## Document \#

Date: 2016-05-01
Title: Encoding Pitman Shorthand scripts into Unicode Character Set
Source: Pitman scripts and its adaptation over years
Author: Ramachandran Rajaram
Status: Individual contribution for consideration / review by UTC Replaces: [L2/15-116r]

Revision History

| Date | Revision Description | Comments / Review by | Document Status |
| :---: | :---: | :---: | :---: |
| 2016-05-01 | 1. Appendix - A (p. 40,41 ) contains Glyphs which were identified as contextual forms of underlying letters, removed in this version $\dagger \dagger$ <br> 2. *158 and 159 have typos: correct INITITAL to INITIAL $\dagger \dagger$ <br> 3. *156 should be: PITMAN SYMBOL LEFT PARENTHESES $\dagger \dagger$ <br> 4. *157 should be: PITMAN SYMBOL RIGHT PARENTHESES $\dagger \dagger$ <br> 5. Page 2, last § in earlier version was removed and rewritten $\dagger \dagger$ <br> 6. Page 3, last § in earlier version. Added comments for Pitman glyphs which can be disjoined / intersected $\dagger \dagger$ <br> 7. Representation 1 from earlier version removed. <br> 8. Representation 1.1 renamed as 1 . Also, the running script which was depicted using proposed characters are adjusted to show difference between light and heavy strokes and also re-written to contain the vowels (p.23) $\dagger \dagger$ <br> 9. Representation 2 from earlier version removed. <br> 10. Representation 2.1 renamed as 2 . Also, the running script which was depicted using proposed characters are adjusted to show difference between light and heavy strokes and also re-written to contain the vowels. (p.24) $\dagger \dagger$ <br> 11. Glyphs as per Appendix - B (p. 42) removed in this version $\dagger \dagger$ <br> 12. Vowel sign light dot resized and contrasted to get distinguished (\# 27) <br> 13. Vowel sign heavy dot resized (\# 29) <br> 14. Diphthong I, OW, OI adjusted for smooth finish (\# 32, \# 33, \# 34) <br> 15. Character Name, Diphone Sign changed to Diphone Letter (\#36, \# 37) <br> 16. Character Name, removed the text "FOR STRAIGHT STROKES" (\# 54) <br> 17. Small and Large Circles adjusted by size (\#55, \# 56) <br> 18. Character Name, changed from INITIAL K HOOK to KW HOOK (\#62) <br> 19. Two logograms WHY and FIRST added to character set (\#129 and \#130) | Stanislav Jan Šarman | For review at UTC Meeting [2nd week of May 2016] |

$\dagger \dagger$ Comments by script ad hoc group on their review of [L2/15-116r]
$\dagger \dagger$ Comments by Stanislav on his earlier review of [L2/15-116r]

## Historical overview of Pitman Shorthand and its adaptations

Pitman Shorthand scripts are widely used in English speaking countries. It is called 'Phonography' as it is a system of writing scripts based on pronunciation of English words and not using spelling of the words. Originally developed by the Englishman Sir Isaac Pitman, it was published in 1837. Since then, there have been several revisions to the original version for easy adaption.

There are at-least three "dialects" of Pitman's shorthand: the original Pitman's, Pitman's New Era, and Pitman's 2000. The later versions dropped certain symbols and introduced other simplifications to earlier versions. For example, strokes "rer" (heavy curved downstroke) and "kway," (hooked horizontal straight stroke) are present in Pitman's New Era, but not in Pitman's 2000. The characters that are proposed for encoding (in this proposal) are the consonants, vowels and dipthongs which are prima facie the base characters for Pitman Shorthand irrespective of any versions. Pitman's New Era is a fairly old version as compared to Pitman 2000 version. There is subtle difference between these two versions not with respect to base characters but some ligatures. Pitman Scripts described below is based on Pitman's New Era Shorthand which has been adapted to around 15 Languages (viz., Japanese, Latin, Dutch, German, French, Spanish, Italian, Malay, Welsh, Swahili, Sinhala, Hebrew, Esperanto, Hindi, Portuguese) to name a few.

Unsupported orthographies This proposal encodes Pitman Scripts used for English language. There is a roadmap to encode Pitman Scripts used for other supported languages in future, subject to availability of relevant materials or documentations which is being pursued.

## Typology

Pitman Shorthand is a system of representing an English word or set of related English phrases using Consonants and Vowels (cf. Duployan Shorthand). As mentioned earlier, Pitman Shorthand (is based on simple geometric symbols viz., lines and curves) is written phonetically and not using spelling of each letters. Consonants are represented using strokes (Lines and Curves) can be easily differentiated either visually or according to their functionality and Vowels are represented using (Dot and Dash) although there are special vowels or combination of vowels which are described in the subsequent sections. Consonants and Vowels are written following a set of rules and their orientation does not change generally, except for in some cases. Pitman shorthand scripts are written Left to Right proceeding down the page. Scripts belonging to more than one word can be joined together to achieve fast writing of subsequent set of group words (e.g., the phrase, "As a matter of fact" can be combined together and written as a single script even though each word is a separate script).

This proposal document is written in a similar pattern after referring to Duployan proposal document, Code Charts and also other related documentation.

## Script Structure

In Pitman Shorthand, there is specific distinction between each Consonants in which some are written with light strokes (e.g., P, T, F, ITH, Kay, M, R) and some with heavy strokes (e.g., B, D, V, THEE, GY, ING) Vowels are represented by Light/Heavy Dot/Dash. There are 12 vowels in total (3 Light dots, 3 Heavy dots, 3 Light dashes and 3 Heavy dashes). There are three positions in which the vowels can be placed for a consonant to form meaningful phonemes. For the purpose of encoding, only 4 vowels are considered (ignoring their relative positions). These four vowels are Light Dot, Light Dash, Heavy Dot and Heavy Dash

In addition to the above vowels, there are certain special vowels called Diphthongs which are used separately or in combination with the vowels. Also, there are separate syllables called Diphones and Triphones. Apart from the original consonants, all these special vowels have separate script in Pitman Shorthand and they are also part of the allocation table.

Pitman Consonant scripts are generally written at the size of $1 / 6^{\text {th }}$ an inch. For easier representation of words, sometimes the size of the stroke is halved or doubled to add additional Consonant phonemes

Also, there are different variants to Consonant strokes (called dual consonants) which are added to the consonants either at the start or middle or at the end. Those variants are small and large hooks, small and large circles, ST and STR loops, Shun Hooks. These variant characters are not to be written individually but will be forming part of the main Consonant stroke to provide additional phonetic characters in a more convenient way, but following the rules in which they should be used. These variants also have separate character set and will be part of the allocation table.

Pitman Shorthand scripts can be joined together cursively for achieving the speed in writing but maintaining legibility. Wherever required, scripts belonging to more than one word can be joined together in a more flexible way to attain greater speed. Pitman Glyphs can also be dis-joined or intersected.

Pitman characters and their name
Characters of Pitman Shorthand (that are proposed for encoding) are detailed as below:

| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 1 | \} | PITMAN LETTER PEE |
| 2 | \} | PITMAN LETTER BeE |
| 3 |  | PItMAN LETTER TEE |
| 4 |  | PITMAN LETTER DEE |
| 5 | / | PITMAN LETTER CHAY |
| 6 | / | PITMAN LETTER JAY |
| 7 | - | PITMAN LETTER KAY |
| 8 | - | PITMAN LETTER GAY |
| 9 | / | PITMAN LETTER RAY |
| 10 | $\checkmark$ | PITMAN LETTER WAY |
| 11 | $C$ | PITMAN LETTER YAY |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 12 | 6 | PITMAN LETTER UP HAY |
| 13 | 9 | PITMAN LETTER DOWN HAY |
| 14 | $\sim$ | PITMAN LETTER EM |
| 15 | $\checkmark$ | PITMAN LETTER EN |
| 16 | $\checkmark$ | PITMAN LETTER ING |
| 17 | , | PITMAN LETTER EFF |
| 18 | $\checkmark$ | PITMAN LETTER VEE |
| 19 | ( | PITMAN LETTER ITH |
| 20 | ( | PITMAN LETTER THEE |
| 21 | ) | PITMAN LETTER ESS |
| 22 | ) | PITMAN LETTER ZEE |
| 23 | $\checkmark$ | PITMAN LETTER ISH |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 24 | $\checkmark$ | PITMAN LETTER ZHEE |
| 25 | $\Gamma$ | PITMAN LETTER ELL |
| 26 | 7 | PITMAN LETTER AR |
| 27 | - | PITMAN VOWEL SIGN LIGHT DOT |
| 28 | - | PITMAN VOWEL SIGN LIGHT DASH |
| 29 | - | PITMAN VOWEL SIGN HEAVY DOT |
| 30 | - | PITMAN VOWEL SIGN HEAVY DASH |
| 31 | 。 | PITMAN INTERVENING DOT VOWEL |
| 32 | $v$ | PITMAN LETTER I UP |
| 33 | $\wedge$ | PITMAN LETTER OW DOWN |
| 34 | 7 | PITMAN LETTER OI UP |
| 35 | $n$ | PITMAN LETTER EW DOWN |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 36 | $\llcorner$ | PITMAN DIPHONE LETTER FOR LIGHT and HEAVY DOT VOWEL |
| 37 | 7 | PITMAN DIPHONE LETTER FOR LIGHT and HEAVY DASH VOWEL |
| 38 | $n$ | PITMAN TRIPHONE LETTER I UP |
| 39 | N | PITMAN TRIPHONE LETTER OW DOWN |
| 40 | z | PITMAN TRIPHONE LETTER OI UP |
| 41 | $\sim$ | PITMAN TRIPHONE LETTER EW DOWN |
| 42 | $\bigcirc$ | PITMAN R HOOK FOR LETTER TEE and DEE |
| 43 | $\checkmark$ | PITMAN R HOOK FOR LETTER EM |
| 44 | $\bigcirc$ | PITMAN L HOOK FOR LETTER TEE and DEE |
| 45 | $\checkmark$ | PITMAN L HOOK FOR LETTER EM |
| 46 | $\checkmark$ | PITMAN N HOOK FOR LETTER TEE and DEE |
| 47 | $\checkmark$ | PITMAN N HOOK FOR LETTER EM |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 48 | $\checkmark$ | PITMAN F or V HOOK FOR LETTER TEE and DEE |
| 49 | $\checkmark$ | PITMAN SHUN HOOK LEFT MOTION FOR LETTER TEE and DEE |
| 50 | $\checkmark$ | PITMAN SHUN HOOK RIGHT MOTION FOR LETTER TEE and DEE |
| 51 | $\checkmark$ | PITMAN SHUN HOOK FOR LETTER EM |
| 52 | $\bigcirc$ | PITMAN FINAL SHUN HOOK FOLLOWING CIRCLE ES |
| 53 | ๑ | PITMAN FINAL SHUN HOOK FOLLOWING CIRCLE ES WITH ADDED ES CIRCLE |
| 54 | 0 | PITMAN SMALL CIRCLE ATTACHED TO HOOKS |
| 55 | - | PITMAN SMALL CIRCLE |
| 56 | $\bigcirc$ | PITMAN LARGE CIRCLE |
| 57 | ) | PITMAN ST LOOP FOR LETTER TEE and DEE |
| 58 | $\checkmark$ | PITMAN ST LOOP INITIAL FOR LETTER EM |
| 59 | $\checkmark$ | PITMAN ST LOOP FINAL FOR LETTER EM |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 60 | ) | PITMAN STR LOOP FOR LETTER TEE and DEE |
| 61 | $\checkmark$ | PITMAN STR LOOP FOR LETTER EM |
| 62 | c | PITMAN INITIAL KW HOOK FOR LETTER KAY |
| 63 | $\checkmark$ | PITMAN INITIAL W HOOK FOR LETTER EL |
| 64 | $\checkmark$ | PITMAN INITIAL WH HOOK FOR LETTER EL |
| 65 | , | PITMAN INITIAL W HOOK FOR LETTER KAY, GAY, EM, AR and RAY |
| 66 | c | PITMAN MEDIAL LEFT W HOOK DISJOINED FOR LETTER KAY, GAY, EM, AR and RAY |
| 67 | , | PITMAN MEDIAL RIGHT W HOOK DISJOINED FOR LETTER KAY, GAY, EM, AR and RAY |
| 68 | $\Gamma$ | PITMAN HEAVY LETTER ELL |
| 69 | 7 | PITMAN HEAVY LETTER AR |
| 70 | $\sim$ | PITMAN HEAVY LETTER EM |
| 71 | $\checkmark$ | PITMAN LETTER WAY WITH ENLARGED HOOK |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 72 | $\backslash$ | PITMAN LETTER PEE HALVED |
| 73 | $\backslash$ | PITMAN LETTER BEE HALVED |
| 74 | 1 | PITMAN LETTER TEE HALVED |
| 75 | I | PITMAN LETTER DEE HALVED |
| 76 | $/$ | PITMAN LETTER CHAY HALVED |
| 77 | / | PITMAN LETTER JAY HALVED |
| 78 | - | PITMAN LETTER KAY Halved |
| 79 | - | PITMAN LETTER GAY Halved |
| 80 | $/$ | PITMAN LETTER RAY HALVED |
| 81 | $U$ | PITMAN LETTER WAY Halved |
| 82 | $\zeta$ | PITMAN LETTER YAY HALVED |
| 83 | 6 | PITMAN LETTER UP HAY HALVED |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 84 | 9 | PITMAN LETTER DOWN HAY Halved |
| 85 | $\bigcirc$ | PITMAN LETTER EM HALVED |
| 86 | $\sim$ | PITMAN LETTER HEAVY EM HALVED |
| 87 | $\smile$ | PITMAN LETTER EN HALVED |
| 88 | $\checkmark$ | PITMAN LETTER HEAVY EN HALVED |
| 89 | c | PITMAN LETTER ING HALVED WITH ADDITION OF R HOOK |
| 90 | $\checkmark$ | PITMAN LETTER EFF HALVED |
| 91 | $\checkmark$ | PITMAN LETTER VEE HALVED |
| 92 | ( | PITMAN LETTER ITH HALVED |
| 93 | $($ | PITMAN LETTER THEE HALVED |
| 94 | ) | PITMAN LETTER ESS HALVED |
| 95 | ) | PITMAN LETTER ZEE HALVED |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 96 | ノ | PITMAN LETTER ISH HALVED |
| 97 | ノ | PITMAN LETTER ZHEE HALVED |
| 98 | $r$ | PITMAN LETTER ELL HALVED |
| 99 | $r$ | PITMAN LETTER HEAVY ELL HALVED |
| 100 | ) | PItMAN LETTER AR Halved |
| 101 | ) | PITMAN LETTER HEAVY AR HALVED |
| 102 |  | PITMAN LETTER PEE DOUBLED |
| 103 |  | PITMAN LETTER BEE DOUBLED |
| 104 |  | PITMAN LETTER TEE DOUBLED |
| 105 |  | PITMAN LETTER DEE DOUBLED |
| 106 |  | PITMAN LETTER CHAY DOUBLED |
| 107 |  | PITMAN LETTER JAY DOUBLED |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 108 |  | PITMAN LETTER KAY DOUbLED |
| 109 |  | PITMAN LETTER GAY DOUBLED |
| 110 |  | PItMAN LETTER RAY doubled |
| 111 | / | PITMAN LETTER WAY DOUBLED |
| 112 |  | PITMAN LETTER YAY DOUBLED |
| 113 |  | PITMAN LETTER UP HAY DOUBLED |
| 114 | $9$ | PITMAN LETTER DOWN HAY DOUBLED |
| 115 |  | PITMAN LETTER EM DOUBLED |
| 116 |  | PITMAN HEAVY LETTER EM DOUBLED |
| 117 |  | PITMAN LETTER EN DOUBLED |
| 118 |  | PITMAN LETTER ING DOUBLED |
| 119 |  | PITMAN LETTER EFF DOUBLED |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 120 | $>$ | PItMAN LETTER VEe doubled |
| 121 | ( | PITMAN LETTER ITH DOUBLED |
| 122 | ( | PITMAN LETTER THEE DOUBLED |
| 123 | ) | PITMAN LETTER ESS DOUBLED |
| 124 | ) | PITMAN LETTER ZEE DOUBLED |
| 125 |  | PITMAN LETTER ISH DOUBLED |
| 126 |  | PITMAN LETTER ZHEE DOUBLED |
| 127 |  | PITMAN LETTER ELL DOUBLED |
| 128 | $1$ | PITMAN LETTER AR DOUBLED |
| 129 | $\llcorner$ | PITMAN LETTER LOGOGRAM WHY |
| 130 | 0 | PITMAN LETTER LOGOGRAM FIRST |

Punctuation Characters

| 131 | $\gamma$ | PITMAN SYMBOL FULL STOP PERIOD |
| :---: | :---: | :---: |
| 132 | $\rho_{\gamma}$ | PITMAN SYMBOL QUESTION MARK |
| 133 | 1 | PITMAN SYMBOL EXCLAMATION MARK |
| 134 | $\sim$ | PITMAN SYMBOL EM or En DASH |
| 135 | $f$ | PITMAN SYMBOL Left Parentheses |
| 136 | f | PITMAN SYMBOL RIGHT PARENTHESES |
| 137 | " | PITMAN SYMBOL INITIAL CAPITALS |
| 138 | " | PITMAN SYMBOL ALL INITIAL CAPITALS |
| 139 | // | PITMAN SYMBOL PARAGRAPH MARK |
| 140 | , | PITMAN SYMBOL EMPHASIS or CAUTION |
| 141 | $\cdots$ | PITMAN SYMBOL HUMOR |

## Allocation Table

|  | 1BCB | 1BCC | 1BCD | 1BCE | 1BCF | 1BD0 | 1BD1 | 1BD2 | 1BD3 | 1BD4 | 1BD5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| 0 | $\searrow$ | $\bigcirc$ | - | $\bigcirc$ | ) | $\backslash$ | $\checkmark$ | $\searrow$ |  | ட |  |
|  | 1BCB0 | 1BCCO | 1BCDO | 1BCEO | 1BCFO | 1BD00 | 1BD10 | 1BD20 | 1BD30 | 1BD40 | 1BD50 |
| 1 | $\rangle$ | $\checkmark$ | - | $\smile$ | $\checkmark$ | \} | $C$ |  |  | 0 |  |
|  | 1BCB1 | 1BCC1 | 1BCD1 | 1BCE1 | 1BCF1 | 1BD01 | 1BD11 | 1BD21 | 1BD31 | 1BD41 | 1BD51 |
| 2 |  | $\checkmark$ | - | $\bigcirc$ | $\checkmark$ | 1 | $\checkmark$ |  |  |  |  |
|  | 1BCB2 | 1BCC2 | 1BCD2 | 1BCE2 | 1BCF2 | 1BD02 | 1BD12 | 1BD22 | 1BD32 | 1BD42 | 1BD52 |
| 3 | 1 |  | - | C | $)$ | 1 | $\checkmark$ |  |  |  |  |
|  | 1BCB3 | 1BCC3 | 1BCD3 | 1BCE3 | 1BCF3 | 1BD03 | 1BD13 | 1BD23 | 1BD33 | 1BD43 | 1BD53 |
| 4 | $/$ |  | $\bigcirc$ | $\checkmark$ | $\checkmark$ | / | $($ |  |  |  |  |
|  | 1BCB4 | 1BCC4 | 1BCD4 | 1BCE4 | 1BCF4 | 1BD04 | 1BD14 | 1BD24 | 1BD34 | 1BD44 | 1BD54 |
| 5 | $/$ | ( | V | $\checkmark$ | C | / | $($ |  | $j$ |  |  |
|  | 1BCB5 | 1BCC5 | 1BCD5 | 1BCE5 | 1BCF5 | 1BD05 | 1BD15 | 1BD25 | 1BD35 | 1BD45 | 1BD55 |
| 6 | - | ( | $\wedge$ | $\checkmark$ | $\checkmark$ | - | ) | - |  |  |  |
|  | 1BCB6 | 1BCC6 | 1BCD6 | 1BCE6 | 1BCF6 | 1BD06 | 1BD16 | 1BD26 | 1BD36 | 1BD46 | 1BD56 |
| 7 | - | $)$ | 7 | $\checkmark$ | $\checkmark$ | - | ) | - |  |  |  |
|  | 1BCB7 | 1BCC7 | 1BCD7 | 1BCE7 | 1BCF7 | 1BD07 | 1BD17 | 1BD27 | 18D37 | 1BD47 | 1BD57 |
| 8 | $l$ | $)$ | $\bigcirc$ | $\cup$ | ) | 1 | $\bigcirc$ |  |  |  |  |
|  | 1BCB8 | 1BCC8 | 1BCD8 | 1BCE8 | 1BCF8 | 1BD08 | 1BD18 | 1BD28 | 1BD38 | 1 BD 48 | 1BD58 |
| 9 | $0$ | $\checkmark$ | $L$ | $\checkmark$ | c | $\checkmark$ | $\checkmark$ |  |  |  |  |
|  | 1BCB9 | 1BCC9 | 1BCD9 | 1BCE9 | 1BCF9 | 1BD09 | 1BD19 | 1BD29 | 1BD39 | 1BD49 | 1BD59 |
| A | $l$ | $\checkmark$ | 7 | $\bigcirc$ | ) | C | $r$ |  |  |  |  |
|  | 1BCBA | 1BCCA | 1BCDA | 1BCEA | 1BCFA | 1BDOA | 1BD1A | 1BD2A | 1BD3A | 1BD4A | 1BD5A |


|  | 1BCB | 1BCC | 1BCD | 1BCE | 1BCF | 1BD0 | 1BD1 | 1BD2 | 1BD3 | 1BD4 | 1BD5 |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| B | 6 | $\Gamma$ | $n$ | ๑ |  | 6 | $r$ |  |  |  |  |
|  | 1BCBB | 1BCCB | 1BCDB | 1BCEB | 1BCFB | 1BDOB | 18D1B | 1BD2B | 18D3B | 18D4B | 1BD5B |
| C | 9 | $1$ | $n$ | 0 | $1$ | 9 | $)$ |  |  |  |  |
|  | 1BCBC | 1BCCC | 1BCDC | 1BCEC | 1BCFC | 1BDOC | 18D1C | 1BD2C | 1BD3C | 1BD4C | 1BD5C |
| D |  |  | z | $\bigcirc$ | $\bigcirc$ | $\frown$ | 1 |  |  |  |  |
|  | 1BCBD |  | 1BCDD | 1BCED | 1BCFD | 1BDOD |  |  | 1BD3D | 1BD4D | 1BD5D |
| E |  |  | $\sim$ | O | $c$ | $\sim$ |  |  |  |  |  |
|  | 1BCBE | 1BCCE | 1BCDE | 1BCEE | 1BCFE | 1BDOE | 1BD1E | 1BD2E | 18D3E | 18D4E | 18D5E |
|  |  |  |  |  |  | $\smile$ |  |  |  |  |  |
|  | 1BCBF | 1BCCF | 1BCDF | 1BCEF | 1BCFF | 1BDOF | 18D1F | 18D2F | 18D3F | 18D4F | 1BD5F |

Note: A few code blocks are shaded and left blank for provision of further characters that may find its place, based on subsequent reviews

## Allocation - Supplemental Punctuation

|  | 2E0 | 2E1 | 2E2 | 2E3 | 2E4 |
| :---: | :---: | :---: | :---: | :---: | :---: |
| 3 |  |  |  |  | $\gamma$ |
|  |  |  |  |  | 2 E 43 |
| 4 |  |  |  |  | ? |
|  |  |  |  |  | 2 E 44 |
| 5 |  |  |  |  | 1 |
|  |  |  |  |  | 2 E 45 |
| 6 |  |  |  |  | $\sim$ |
|  |  |  |  |  | $2 \mathrm{E46}$ |
| 7 |  |  |  |  | $t$ |
|  |  |  |  |  | $2 E 47$ |
| 8 |  |  |  |  | f |
|  |  |  |  |  | $2 E 48$ |
| 9 |  |  |  |  | " |
|  |  |  |  |  | $2 \mathrm{E49}$ |
| A |  |  |  |  | " |
|  |  |  |  |  | 2E4A |
| B |  |  |  |  | // |
|  |  |  |  |  | 2E4B |
| C |  |  |  |  | \} |
|  |  |  |  |  | $2 \mathrm{E4C}$ |
| D |  |  |  |  | $\cdots$ |
|  |  |  |  |  | 2E4D |

## Character properties

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1BCB0;PITMAN LETTER PEE;Lo;0;L;;;;;N;;;;;
1BCB1;PITMAN LETTER BEE;Lo;0;L;;;;;N;;;;;
1BCB2;PITMAN LETTER TEE;Lo;0;L;;;;;N;;;;;
1BCB3;PITMAN LETTER DEE;Lo;0;L;;;;;N;;;;;
1BCB4;PITMAN LETTER CHAY;Lo;0;L;;;;;N;;;;;
1BCB5;PITMAN LETTER JAY;Lo;0;L;;;;;N;;;;;
1BCB6;PITMAN LETTER KAY;Lo;0;L;;;;;N;;;;;
1BCB7;PITMAN LETTER GAY;Lo;0;L;;;;;N;;;;;
1BCB8;PITMAN LETTER RAY;Lo;0;L;;;;;N;;;;;
1BCB9;PITMAN LETTER WAY;Lo;O;L;;;;;N;;;;;
1BCBA;PITMAN LETTER YAY;Lo;0;L;;;;;N;;;;;
1BCBB;PITMAN LETTER UP HAY;Lo;0;L;;;;;N;;;;;;
1BCBC;PITMAN LETTER DOWN HAY;Lo;O;L;;;;;N;;;;;
1BCCO;PITMAN LETTER EM;Lo;0;L;;;;;N;;;;;
1BCC1;PITMAN LETTER EN;Lo;0;L;;;;;N;;;;;
1BCC2;PITMAN LETTER ING;Lo;0;L;;;;;N;;;;;
1BCC3;PITMAN LETTER EFF;Lo;0;L;;;;;N;;;;;
1BCC4;PITMAN LETTER VEE;Lo;0;L;;;;;N;;;;;
1BCC5;PITMAN LETTER ITH;Lo;0;L;;;;;N;;;;;
1BCC6;PITMAN LETTER THEE;Lo;0;L;;;;;N;;;;;
1BCC7;PITMAN LETTER ESS;Lo;0;L;;;;;N;;;;;
1BCC8;PITMAN LETTER ZEE;Lo;0;L;;;;;N;;;;;
1BCC9;PITMAN LETTER ISH;Lo;0;L;;;;;N;;;;;
1BCCA;PITMAN LETTER ZHEE;Lo;0;L;;;;;N;;;;;
1BCCB;PITMAN LETTER ELL;Lo;0;L;;;;;N;;;;;;
1BCCC;PITMAN LETTER AR;Lo;0;L;;;;;N;;;;;
1BCDO;PITMAN VOWEL SIGN LIGHT DOT;Lo;0;L;;;;;N;;;;;
1BCD1;PITMAN VOWEL SIGN LIGHT DASH;Lo;0;L;;;;;N;;;;;
1BCD2;PITMAN VOWEL SIGN HEAVY DOT;Lo;0;L;;;;;N;;;;;
1BCD3;PITMAN VOWEL SIGN HEAVY DASH;Lo;0;L;;;;;N;;;;;;
1BCD4;PITMAN INTERVENING DOT VOWEL;Lo;O;L;;;;;N;;;;;
1BCD5;PITMAN LETTER I UP;Lo;0;L;;;;;N;;;;;
1BCD6;PITMAN LETTER OW DOWN;Lo;0;L;;;;;N;;;;;
1BCD7;PITMAN LETTER OI UP;Lo;0;L;;;;;N;;;;;
1BCD8;PITMAN LETTER EW DOWN;Lo;0;L;;;;;N;;;;;
1BCD9;PITMAN DIPHONE LETTER FOR LIGHT and HEAVY DOT VOWEL;Lo;0;L;;;;;N;;;;;
1BCDA;PITMAN DIPHONE LETTER FOR LIGHT and HEAVY DASH VOWEL;Lo;0;L;;;;;N;;;;;
1BCDB;PITMAN TRIPHONE LETTER I UP;Lo;O;L;;;;;N;;;;;;
1BCDC;PITMAN TRIPHONE LETTER OW DOWN;Lo;0;L;;;;;N;;;;;
1BCDD;PITMAN TRIPHONE LETTER OI UP;Lo;O;L;;;;;N;;;;;
1BCDE;PITMAN TRIPHONE LETTER EW DOWN;Lo;O;L;;;;;N;;;;;
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1BCEO;PITMAN R HOOK FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCE1;PITMAN R HOOK FOR LETTER EM;Lo;0;L;;;;;N;;;;;
1BCE2;PITMAN L HOOK FOR LETTER TEE and DEE;Lo;O;L;;;;;N;;;;;
1BCE3;PITMAN L HOOK FOR LETTER EM;Lo;0;L;;;;;N;;;;;
1BCE4;PITMAN N HOOK FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCE5;PITMAN N HOOK FOR LETTER EM;Lo;0;L;;;;,N;;;;;
1BCE6;PITMAN F or V HOOK FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCE7;PITMAN SHUN HOOK LEFT MOTION FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCE8;PITMAN SHUN HOOK RIGHT MOTION FOR LETTER TEE and DEE;Lo;O;L;;;;N;;;;;;
1BCE9;PITMAN SHUN HOOK FOR LETTER EM;Lo;O;L;;;;;N;;;;;
1BCEA;PITMAN FINAL SHUN HOOK FOLLOWING CIRCLE ES;Lo;O;L;;;;;N;;;;;
1BCEB;PITMAN FINAL SHUN HOOK FOLLOWING CIRCLE ES WITH ADDED ES CIRCLE;Lo;0;L;;;;;N;;;;;
1BCEC;PITMAN SMALL CIRCLE ATTACHED TO HOOKS;Lo;0;L;;;;;N;;;;;
1BCED;PITMAN SMALL CIRCLE;Lo;0;L;;;;;N;;;;;
1BCEE;PITMAN LARGE CIRCLE;Lo;0;L;;;;;N;;;;;
1BCFO;PITMAN ST LOOP FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCF1;PITMAN ST LOOP INITIAL FOR LETTER EM;Lo;0;L;;;;N;;;;;;
1BCF2;PITMAN ST LOOP FINAL FOR LETTER EM;Lo;0;L;;;;;N;;;;;;
1BCF3;PITMAN STR LOOP FOR LETTER TEE and DEE;Lo;0;L;;;;;N;;;;;
1BCF4;PITMAN STR LOOP FOR LETTER EM;Lo;0;L;;;;;N;;;;;
1BCF5;PITMAN INITIAL KW HOOK FOR LETTER KAY;Lo;0;L;;;;;N;;;;;
1BCF6;PITMAN INITIAL W HOOK FOR LETTER EL;Lo;0;L;;;;N;;;;;;
1BCF7;PITMAN INITIAL WH HOOK FOR LETTER EL;Lo;0;L;;;;;N;;;;;
1BCF8;PITMAN INITIAL W HOOK FOR LETTER KAY, GAY, EM, AR and RAY;Lo;0;L;;;;;N;;;;;
1BCF9;PITMAN MEDIAL LEFT W HOOK DISJOINED FOR LETTER KAY, GAY, EM, AR and RAY;Lo;0;L;;;;;N;;;;;
1BCFA;PITMAN MEDIAL RIGHT W HOOK DISJOINED FOR LETTER KAY, GAY, EM, AR and RAY;Lo;0;L;;;;;N;;;;;
1BCFB;PITMAN HEAVY LETTER ELL;Lo;0;L;;;;;N;;;;;
1BCFC;PITMAN HEAVY LETTER AR;Lo;0;L;;;;;N;;;;;
1BCFD;PITMAN HEAVY LETTER EM;Lo;0;L;;;;N;;;;;;
1BCFE;PITMAN LETTER WAY WITH ENLARGED HOOK;Lo;0;L;;;;;N;;;;;
```

1BD00;PITMAN LETTER PEE HALVED;Lo;0;L;;;;;N;;;;;
1BD01;PITMAN LETTER BEE HALVED;Lo;0;L;;;;;N;;;;;
1BD02;PITMAN LETTER TEE HALVED;Lo;0;L;;;;;N;;;;;
1BD03;PITMAN LETTER DEE HALVED;Lo;0;L;;;;;N;;;;;;
1BD04;PITMAN LETTER CHAY HALVED;Lo;0;L;;;;;N;;;;;
1BD05;PITMAN LETTER JAY HALVED;Lo;0;L;;;;;N;;i;;;
1BD06;PITMAN LETTER KAY HALVED;Lo;0;L;;;;;N;;;;;;
1BD07;PITMAN LETTER GAY HALVED;Lo;0;L;;;;;N;;;;;
1BD08;PITMAN LETTER RAY HALVED;Lo;0;L;i;;;N;;;;;;
1BD09;PITMAN LETTER WAY HALVED;Lo;0;L;;;;;N;;;;;;
1BDOA;PITMAN LETTER YAY HALVED;Lo;0;L;;;;;N;;;;;;
1BDOB;PITMAN LETTER UP HAY HALVED;Lo;0;L;;i;;N;;;;;;
1BDOC;PITMAN LETTER DOWN HAY HALVED;Lo;0;L;;;;;N;;;;;
1BDOD;PITMAN LETTER EM HALVED;Lo;0;L;;;;;N;;;;;
1BDOE;PITMAN LETTER HEAVY EM HALVED;Lo;0;L;;i;;N;;;;;
1BDOF;PITMAN LETTER EN HALVED;Lo;0;L;;;;;N;;;;;

```
1BD10;PITMAN LETTER HEAVY EN HALVED;Lo;0;L;;;;;N;;;;;
1BD11;PITMAN LETTER ING HALVED WITH ADDITION OF R HOOK;Lo;0;L;;;;;N;;;;;
1BD12;PITMAN LETTER EFF HALVED;Lo;0;L;;;;;N;;;;;
1BD13;PITMAN LETTER VEE HALVED;Lo;0;L;;;;;N;;;;;
1BD14;PITMAN LETTER ITH HALVED;Lo;0;L;;;;;N;;;;;
1BD15;PITMAN LETTER THEE HALVED;Lo;0;L;;;;;N;;;;;
1BD16;PITMAN LETTER ESS HALVED;Lo;0;L;;;;;N;;;;;
1BD17;PITMAN LETTER ZEE HALVED;Lo;0;L;;;;;N;;;;;
1BD18;PITMAN LETTER ISH HALVED;Lo;0;L;;;;;N;;;;;
1BD19;PITMAN LETTER ZHEE HALVED;Lo;0;L;;;;;N;;;;;
1BD1A;PITMAN LETTER ELL HALVED;Lo;O;L;;;;;N;;;;;
1BD1B;PITMAN LETTER HEAVY ELL HALVED;Lo;0;L;;;;;N;;;;;
1BD1C;PITMAN LETTER AR HALVED;Lo;0;L;;;;N;;;;;
1BD1D;PITMAN LETTER HEAVY AR HALVED;Lo;0;L;;;;;N;;;;;
```

1BD20;PITMAN LETTER PEE DOUBLED;Lo;0;L;;i;; $\mathrm{N} ; ; ; ; ;$
1BD21;PITMAN LETTER BEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD22;PITMAN LETTER TEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD23;PITMAN LETTER DEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD24;PITMAN LETTER CHAY DOUBLED;Lo;0;L;;;;;N;;;;;
1BD25;PITMAN LETTER JAY DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD26;PITMAN LETTER KAY DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD27;PITMAN LETTER GAY DOUBLED;Lo;0;L;;;;;N;;i;;;
1BD28;PITMAN LETTER RAY DOUBLED;Lo;0;L;;i;; $\mathrm{N} ; ; ; ; ;$
1BD29;PITMAN LETTER WAY DOUBLED;Lo;0;L;;;;;N;;;;;
1BD2A;PITMAN LETTER YAY DOUBLED;Lo;0;L;;;;;N;;;;;
1BD2B;PITMAN LETTER UP HAY DOUBLED;Lo;0;L;;;;;N;;;;;
1BD2C;PITMAN LETTER DOWN HAY DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD2D;PITMAN LETTER EM DOUBLED;Lo;0;L;;;;;N;;;;;
1BD2E;PITMAN HEAVY LETTER EM DOUBLED;Lo;0;L;;;;;N;;;;;
1BD2F;PITMAN HEAVY LETTER EM DOUBLED;Lo;0;L;;;;;N;;;;;
1BD30;PITMAN LETTER ING DOUBLED;Lo;0;L;;;;;N;;;;;
1BD31;PITMAN LETTER EFF DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD32;PITMAN LETTER VEE DOUBLED;Lo;0;L;;;;;N;;i;;;
1BD33;PITMAN LETTER ITH DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD34;PITMAN LETTER THEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD35;PITMAN LETTER ESS DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD36;PITMAN LETTER ZEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD37;PITMAN LETTER ISH DOUBLED;Lo;0;L;;i;;N;;;;;
1BD38;PITMAN LETTER ZHEE DOUBLED;Lo;0;L;;;;;N;;;;;
1BD39;PITMAN LETTER ELL DOUBLED;Lo;0;L;;;;;N;;;;;;
1BD3A;PITMAN LETTER AR DOUBLED;Lo;0;L;;;;;N;i;i;;
1BD40;PITMAN LETTER LOGOGRAM WHY;Lo;0;L;;;;;N;;;;;;
1BD41;PITMAN LETTER LOGOGRAM FIRST;Lo;0;L;;;;;N;;;;;;

## Line breaking properties for punctuation

| 2E43;BA | \# Po | PITMAN SYMBOL FULL STOP PERIOD |
| :--- | :--- | :--- |
| 2E44;BA | \# Po | PITMAN SYMBOL QUESTION MARK |
| 2E45;BA | \#Po | PITMAN SYMBOL EXCLAMATION MARK |
| 2E46;BA | \# Po | PITMAN SYMBOL EM or EN DASH |
| 2E47;BA | \# Po | PITMAN SYMBOL LEFT PARENTHESES |
| 2E48;BA | \# Po | PITMAN SYMBOL RIGHT PARENTHESES |
| 2E49;BA | \#Po | PITMAN SYMBOL INITIAL CAPITALS |
| 2E4A;BA | \# Po | PITMAN SYMBOL ALL INITIAL CAPITALS |
| 2E4B;BA | \# Po | PITMAN SYMBOL PARAGRAPH MARK |
| 2E4C;BA | \# Po | PITMAN SYMBOL EMPHASIS or CAUTION |
| 2E4D;BA | \# Po | PITMAN SYMBOL HUMOR |

## Representations using proposed code points

## Representation 1: << Based on comments from Stanislav Jan Šarman >>

1.1. Running script: This is the running text this is represented using the proposed code points. The running script is as below;
"The best time to do something worthwhile is between yesterday and tomorrow - unknown"
1.2. Running script representation using standard Pitman Script

1.3. In the below section, we see the code point representation of the running script. In this section, we see the Pitman script that is rendered using by the proposed characters (meant for encoding)

Apart from script, its corresponding English equivalent words are provided for better understanding of the representation.

In addition to above, the proposed code point of each script is also depicted, in the highlighted area. [Each code point word pair is delimited with //]


Note: In the above chart, the words (The, to, and) are represented using the Dot and Dash Vowels (with specific orientation) as these three words are grammalogues and their pitman stenem is called Logogram in Pitman Shorthand. They do not have separate characters defined. [Refer references section]

## Representation 2: << Based on comments from Stanislav Jan Šarman >>

1.1. Running script: This is the running text this is represented using the proposed code points. The running scripts is as below;
"You will be able to"
1.2. Running script representation using standard Pitman Script

1.3. In the below section, we see the code point representation of the running script. In this section, we see the Pitman script that is rendered using by the proposed characters (meant for encoding)

Apart from script, its corresponding English equivalent words are provided for better understanding of the representation.

In addition to above, the proposed code point of each script is also depicted, in the highlighted area. [Each code point word pair is delimited with //]


Note: In the above chart, the word <be> is represented using Pitman Letter BEE and the word <to> using Dash Vowel (with specific orientation) as these two words are grammalogues and their pitman stenem is called Logogram in Pitman Shorthand. They do not have separate characters defined. [Refer references section]

## Character ordering

Characters are ordered by straight strokes starting from slanting left and progressing clockwise towards horizontal strokes followed by slanting strokes which are defined in Column 1 in the allocation table.
Thereafter it starts with curved horizontal strokes and then followed by curved strokes progressing from left to right direction which are ordered in column 2 in the allocation table. Then the vowels, diphthongs and other combined vowels defined in column 3. Thereafter, hooks, circles, loops are defined from column 4 thru 6 . Most of the compound consonants are defined in column 7. Lastly the halved and doubled consonants are defined from column 8 thru 11.

This allocation provides for all characters needed for Pitman English scripts. Some codes points in the block are left unallocated for addition of other languages characters to be provided for in future.

## Stenographic period

Unicode has already encoded stenographic full stop U+2E3C STENOGRAPHIC FULL STOP which conveniently be used for rendering Pitman script as there are no other characters in Pitman stenography which resembles this character.

However, there is a separate character available in Pitman Shorthand for the purpose of writing the period (full stop) which is used for easy writing. This character is also proposed for encoding ( $\mathrm{U}+2 \mathrm{E} 43$ )

## Punctuation marks

Like punctuation marks in English, there are a few punctuation marks available for Pitman Shorthand. They are proposed for encoding and are available as a separate code block U+2E43..U+2E4D.

## Fonts

Characters that are proposed needs to be made available as Fonts for the purpose of encoding and publication of charts. This is being pursed and worked on in parallel.

## Pitman Rendering Model

Vowels in Pitman shorthand are indicated by small dot or dash along the consonant script. Mostly, the vowels are not joined to consonants but in certain cases can be joined for convenience purpose only, provided joining does not give them a different meaning.

## Orientation of Diphthongs:

All dash vowels in Pitman shorthand are written perpendicular to straight scripts with respect to their position as decided by the sound. Apart from dot and dash vowels there are special vowels called diphthongs but they take either $1^{\text {st }}$ or $3^{\text {rd }}$ position and there is no second position. There are 4 diphthongs in Pitman shorthand which are either joined or disjoined with consonant scripts. The diphthong EW, normally orient itself conveniently with the curved strokes. For example, when attached with words like few, mew, new, value etc.

Table: $\mathbf{1 \rightarrow}$ Orientation of Diphthongs


## Compound vowels

Combining two consecutive vowels sound are referred to compounding vowels. In Pitman shorthand, there are quite a few words which require a compounding vowel when written as Pitman script. Compound vowels can be of two types i.e., combining two vowels or combining a diphthong and a vowel. There former kind of compounding is referred to as Diphone and the latter referred to a Triphone. Diphone is written in two directions (down-left or up-right) depending upon whether the first occurring vowel is a dot vowel or a dash vowel consecutively. Vowel in a Triphone is always as a dash combined with a diphthong but in the obverse direction of diphthong.

Table: $\mathbf{2} \boldsymbol{\rightarrow}$ Compounding of Vowels (Diphone and Triphone)

| $/$ |  | 1 |  | $\smile$ | $\longrightarrow$ | 1 | $J+A a l+N G$ |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\checkmark$ | $\pm$ | $\checkmark$ | $\longrightarrow$ | $N$ | $\mathbf{W}+\mathrm{Ael}+\mathrm{NG}$ |
|  |  | $n$ | $\pm$ | 1 | $\longrightarrow$ |  | $D+I A+R$ |
|  |  | $z$ | + | $\Gamma$ | $\longrightarrow$ |  | $L+O \ A+L$ |
|  |  | $N$ | + |  | $\longrightarrow$ |  | T + OWA + R |
|  |  | $\sim$ | + |  | $\longrightarrow$ |  | $F+U A+R$ |

## Ligatures, Allograph, Variants and Affixes

The 'H' aspirate pronounced "HAY" is the allograph in Pitman Script. There are two forms of H in Pitman script. The different forms are used based on rules and according to the convenience of joining the stroke with other consonants.

Variants are alternative forms of scripts in Pitman shorthand. They are used in specific cases where convenience of joining strokes cursively, are required. Also they follow certain rules based on which it has to be decided whether the variant forms should be used or the full-form should be used.

Table: $3 \boldsymbol{\rightarrow}$ Ligatures, Variants, Allograph
Allograph (H Aspirate)


## Variants



Ligatures are forms which combines more than one script into a single gylph. In Pitman shorthand, there are many ligatures defined for the purpose of easy writing, combining with other stokes and also following rules under which these ligatures are to be used. Ligatures in Pitman are Discretionary ones.

## Ligatures (Discretionary)



Affixes are used in Pitman shorthand for the purpose of representing W (WAY). They are joined and also disjoined.

## Affixes



## Orientation of Hooks:

In Pitman Shorthand, there are many hooks which are affixed to both straight and curved consonants. They are deemed to be variants of consonant characters, which are used subject to certain defined conditions. They are used for easy formation of strokes. These hooks do not have any meaning in isolation.

For the purpose of encoding these hooks, only two categories of hook are defined. One hook is for straight consonant (Letter TEE or DEE) and the other for curved consonant (Letter EM). These two hooks are taken as reference points in this proposal. They can be oriented in different angles (rotated, vertically or horizontally flipped) for creating hooks to be used with other consonants.

Table: $4 \rightarrow$ Hooks (R, L, N, F/V, SHUN)

## R Hook:

|  | + |  | $\longrightarrow$ | $\uparrow$ | TEE + R Hook |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | $\pm$ | $c$ | $\longrightarrow$ | $\searrow$ | PEE + R Hook |
| / | + | $n$ | $\longrightarrow$ | $7$ | JAY + R Hook |
|  | + | $\checkmark$ | $\rightarrow$ | $\bigcirc$ | EM + R Hook |
|  | + | $n$ | $\rightarrow$ | 2 | ISH + R Hook |
|  | $\pm$ | $\cdots$ | $\longrightarrow$ | C | VEE + R Hook |

## L Hook:



N Hook:

| 1 | + | $\checkmark$ | $\rightarrow$ | $J$ | TEE + N Hook |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\lambda$ | + | $\checkmark$ | $\rightarrow$ | $\rangle$ | PEE + N Hook |
| $/$ | + | $\checkmark$ | $\longrightarrow$ | $J$ | JAY + N Hook |
| - | + | $\checkmark$ | $\longrightarrow$ | $\bigcirc$ | EM + N Hook |
| $\checkmark$ | + | c | $\longrightarrow$ | $\checkmark$ | ISH + N Hook |
| V | + | , | $\longrightarrow$ | V | VEE + N Hook |



Shun Hook:


## Orientation of Loops:

There are two types of loops in Pitman Shorthand. They are ST Loop and STR Loop. These loops can be affixed or joined to both straight and curved consonants subject to certain defined conditions. As like hooks, they are also used for easy formation of strokes. They are a form of glyph that represents the sound of two consonants (ESS + TEE for ST Loop) or three consonants (ESS + TEE + AR for STR Loop). These loops do not have any meaning in isolation

For the purpose of encoding these loops, only two orientations of ST and STR loops each, are defined. One orientation is for straight consonants (Letter TEE or DEE) and the other orientation is for curved consonant (Letter EM)

These two orientations are taken as reference points in this proposal. They can be oriented in different angles (rotated, vertically or horizontally flipped) for creating loops to be used with other consonants.

Table: $5 \boldsymbol{\rightarrow}$ Loops (ST\& STR)
ST Loop:

|  | + | ) | $\longrightarrow$ | $b$ | TEE + ST Loop |
| :---: | :---: | :---: | :---: | :---: | :---: |
|  | + | ) | $\longrightarrow$ | $\bigcirc$ | PEE + ST Loop |
|  | + | J | $\rightarrow$ | $b$ | JAY + ST Loop |
|  | + | $\cdots$ | $\longrightarrow$ | 0 | EM + ST Loop |
| ) | + | C | $\longrightarrow$ | $\partial$ | ESS + ST Loop |
|  | + | $\bigcirc$ | $\longrightarrow$ | $b$ | VEE + ST Loop |

STR Loop:

| 1 | + | ) | $\longrightarrow$ | $b$ | TEE + STR Loop |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $\backslash$ | + | 7 | $\longrightarrow$ | $\bigcirc$ | PEE + STR Loop |
| / | $+$ | $J$ | $\longrightarrow$ | $b$ | JAY + STR Loop |
| $\sim$ | + | $\checkmark$ | $\longrightarrow$ | O | EM + STR Loop |
| ) | $+$ | $C$ | $\longrightarrow$ | $\lambda$ | ESS + STR Loop |
| $\checkmark$ | + | 7 | $\longrightarrow$ | $b$ | VEE + STR Loop |

## Orientation of Dash vowels:

There are two types of vowels used in Pitman Shorthand (Dot and Dash Vowel) which are described above and proposed for encoding. Dot Vowel does not have any orientation but Dash Vowel orients themselves with the consonants to which are related. Orientation of Dash Vowel depends on the position (three positions) in which they are written. Also, its orientation varies when they are written before or after the consonant characters (more particularly when used along with curved consonants). There are no variations in orientation of light and heavy Dash Vowel.

Table: $6 \rightarrow$ Orientation of Dash Vowel (Light and Heavy Dash)

| \| | + | ZWNJ | + | - | -1 | $\mathrm{DASH}_{2}+$ TEE |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| $\backslash$ | + | ZWNJ | + | $\longrightarrow$ | V | PEE + $\mathrm{DASH}_{3}$ |
| / | + | ZWNJ | + | $\rightarrow$ | 1 | $\mathbf{J A Y}+\mathrm{DASH}_{1}$ |
| - | + | ZWNJ | + | $\longrightarrow$ | 1 | $\mathrm{DASH}_{1}+\mathrm{KAY}$ |
| $\bigcirc$ | + | ZWNJ | + | $\rightarrow$ | $\bigcirc$ | $\mathrm{EM} \mathrm{+} \mathrm{DASH}_{3}$ |
| $\sim$ | + | ZWNJ | + | $\rightarrow$ | $\bigcirc$ | $\mathrm{DASH}_{1}+\mathrm{EM}$ |
| $\checkmark$ | + | ZWNJ | + | $\rightarrow$ | $\longleftarrow$ | VEE + DASH ${ }_{1}$ |
| ) | + | ZWNJ | + | - $\longrightarrow$ | $)-$ | ESS + $\mathrm{DASH}_{2}$ |
| $\checkmark$ | + | ZWNJ | + |  | $\cdots$ | WAY + DASH $\mathbf{2}^{2}$ |
| $\Gamma$ | + | ZWNJ | + | $\rightarrow$ | ${ }^{1}$ | $\mathrm{DASH}_{3}+\mathrm{EL}$ |

Note: The subscript 1, 2, 3 given under the description (DASH) refers to the vowel position in relation to the consonant. The vowel appears either before or after the consonant. The vowel does not carry any meaning in isolation.

## References

Representation of Vowels and Diphthongs


Example 1:

Examples, that were extracted from the below website.
http://www.jstor.org/stable/6553?seq=3\#page scan tab contents

According to Isaac Pitman's analysis, there are forty sounds in the English language, twenty-four consonants, twelve simple vowels, and four diphthongs, or double vowels. Adopting (substantially) the Pitmanic symbols, we may represent these sounds as below.

Consonants
$\backslash=\mathrm{p}$ as in pop
\} = \mathrm { b } as in bob
$\mid=\mathrm{t}$ as in tat
$\boldsymbol{I}=\mathrm{d}$ as in did
$/=$ ch as in church
/ $=\mathbf{j}$ as in judge
—二 k as in kick

- = g as in gig
$l^{\prime}=\mathbf{f}$ as in fife
$v=v$ as in vivid

Vowels (Single)
(The vertical line is not a part of the vowel symbol, but is used to represent any consonant stroke. A vowel symbol, as a heavy or light dot, stands for different sounds according to its position.)
$\left.\right|^{\bullet}=$ a as in pa

- = a as in may
. $=\mathrm{e}$ as in we
$\Gamma^{-}=\mathrm{a}$ as in all

http://www.jstor.org/stable/6553?seq=3\#page scan tab contents

Below is a classic example for the (Representations using proposed code points) provided above. The representation provided in (Page \# 9 and \#10) is based on proposed characters which are only base consonants, vowels and dipthongs. The examples provided in the below screen also adhere to the representation model.

| $\cup^{v}$ | ${ }^{-}$ |
| :---: | :---: |
| $L^{2}-\Gamma$ | $\Gamma-$ |
| (.) 1 | $-1$ |
| (*) | $r$ l |
| L | $r$ ) |
| 91 | - - |
| $9^{*}$ | - - - |
| $v^{v}$ | $) \backslash$ |



http://www.forgottenbooks.com/readbook text/Course in Isaac Pitman Shorthand an Exposition of the Authors System of 1000690820/249

| ADAPTATIONS OP ISAAC PITMAN'S PnONOGRAPllY TO FOREIGN LANGUAGES. <br> Taquigrafia B'spanola de Isaac Pitman. 119 pp ., cloth, gilt, 81.30. Aflaptaríiii A la Lengua Espanola del Sistcma de Foiidsrafia del Alitor. <br> Para iiso de Escuelas <br> de Comercio, Institutes y tambien para Estudio Pesonal. Being an Adaptation of Isaac Pitman's Shorthand to the Spanish Language. <br> Key to Taquigrafia Espanola. Cloth, gilt, \$1.10. With additional Exercises. <br> Spanish Phonography. By G. Parody. <br> $\$ 1.25$. <br> Spanish Shorthand Commercial Correspondence. An adaptation of Pitman's Shorthand to the Spanish Language. <br> 56 pp .75 c . <br> French Phonography. 50c.; cloth, eOc. Third edition. Revised and enlarged. An adaptation of Phonography to the French language. By T. A. Reed. | Stenographie Pitman. Par Spencer Herbert. An adaptation of Isaac Pitman's Phonography to the French language. Cloth, $\$ 1.25$. <br> French Shorthand Commercial Correspondence. Cloth, 89 pp ., 75 c . A Series of Business Letters in French Phonography, with type Key. <br> German Phonography. Crown 8vo, $64 \mathrm{pp} ., 60 \mathrm{c}$. ; cloth 753. An adaptation of Phonography to tlie German language. Manuale di Fonografia Italiana. 60c. An Adaptation of Phonography to the Italian language. By Giuseppe Francini. <br> Dutch Phonography. $\$ 1.50$. An Adaptation of Phonography to the Dutch language. By F. De Haan. Pitman's Phonography adapted to Esperanto. Limp cloth, 50 c . <br> Manual of Latin Phonography. \$1.00. An adaptation of Isaac Pitman's Shorthand to the Latin language. By Rev. W. Tatlock, S.J. <br> Japanese Phonography. Complete. <br> \$1,00. |
| :---: | :---: |

## APPENDIX - A

Characters proposed in $[\mathbf{L 2} / \mathbf{1 5 - 1 1 6 r}]$ that were identified as contextual forms of underlying letters by script ad hoc group (UTC \# 145) during their review of this document.
http://www.unicode.org/L2/L2015/15116r-pitman.pdf

| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 43 | $\bigcirc$ | PITMAN HEAVY R HOOK FOR LETTER TEE and DEE |
| 45 | $\checkmark$ | PITMAN HEAVY R HOOK FOR LETTER EM |
| 47 | $n$ | PITMAN HEAVY L HOOK FOR LETTER TEE and DEE |
| 49 | $\checkmark$ | PITMAN HEAVY L HOOK FOR LETTER EM |
| 51 | $\checkmark$ | PITMAN HEAVY $\mathbf{N}$ Hook for letter TEE and DEe |
| 53 | , | PITMAN HEAVY N HOOK FOR LETTER EM |
| 55 | $\checkmark$ | PITMAN HEAVY F or V HOOK FOR LETTER TEE and DEE |
| 57 | $\checkmark$ | PITMAN HEAVY SHUN Hook left Motion for letter tee and DEe |
| 59 | $\checkmark$ | PITMAN HEAVY SHUN HOOK RIGHT MOTION FOR LETTER TEE and DEE |
| 61 | $\checkmark$ | PITMAN HEAVY SHUN HOOK FOR LETTER EM |
| 63 | $\bigcirc$ | PITMAN FINAL HEAVY SHUN HOOK FOLLOWING CIRCLE ES |


| SL \# | Pitman Character | Character Name |
| :---: | :---: | :---: |
| 65 | ๑ | PITMAN FINAL HEAVY SHUN HOOK FOLLOWING CIRCLE ES WITH ADDED ES CIRCLE |
| 71 | ) | PITMAN HEAVY ST LOOP FOR LETTER TEE and DEE |
| 73 | $\checkmark$ | PITMAN HEAVY ST LOOP INITIAL FOR LETTER EM |
| 75 | $\checkmark$ | PITMAN HEAVY ST LOOP FINAL FOR LETTER EM |
| 77 | ) | PITMAN HEAVY STR LOOP FOR LETTER TEE and DEE |
| 79 | $\checkmark$ | PITMAN HEAVY STR LOOP FOR LETTER EM |
| 81 | 0 | PITMAN HEAVY SMALL CIRCLE |
| 83 | $\bigcirc$ | PITMAN HEAVY LARGE CIRCLE |
| 85 | c | PITMAN INITIAL HEAVY W HOOK FOR LETTER GAY |

## APPENDIX - B

Characters proposed in [L2/15-116r] http://www.unicode.org/L2/L2015/15116r-pitman.pdf

| SL\# | Pitman <br> Character | Character Name |
| :---: | :---: | :--- |
| 67 | 0 | PITMAN SMALL CIRCLE ATTACHED TO HOOKS FOR CURVED STROKES |
| 68 | 0 | PITMAN BIG CIRCLE ATTACHED TO HOOKS FOR STRAIGHT STROKES |
| 69 | 0 | PITMAN BIG CIRCLE ATTACHED TO HOOKS FOR CURVED STROKES |

## Link to websites for further reading/reference

http://www.long-live-pitmans-shorthand.org.uk/
http://pitmanshorthand.homestead.com/PitmanBooks.html
http://pitmanshorthand.homestead.com/
http://www.britannica.com/EBchecked/topic/541788/shorthand/53187/Modern-symbol-systems
http://www.jstor.org/stable/6553?seq=1\#page scan tab contents
FRENCH PHONOGRAPHY: An Adaptation of PITMAN'S PHONETIC SHORTHAND to the FRENCH @ https://archive.org/stream/frenchphonograph00reediala\#page/n5/mode/2up

German shorthand = Deutsche Kurzschrift : an adaptation of Pitman's shorthand to German language http://trove.nla.gov.au/work/18296303?selectedversion=NBD3458594

Esperanto shorthand: An adaptation of Pitman's shorthand to Esperanto. (Eldonita laulœ⿷ la afabla permeso de Sir Isaac Pitman \& Sons, Itd.)
http://www.amazon.com/Esperanto-shorthand-adaptation-Esperanto-Eldonita/dp/B0008CCZTE
Stenografia Italiana;: Italian shorthand, an adaptation of Pitman's shorthand to the Italian language http://www.amazon.com/Stenografia-Italiana-shorthand-adaptation-explanations/dp/B0008A8FPE

Pitman's shorthand adapted to Sinhala
http://www.amazon.co.uk/372/dp/B0000CMJV7
Pitman's shorthand adapted to Malay.
http://www.worldcat.org/title/pitmans-shorthand-adapted-to-malay/oclc/221194641
http://lib.sabah.uitm.edu.my/webopac20/Record/0000022598
Pitman shorthand adapted to Swahili
http://maktaba.ku.ac.ke/cgi-bin/koha/opac-detail.pl?biblionumber=61733

