C5		06C5	
71	ARABIC LETTER OE	F1	OE	06C6		06C6	
72	ARABIC LETTER WAW WITH TWO DOTS	F2	WAW WITH TWO DOTS	06CA		06CA	
73	ARABIC LETTER KIRGHIZ YU	F3	VE	06C9	06CB		To be assigned
74	ARABIC LETTER YEH WITH TAIL	F4	YEH WITH TAIL	06CD		06CD	
75	ARABIC LETTER YA WITH CARON ABOVE	F5	YEH WITH SMALL V	06CE		06CE	
76	ARABIC LETTER E	F6	E	06D0		06D0	



ISO 11822		MARC 21 equivalent		Mappings			Status
Code	Character name	Code	Character name	N 227	LC/ALA	Final	
77	ARABIC LETTER YEH BARREE	FF	YEH BARREE	06D2		06D2	
78	ARABIC LETTER PERIOD	F8	YEH BARREE WITH HAMZA ABOVE	06D3		06D3	
79-7C	<i>Reserved</i>	F9-FC	<i>Reserved</i>				
7D	ARABIC LETTER SHORT E	FD	SHORT E	0306		0306	
7E	ARABIC LETTER SHORT U	FE	SHORT U	030C		030C	

#### 4. Clarification of Character Identity Pending

##### 73 ARABIC LETTER KIRGHIZ YU

ISO 11822 was intended to replicate the MARC 21 Extended Arabic set as an International Standard, but the characters at position 73 in the two sets have different names (ARABIC LETTER KIRGHIZ YU in ISO 11822 and VE in the MARC 21 set respectively). The following table compares the two characters and their possible UCS mappings.

	Character 73 in ISO 11822	Character 73 in MARC 21	U+06C9	U+06CB
<b>Character name</b>	ARABIC LETTER KIRGHIZ YU	VE	ARABIC LETTER KIRGHIZ YU	ARABIC LETTER VE
<b>Appearance</b>	<i>waw</i> with three dots in triangle pointing up	<i>waw</i> with three dots in triangle pointing up	<i>waw</i> with circumflex	<i>waw</i> with three dots in triangle pointing up
<b>Usage</b>	“Used in Uighur”	Not annotated	“Kazakh, Kirghiz”	“Uighur, Kazakh”

Character 73 in ISO 11822 has the same name as U+06C9. But its appearance and usage are consistent with U+06CB. Character 73 in the MARC 21 set (which ISO 11822 has the same appearance as U+06CB and a similar name (its usage is unspecified). Additionally, the name of character 73 in ISO 11822 refers to Kirghiz, but the usage note refers to Uighur.

It appears that the wrong name was assigned to character 73 when Table 5: Legend of ISO 11822 (which gives character names) was being prepared. The two characters are very similar, and in a small font are difficult to tell apart.