

## D.1 Shape of Base Characters

### D.1.1 Latin Small Letter F vs. Latin Small Letter F with Hook

*Code Points Considered:*

Code Points	Glyph	Name
0066	f	LATIN SMALL LETTER F
0192	f	LATIN SMALL LETTER F WITH HOOK

Example from a Swedish Newspaper:



*Findings:*

The example uses a shape of “Latin Small Letter F” (0066) that is identical to “Latin Small Letter F with Hook” (0192) in italic style. Example from a large, daily newspaper, in which all instances of “f” are just italic variants of “f”.

*Conclusions:*

These two code points should be treated as variants

### D.1.2 Latin Small Letter A vs. Latin Small Letter Alpha

*Code Points Considered:*

Code Points	Glyph	Name
0061	a	LATIN SMALL LETTER A
0251	ɑ	LATIN SMALL LETTER ALPHA

*Findings:*

Latin Small Letter Alpha is not in the Repertoire

*Conclusion:*

These code points are not variants.

### D.1.3 Latin Small Letter Z vs. Latin Small Letter Ezh

*Code Points Considered:*

Code Points	Glyph	Name
007A	z	LATIN SMALL LETTER Z
0292	Ʒ	LATIN SMALL LETTER EZH

Sequence zƷ (007A 0292) compared using Google Fonts in <https://wordmark.it/>:

zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ
Adelle Regular	Adelle Italic	Adelle Regular	Adelle Ultra Regular	Adelle Ultra Medium	Adelle Ultra Semi-Bold	Adelle Ultra Bold	Adelle Ultra Extra-Bold	Adelle Pathway Regular	Adelle Regular	Adelle Regular	Adelle Regular
zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ
Adelle Regular	Adelle Pro Thin	Adelle Pro Extra Light	Adelle Pro Light	Adelle Pro Regular	Adelle Pro Medium	Adelle Pro Semi-Bold	Adelle Pro Bold	Adelle Script Regular	Adelle Regular	Adelle Regular	Adelle Regular
zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ
Adelle Regular	Adelle Bold	Adelle Regular	Adelle Italic	Adelle Medium	Adelle Medium Italic	Adelle Bold	Adelle Bold Italic	Adelle Extra-Bold	Adelle Extra-Bold Italic	Adelle Black	Adelle Black Italic
zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ
Adelle SC Regular	Adelle SC Italic	Adelle SC Medium	Adelle SC Medium Italic	Adelle SC Bold	Adelle SC Bold Italic	Adelle SC Extra-Bold	Adelle SC Extra-Bold Italic	Adelle SC Black	Adelle SC Black Italic	Adelle Sans Thin	Adelle Sans Thin Italic
zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ	zƷ
Adelle Sans Light	Adelle Sans Light Italic	Adelle Sans Regular	Adelle Sans Italic	Adelle Sans Medium	Adelle Sans Medium Italic	Adelle Sans Bold	Adelle Sans Bold Italic	Adelle Sans Extra-Bold	Adelle Sans Extra-Bold Italic	Adelle Sans Black	Adelle Sans Black Italic

*Findings:*

Glyphs are distinguishable. In a large number of fonts, the two letters are consistently different.

### Conclusion:

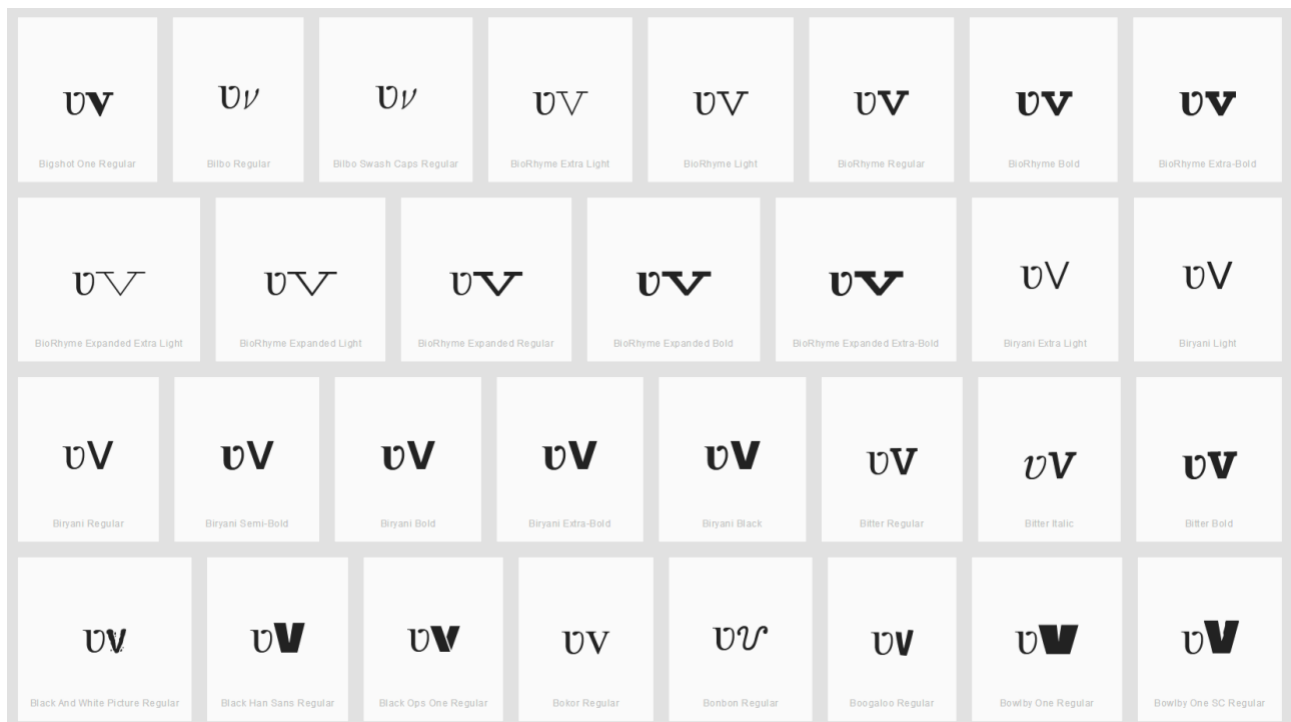
These code points are not variants.

## D.1.4 Latin Small Letter V with Hook vs. Latin Small Letter V

### Code Points Considered:

Code Points	Glyph	Name
028B	ʋ	LATIN SMALL LETTER V WITH HOOK
0076	v	LATIN SMALL LETTER V

Sequence ʋv (028B 0067) compared using Google Fonts in <https://wordmark.it/> :



### Findings:

All cases I viewed on wordmark.it looked more or less similar to the above screenshot. In particular the ʋ looks more like a u than a v at the bottom in the sense that it never has a sharp angle, but always a curve (whereas v has almost always a sharp angle). Furthermore, the top right corner of the ʋ is always turned visibly to the left. Even in cases where the v has some serif this is distinguishable from the ʋ hook as the serif is always in both directions (left and right).

### Conclusion:

These code points are not variants.

### D.1.5 Latin Small Letter I vs. Latin Small Letter Dotless I vs. Latin Small Letter Iota

Latin Small Letters I, Dotless I and Iota may be considered equivalent by readers and writers, since the dot of the I is frequently omitted in hand-writing, and since the shape of Iota is a typical style of writing the shape of the I.

*Code Points Considered:*

Code Points	Glyph	Name
0069	i	LATIN SMALL LETTER I
0131	ı	LATIN SMALL LETTER DOTLESS I
0269	ı	LATIN SMALL LETTER IOTA

Sequence iıı ( 0069 0131 0269) compared using Google Fonts in <https://wordmark.it/> :



Glyphs are distinguishable when written in lower case.

Sequence II (0131 0269) compared using Google Fonts in <https://wordmark.it/>

I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L
Arial Transparent	Arial Transparent Bold	Arial	Arial Black	Arial Bold	Arial Bold Italic	Arial Italic	Carlton	Carlton Bold	Carlton Bold Italic	Carlton Italic	Carlton Light
I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L	I VS L
Carlton Light Italic	Carlton	Carlton Bold	Carlton Bold Italic	Carlton Italic	Carlton Math	Carlton	Carlton Bold	Carlton Bold Italic	Carlton Italic	Carlton Sans MS	Carlton Sans MS Bold
I VS I	I VS I	1 VS L	1 VS L	2 VS 2	2 VS 2	1 VS L	1 VS L	I VS I	I VS I	I VS L	I VS L
Carlton Sans MS Bold Italic	Carlton Sans MS Italic	Comedian	Comedian Bold	Comedian Bold Italic	Comedian Italic	Comedian	Comedian's Bold	Comedian's Bold Italic	Comedian's Italic	Comedian	Comedian
I VS L	I VS I	I VS I	1 VS L	1 VS L	1 VS L	1 VS L	1 VS L	1 VS L	I VS L	I VS L	I VS L
Comedian Bold	Comedian Bold Italic	Comedian Italic	Comedian	Comedian	Comedian	Comedian New Bold	Comedian New Bold Italic	Comedian New Italic	Comedian	Comedian Bold	Comedian Bold

*Findings:*

In the italic versions of any of the serif fonts (e.g., Times New Roman or Consolas) these are identical.

### Conclusions:

Latin Small Letter Iota (0269) and Latin Small Letter Dotless I (0131) are variants.

### D.1.6 Latin Small Letter E vs. Latin Small Letter Open E

Latin Small Letter E and Latin Small Letter Open E may be considered equivalent by readers and writers, since Open E is a typical shape in writing e in word-initial positions.

*Code Points Considered:*

Code Points	Glyph	Name
0065	e	LATIN SMALL LETTER E
025B	ε	LATIN SMALL LETTER OPEN E

Glyph Representations per <https://wordmark.it/>:



### Findings:

Glyphs are distinguishable. In a large number of fonts, the two letters are consistently different.

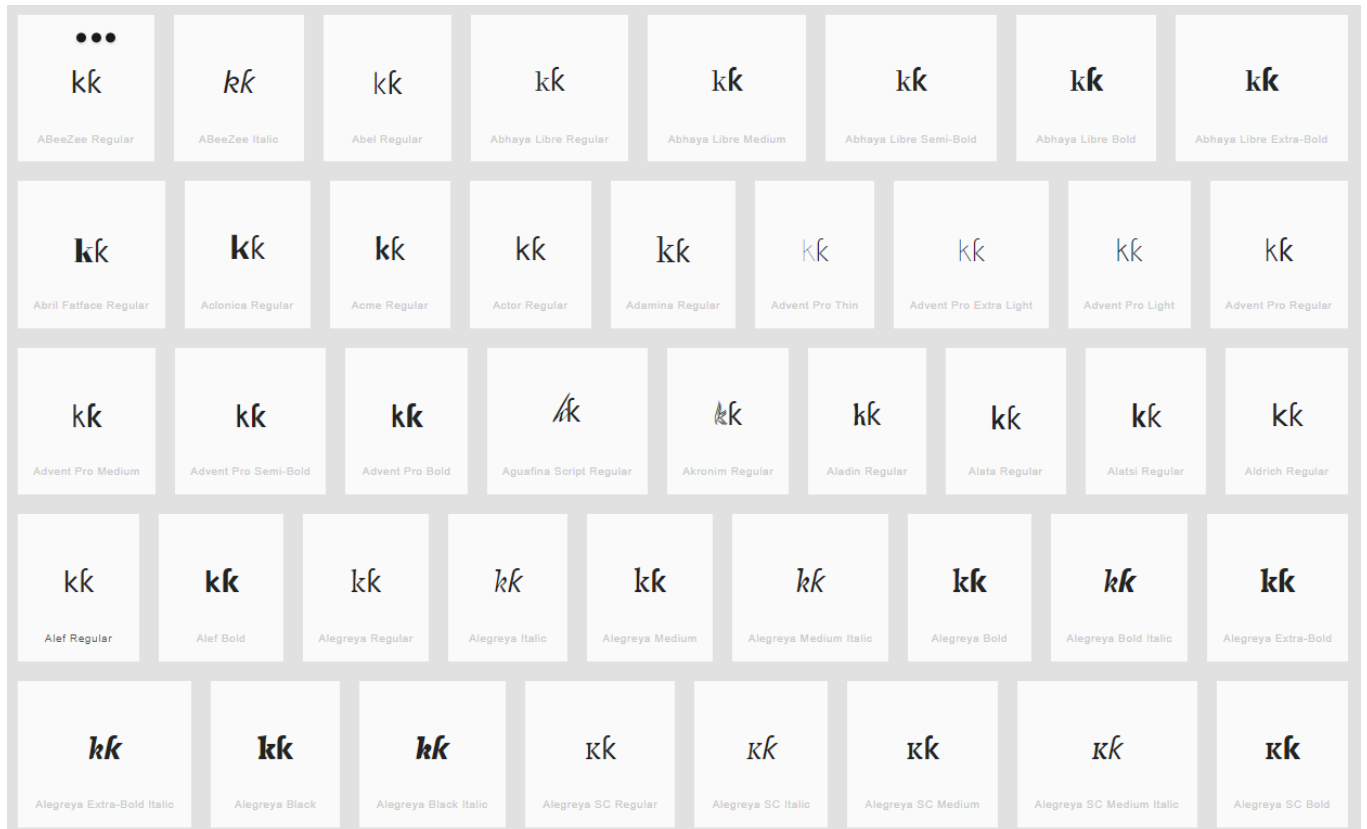
### D.1.7 Latin Small Letter K vs. Latin Small Letter K with Hook

Latin Small Letter K and Latin Small Letter K with Hook may be considered equivalent by readers and writers, since the extended hook is a frequent variation encountered in hand-writing.

### Code Points Considered:

Code Points	Glyph	Name
006B	k	LATIN SMALL LETTER K
0199	ķ	LATIN SMALL LETTER K WITH HOOK

Sequence 006B and 0199 compared using Google Fonts in <https://wordmark.it/>:



### Findings:

Variant – indistinguishable in some fonts

### D.1.8 Latin Small Letter Y vs. Latin Small Letter Y with Hook

Latin Small Letter Y and Latin Small Letter Y with Hook may be considered equivalent by readers and writers, since the extended hook is a frequent variation encountered in hand-writing.

### Code Points Considered:

Code Points	Glyph	Name
01B4	y	LATIN SMALL LETTER Y WITH HOOK
0079	y	LATIN SMALL LETTER Y

Sequence yyyy (0079 + 0079 + 01B4 + 0079) compared using Google Fonts in

<https://wordmark.it/>:



### Findings:

As expected, there is a large degree in variation in the rendering of the glyphs of 0079. Two essential differences between 01B4 and 0079 are recognized. 01B4 tends to be tilted or italicized and the key difference is the extended diagonal line turning into a right hand side hook.

As demonstrated by the examples, a number of fonts show a similar tilting, not only in italic fonts, as well as an extension of lines.

However, no example was found where the right hand-side line is extended right-wards (but only left-wards - generally also in cursive handwriting the letter doesn't connect right-wards at the top to following letter), and only one font (highlighted in blue) was shown where the two renderings are visually (nearly) identical.

### Conclusions:

Since the two code-points are different in a large number of fonts (albeit inconsistently) no variant pair is warranted in this case.

## D.1.9 Latin Small Letter D with Caron vs. Latin Small Letter D with Hook

Latin Small Letter D and Latin Small Letter D with Hook may be considered equivalent by readers and writers, since the extended hook may be another style of writing the Caron in cursive hand-writing. Additionally, the Caron may become indistinguishable from an apostrophe.

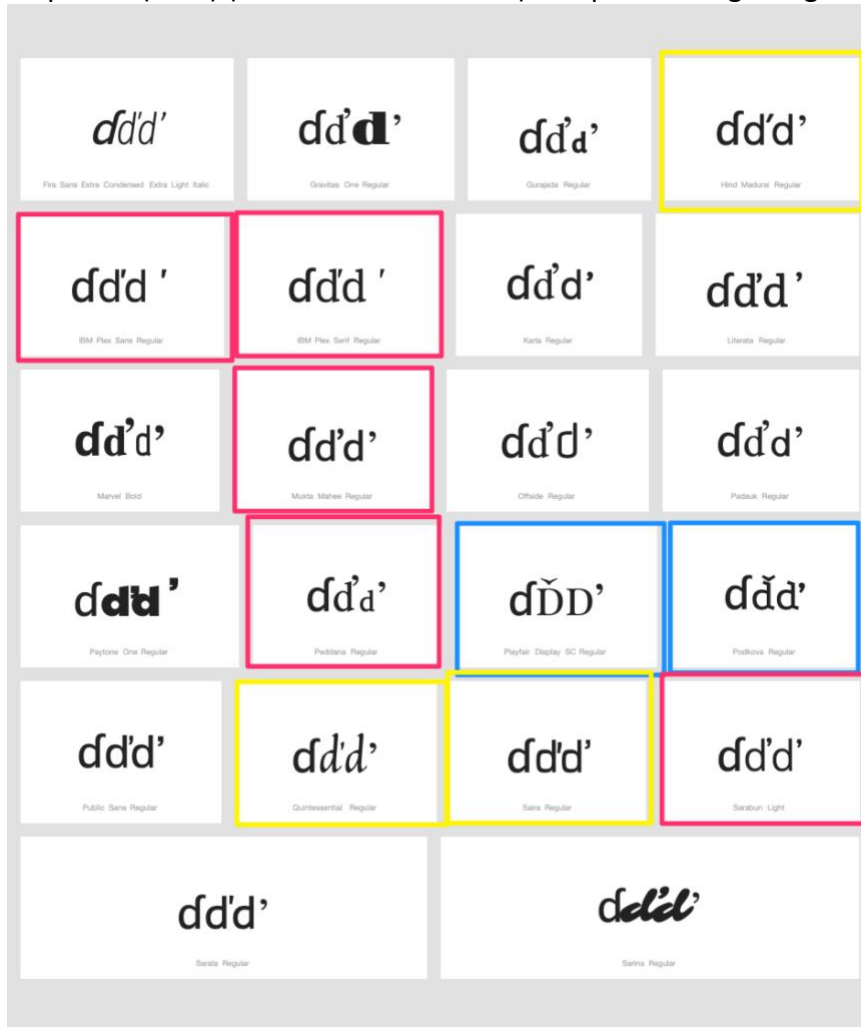
### Code Points Considered:

Code Points	Glyph	Name
010F	d'	LATIN SMALL LETTER D WITH CARON

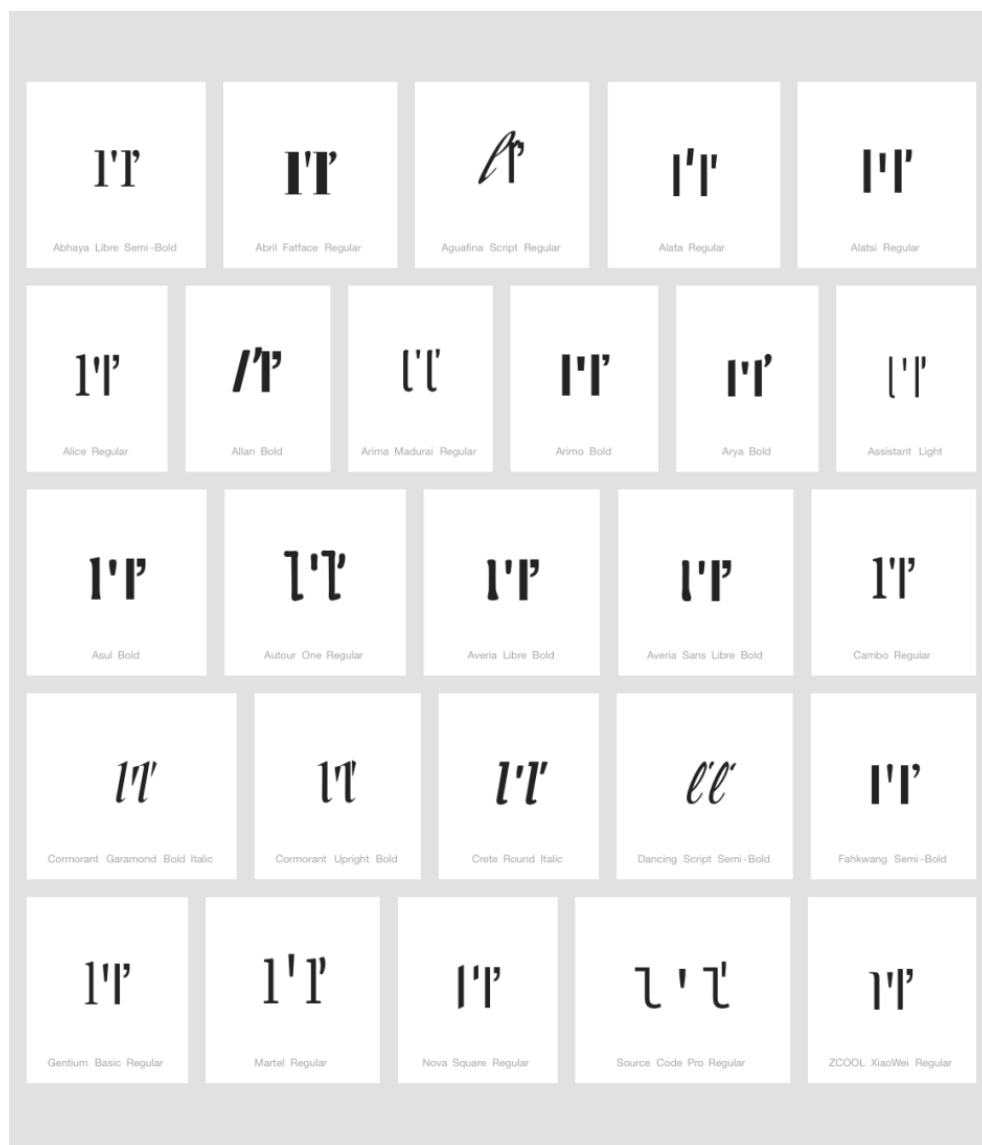


0257	đ	LATIN SMALL LETTER D WITH HOOK
02BC	'	MODIFIER LETTER APOSTROPHE
0064	d	LATIN SMALL LETTER D
006C	l	LATIN SMALL LETTER L
013E	ĺ	LATIN SMALL LETTER L WITH CARON

Sequence (đđđ') (0257 010F 0064 02BC) compared using Google Fonts in <https://wordmark.it/>:



Sequence (l'ĺ) (006C 02BC 013E) compared using Google Fonts in <https://wordmark.it/>:



### *Findings:*

While the differences between 0257 and 010F seem rather stable, this is not the case for 010F vs 0064 + 02BC as well as 006C + 02BC vs 013E. Accordingly, 010F vs 0064 + 02BC as well as 006C + 02BC vs 013E are indistinguishable in a significant number of fonts and homoglyphs in a minority of fonts. However, as the apostrophe (02BC) is not included in the repertoire, this variant relationship is not applicable.

### *Conclusions:*

010F d' Letter D with Caron and 0257 d Letter D with Hook are not variants. And the variant relationship between Caron and apostrophe is not applicable as the apostrophe is not included in the repertoire.

### D.1.10 Latin Small Letter T vs. Latin Small Letter L with Stroke

Latin Small Letter T and Latin Small Letter L with Stroke may become confusable in casual handwriting, italic fonts or fonts which do not slant the stroke of the l.

*Code Points Considered:*

Code Points	Glyph	Name
0074	t	LATIN SMALL LETTER T
0142	†	LATIN SMALL LETTER L WITH STROKE

Sequence (t †) (0074 0142) compared using Google Fonts in <https://wordmark.it/>:



*Findings:*

Glyphs are distinguishable

*Conclusions:*

These are not variants.

### D.1.11 Latin Small Letter J vs. Latin Small Letter I with Ogonek

Latin Small Letter J and Latin Small Letter I with Ogonek may become confusable in some font designs, since the ogonek may be mistaken for the extension of the j-shape below the baseline for less careful readers.

*Code Points Considered:*

Code Points	Glyph	Name
006A	j	LATIN SMALL LETTER J
012F	ï	LATIN SMALL LETTER I WITH OGONEK

Sequence jj (006A 012F) compared using Google Fonts in <https://wordmark.it/>:



*Findings:*

Glyphs are distinguishable. In a large number of fonts, the two letters are consistently different.

*Conclusions:*

These are not variants.

### D.1.12 Latin Small Letter B vs. Latin Small Letter Thorn vs. Latin Small Letter P

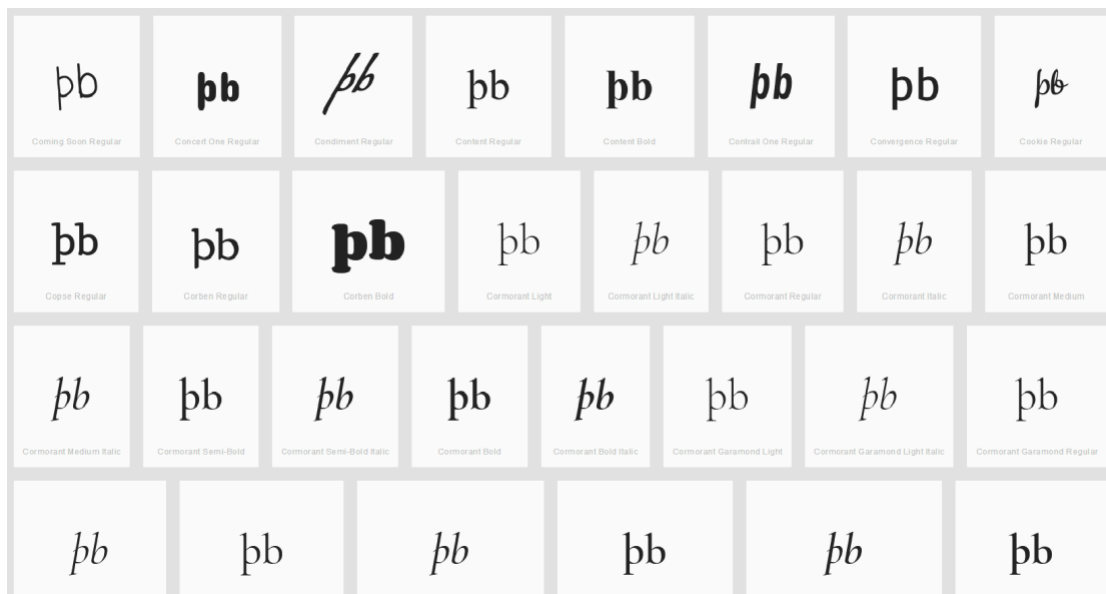
Latin Small Letter Thorn may become nearly identical to either Latin Small Letter B or Latin Small Letter P depending on font designs, context, and reader since the former is essentially an

overlay of the latter two shapes and serifs may appear in either of the extensions of the round shape above and below the baseline.

Code Points Considered:

Code Points	Glyph	Name
00FE	þ	LATIN SMALL LETTER THORN
0062	b	LATIN SMALL LETTER B
0070	p	LATIN SMALL LETTER P

Sequence þb (00FE 0062) compared using Google Fonts in <https://wordmark.it/> :



### Findings:

All cases on wordmark.it looked similar to the above screenshot. The þ and b always appear quite distinguishable as the þ always has a stroke below the base line and the b never crosses the baseline.

### Conclusion:

These code points are not variants.

Sequence (p þ) (0070 00FE) compared using Google Fonts in <https://wordmark.it/>:



### Findings:

The upper leg of the Thorn is visible in most fonts (except those highlighted) can be somewhat unclear.

### Conclusion:

These code points are not variants.

## D.1.13 Letter Eth Versus Letter D with Stroke

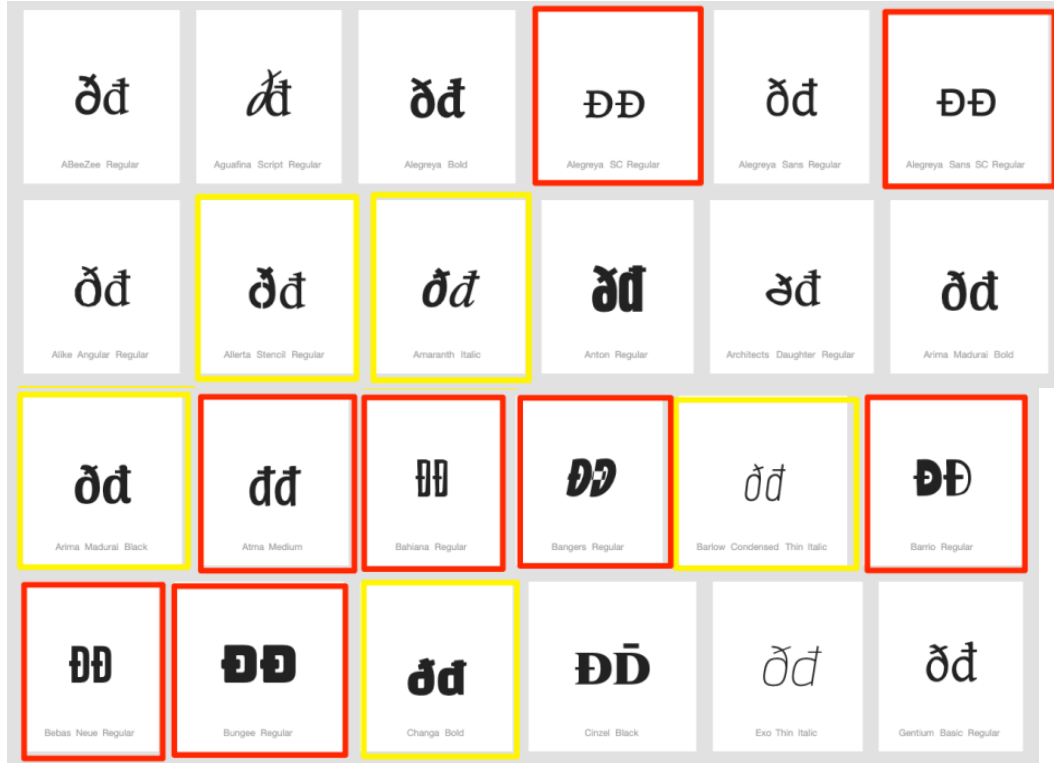
Letter Eth and Letter D with Stroke may appear nearly identical depending on font design, context, and rendering since the former is essentially the same shape as the latter in a cursive or italic style.

### Code Points Considered:

Code Points	Glyph	Name
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00F0	ð	LATIN SMALL LETTER ETH
0111	đ	LATIN SMALL LETTER D WITH STROKE

Sequence (ðđ) (00F0 0111) compared using Google Fonts in <https://wordmark.it/>:



#### Findings:

The two letters are distinguishable in a majority of fonts. In italic or bold fonts, they may become difficult to distinguish (highlighted in yellow), while in few fonts they are represented identically (highlighted in red). A minority of fonts represents both codepoints in uppercase forms, in which they are homoglyphs (highlighted in red).

#### Conclusions:

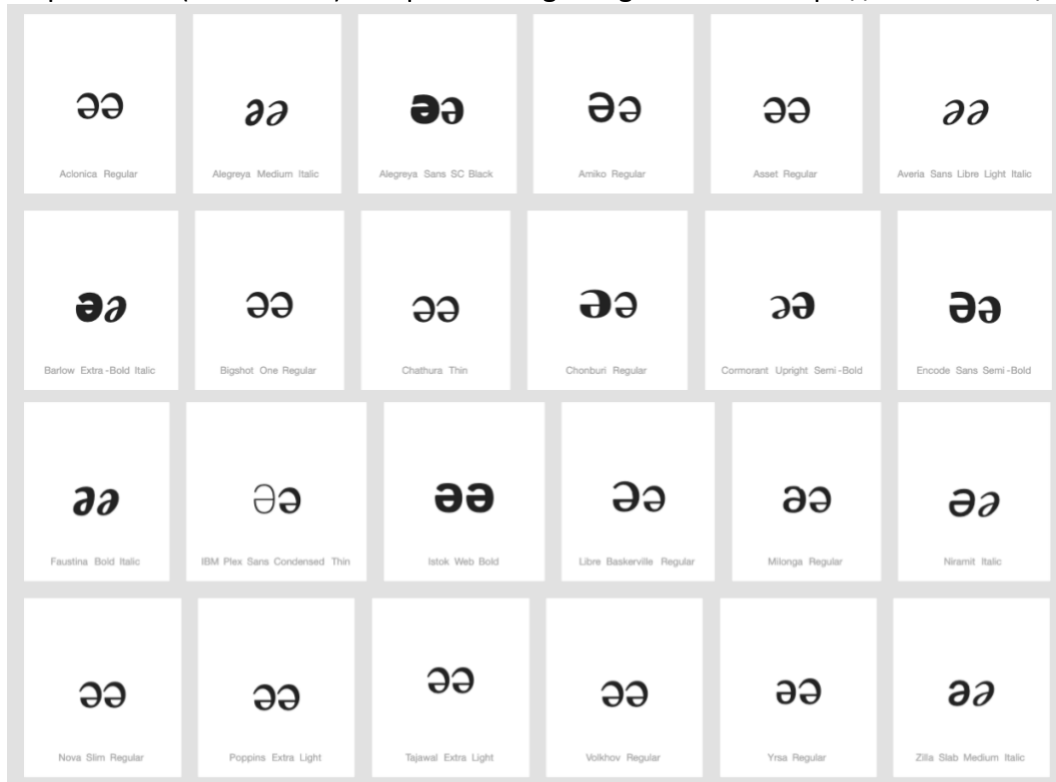
The characters should be suggested to be highlighted in the string-similarity check, since they may be confusingly similar or even homoglyphs in a minority of fonts.

### D.1.14 Latin Small Letter Schwa vs. Latin Small Letter Turned E

#### Code Points Considered:

Code Points	Glyph	Name
0259	ə	LATIN SMALL LETTER SCHWA
01DD	ə	LATIN SMALL LETTER TURNED E

Sequence əə (0259 01DD) compared using Google Fonts in <https://wordmark.it/>:



#### *Findings:*

Shapes of code points are mostly identical. In some font shapes of code points are different in size but there is no possibility to know which shape corresponds to which code point.

#### *Conclusions:*

These two code points are variants.

### D.1.15 Additional Analysis

Following analysis was conducted when adding code points for Kpelle language and Serer language to the repertoire.

#### **Latin Small Letter C with Hook**

##### *Code Points Considered:*

Code Points	Glyph	Name
0063	c	LATIN SMALL LETTER C
0107	ć	LATIN SMALL LETTER C WITH ACUTE
0188	ċ	LATIN SMALL LETTER C WITH HOOK

#### *Findings:*



						Inspectors							Panel Inspection
Unicode Name	Unicode Code Point	<u>Glyph</u>	<u>Glyph</u>	Unicode Code Point	Unicode Name	MT	DT	BJ	HH	MB	MD	MM	
						1=Identical 2=Nearly Identical (*) 3=Distinguishable 4=Different 5=N/A							Confirmed Review
Small Letter C	0063	c	Ꝣ	0188	Small Letter C with Hook	3	4	3	4	4	4	4	Not a variant
		c	Ꝣ			3	4	2	3	4	4	4	
		c	Ꝣ			3	4	2	2	4	3	3	
Small Letter C with Acute	0107	ċ	Ꝣ	0188	Small Letter C with Hook	3	3	3	3	3	3	4	Not a variant
		ċ	Ꝣ			3	3	3	3	3	3	4	
		ċ	Ꝣ			2	3	3	3	3	3	3	

### Conclusions:

These code points are not variants.

## Latin Small Letter G with Hook

### Code Points Considered:

Code Points	Glyph	Name
0067	g	LATIN SMALL LETTER G
0123	ġ	LATIN SMALL LETTER G WITH ACUTE
0260	ḡ	LATIN SMALL LETTER G WITH HOOK

### Findings:

						Inspectors							Panel Inspection
Unicode Name	Unicode Code Point	<u>Glyph</u>	<u>Glyph</u>	Unicode Code Point	Unicode Name	MT	DT	BJ	HH	MB	MD	MM	
						1=Identical 2=Nearly Identical (*) 3=Distinguishable 4=Different 5=N/A							Confirmed Review
Small Letter G	0067	g	ḡ	0260	Small Letter G with Hook	4	4	4	4	4	4	4	Not a variant
		g	ḡ			4	4	3	3	4	4	3	
		g	ḡ			3	4	2	3	4	3	2	
Small Letter G with Cedilla	0123	ġ	ḡ	0260	Small Letter G with Hook	4	4	4	4	4	4	4	Not a variant
		ġ	ḡ			4	4	4	4	4	4	4	
		ġ	ḡ			3	4	4	4	4	3	4	

### Conclusions:

These code points are not variants.

## Latin Small Letter P with Hook

### Findings:

						Inspectors							Panel Inspection
Unicode Name	Unicode Code Point	<u>Glyph</u>	<u>Glyph</u>	Unicode Code Point	Unicode Name	MT	DT	BJ	HH	MB	MD	MM	
						1=Identical 2=Nearly Identical (*) 3=Distinguishable 4=Different 5=N/A							Confirmed Review
Small Letter Thorn	00FE	þ	Ṗ	01A5	Small Letter P with Hook	3	3	3	3	3	4	3	Not a variant
		þ	Ṗ			3	3	2	2	3	3	2	
		þ	Ṗ			3	3	4	3	3	4	2	

### Conclusion:

These code points are not variants.

## Latin Small Letter T with Hook

### Code Points Considered:

Code Points	Glyph	Name
0066	f	LATIN SMALL LETTER F
0074	t	LATIN SMALL LETTER T
0165	t̃	LATIN SMALL LETTER T WITH CARON
0192	f̃	LATIN SMALL LETTER F WITH HOOK
01AD	ṭ	LATIN SMALL LETTER T WITH HOOK

### Findings:

						Inspectors							Panel Inspection
Unicode Name	Unicode Code Point	<u>G</u> l <u>y</u> ph	<u>G</u> l <u>y</u> ph	Unicode Code Point	Unicode Name	MT	DT	BJ	HH	MB	MD	MM	
						1=Identical 2=Nearly Identical (*) 3=Distinguishable 4=Different 5=N/A							Confirmed Review
Small Letter T	0074	t	ƒ	01AD	Small Letter T with Hook	3	3	3	3	3	4	4	Not a Variant
		t	ƒ			2	3	2	2	3	4	2	
		ƒ	€			3	3	2	3	3	4	3	
Small Letter T with Caron	0165	ƒ̃	ƒ	01AD	Small Letter T with Hook	3	4	3	2	3	3	4	Not a variant
		ƒ̃	ƒ			3	4	3	2	3	3	4	
		ƒ̃	€			3	4	3	3	3	3	4	
Small Letter F	0066	f	ƒ	01AD	Small Letter T with Hook	2	4	2	2	3	3	2	Not a Variant
		f	ƒ			2	4	2	2	3	3	2	
		f	€			3	4	4	4	4	4	3	
Small Letter F with Hook	0192	f̃	ƒ	01AD	Small Letter T with Hook	3	4	2	2	4	4	3	Not a variant
		f̃	ƒ			3	4	2	2	3	4	3	
		f̃	€			3	4	3	3	4	4	3	

### Conclusions:

These code points are not variants.