

Greek Language Support for X_YLaTeX and LuaLaTeX

Apostolos Syropoulos
Xanthi, Greece
asyropoulos@yahoo.com

2009/11/23
Last Updated 2022/08/22

Abstract

The `xgreek` package provides rudimentary support for Greek language typesetting with X_YLaTeX and LuaLaTeX. In particular, it provides support for modern Greek (either monotonic or polytonic) and ancient Greek.

1 Introduction

The `xgreek` package provides rudimentary support for Greek language typesetting with X_YLaTeX and LuaLaTeX. Users will be able to typeset documents in either modern Greek (monotonic or polytonic) or ancient Greek by selecting the appropriate package option. The default “language” is monotonic Greek.

Support for LuaLaTeX was provided by Javier Bezos.

2 The Source Code

According to the Unicode standard

<http://www.unicode.org/Public/UNIDATA/UnicodeData.txt>

the uppercase form of GREEK SMALL LETTER EPSILON WITH TONOS is GREEK CAPITAL LETTER ETA WITH TONOS. This is certainly wrong. The main reason is that accents are not part of the letter as for example is the case with LATIN SMALL LETTER K WITH CARON. Since, X_YLaTeX blindly follows the Unicode standard, commands like `\MakeUppercase` produce wrong output. For this reason I first need to set up the correct `\uccodes` and `\lccodes`.

```
1 \langle *xgreek \rangle
2 \message{Package 'xgreek' version 3.1.0 by Apostolos Syropoulos}
3 \global\lccode"0370="0371 \global\uccode"0370="0370
4 \global\lccode"0371="0371 \global\uccode"0371="0370
```

5 \global\lccode"0372="0373 \global\uccode"0372="0372
 6 \global\lccode"0373="0373 \global\uccode"0373="0372
 7 \global\lccode"0376="0377 \global\uccode"0376="0376
 8 \global\lccode"0377="0377 \global\uccode"0377="0376
 9 \global\lccode"03FD="037B \global\uccode"03FD="03FD
 10 \global\lccode"037B="037B \global\uccode"037B="03FD
 11 \global\lccode"03FE="037C \global\uccode"03FE="03FE
 12 \global\lccode"037C="037C \global\uccode"037C="03FE
 13 \global\lccode"03FF="037D \global\uccode"03FF="03FF
 14 \global\lccode"037D="037D \global\uccode"037D="03FF
 15 \global\lccode"0386="03AC \global\uccode"0386="0391
 16 \global\lccode"0388="03AD \global\uccode"0388="0395
 17 \global\lccode"0389="03AC \global\uccode"0389="0397
 18 \global\lccode"038A="03AF \global\uccode"038A="0399
 19 \global\lccode"038C="03CC \global\uccode"038C="039F
 20 \global\lccode"038E="03CD \global\uccode"038E="03A5
 21 \global\lccode"038F="03CE \global\uccode"038F="03A9
 22 \global\lccode"0390="0390 \global\uccode"0390="03AA
 23 \global\lccode"0391="03B1 \global\uccode"0391="0391
 24 \global\lccode"0392="03B2 \global\uccode"0392="0392
 25 \global\lccode"0393="03B3 \global\uccode"0393="0393
 26 \global\lccode"0394="03B4 \global\uccode"0394="0394
 27 \global\lccode"0395="03B5 \global\uccode"0395="0395
 28 \global\lccode"0396="03B6 \global\uccode"0396="0396
 29 \global\lccode"0397="03B7 \global\uccode"0397="0397
 30 \global\lccode"0398="03B8 \global\uccode"0398="0398
 31 \global\lccode"0399="03B9 \global\uccode"0399="0399
 32 \global\lccode"039A="03BA \global\uccode"039A="039A
 33 \global\lccode"039B="03BB \global\uccode"039B="039B
 34 \global\lccode"039C="03BC \global\uccode"039C="039C
 35 \global\lccode"039D="03BD \global\uccode"039D="039D
 36 \global\lccode"039E="03BE \global\uccode"039E="039E
 37 \global\lccode"039F="03BF \global\uccode"039F="039F
 38 \global\lccode"03A0="03C0 \global\uccode"03A0="03A0
 39 \global\lccode"03A1="03C1 \global\uccode"03A1="03A1
 40 \global\lccode"03A3="03C3 \global\uccode"03A3="03A3
 41 \global\lccode"03A4="03C4 \global\uccode"03A4="03A4
 42 \global\lccode"03A5="03C5 \global\uccode"03A5="03A5
 43 \global\lccode"03A6="03C6 \global\uccode"03A6="03A6
 44 \global\lccode"03A7="03C7 \global\uccode"03A7="03A7
 45 \global\lccode"03A8="03C8 \global\uccode"03A8="03A8
 46 \global\lccode"03A9="03C9 \global\uccode"03A9="03A9
 47 \global\lccode"03AA="03CA \global\uccode"03AA="03AA
 48 \global\lccode"03AB="03CB \global\uccode"03AB="03AB
 49 \global\lccode"03AC="03AC \global\uccode"03AC="0391
 50 \global\lccode"03AD="03AD \global\uccode"03AD="0395
 51 \global\lccode"03AE="03AE \global\uccode"03AE="0397
 52 \global\lccode"03AF="03AF \global\uccode"03AF="0399
 53 \global\lccode"03B0="03B0 \global\uccode"03B0="03AB
 54 \global\lccode"03B1="03B1 \global\uccode"03B1="0391

55 \global\lccode"03B2="03B2 \global\uccode"03B2="0392
56 \global\lccode"03B3="03B3 \global\uccode"03B3="0393
57 \global\lccode"03B4="03B4 \global\uccode"03B4="0394
58 \global\lccode"03B5="03B5 \global\uccode"03B5="0395
59 \global\lccode"03B6="03B6 \global\uccode"03B6="0396
60 \global\lccode"03B7="03B7 \global\uccode"03B7="0397
61 \global\lccode"03B8="03B8 \global\uccode"03B8="0398
62 \global\lccode"03B9="03B9 \global\uccode"03B9="0399
63 \global\lccode"03BA="03BA \global\uccode"03BA="039A
64 \global\lccode"03BB="03BB \global\uccode"03BB="039B
65 \global\lccode"03BC="03BC \global\uccode"03BC="039C
66 \global\lccode"03BD="03BD \global\uccode"03BD="039D
67 \global\lccode"03BE="03BE \global\uccode"03BE="039E
68 \global\lccode"03BF="03BF \global\uccode"03BF="039F
69 \global\lccode"03C0="03C0 \global\uccode"03C0="03A0
70 \global\lccode"03C1="03C1 \global\uccode"03C1="03A1
71 \global\lccode"03C2="03C2 \global\uccode"03C2="03A3
72 \global\lccode"03C3="03C3 \global\uccode"03C3="03A3
73 \global\lccode"03C4="03C4 \global\uccode"03C4="03A4
74 \global\lccode"03C5="03C5 \global\uccode"03C5="03A5
75 \global\lccode"03C6="03C6 \global\uccode"03C6="03A6
76 \global\lccode"03C7="03C7 \global\uccode"03C7="03A7
77 \global\lccode"03C8="03C8 \global\uccode"03C8="03A8
78 \global\lccode"03C9="03C9 \global\uccode"03C9="03A9
79 \global\lccode"03CA="03CA \global\uccode"03CA="03AA
80 \global\lccode"03CB="03CB \global\uccode"03CB="03AB
81 \global\lccode"03CC="03CC \global\uccode"03CC="039F
82 \global\lccode"03CD="03CD \global\uccode"03CD="03A5
83 \global\lccode"03CE="03CE \global\uccode"03CE="03A9
84 \global\lccode"03D0="03D0 \global\uccode"03D0="0392
85 \global\lccode"03D1="03D1 \global\uccode"03D1="0398
86 \global\lccode"03D2="03C5 \global\uccode"03D2="03A5
87 \global\lccode"03D3="03CD \global\uccode"03D3="03A5
88 \global\lccode"03D4="03CB \global\uccode"03D4="03AB
89 \global\lccode"03D5="03C6 \global\uccode"03D5="03A6
90 \global\lccode"03D6="03C0 \global\uccode"03D6="03A0
91 \global\lccode"03DA="03DB \global\uccode"03DA="03DA
92 \global\lccode"03DB="03DB \global\uccode"03DB="03DA
93 \global\lccode"03DC="03DD \global\uccode"03DC="03DC
94 \global\lccode"03DD="03DD \global\uccode"03DD="03DC
95 \global\lccode"03DE="03DF \global\uccode"03DE="03DE
96 \global\lccode"03DF="03DF \global\uccode"03DF="03DE
97 \global\lccode"03E0="03E1 \global\uccode"03E0="03E0
98 \global\lccode"03E1="03E1 \global\uccode"03E1="03E0
99 \global\lccode"03F0="03BA \global\uccode"03F0="039A
100 \global\lccode"03F1="03C1 \global\uccode"03F1="03A1
101 \global\lccode"03F2="03F2 \global\uccode"03F2="03F9
102 \global\lccode"03F9="03F2 \global\uccode"03F9="03F9
103 \global\lccode"1F00="1F00 \global\uccode"1F00="0391
104 \global\lccode"1F01="1F01 \global\uccode"1F01="0391

```

105 \global\lccode"1F02="1F02 \global\uccode"1F02="0391
106 \global\lccode"1F03="1F03 \global\uccode"1F03="0391
107 \global\lccode"1F04="1F04 \global\uccode"1F04="0391
108 \global\lccode"1F05="1F05 \global\uccode"1F05="0391
109 \global\lccode"1F06="1F06 \global\uccode"1F06="0391
110 \global\lccode"1F07="1F07 \global\uccode"1F07="0391
111 \global\lccode"1F08="1F00 \global\uccode"1F08="0391
112 \global\lccode"1F09="1F01 \global\uccode"1F09="0391
113 \global\lccode"1F0A="1F02 \global\uccode"1F0A="0391
114 \global\lccode"1F0B="1F03 \global\uccode"1F0B="0391
115 \global\lccode"1F0C="1F04 \global\uccode"1F0C="0391
116 \global\lccode"1F0D="1F05 \global\uccode"1F0D="0391
117 \global\lccode"1F0E="1F06 \global\uccode"1F0E="0391
118 \global\lccode"1F0F="1F07 \global\uccode"1F0F="0391
119 \global\lccode"1F10="1F10 \global\uccode"1F10="0395
120 \global\lccode"1F11="1F11 \global\uccode"1F11="0395
121 \global\lccode"1F12="1F12 \global\uccode"1F12="0395
122 \global\lccode"1F13="1F13 \global\uccode"1F13="0395
123 \global\lccode"1F14="1F14 \global\uccode"1F14="0395
124 \global\lccode"1F15="1F15 \global\uccode"1F15="0395
125 \global\lccode"1F18="1F10 \global\uccode"1F18="0395
126 \global\lccode"1F19="1F11 \global\uccode"1F19="0395
127 \global\lccode"1F1A="1F12 \global\uccode"1F1A="0395
128 \global\lccode"1F1B="1F13 \global\uccode"1F1B="0395
129 \global\lccode"1F1C="1F14 \global\uccode"1F1C="0395
130 \global\lccode"1F1D="1F15 \global\uccode"1F1D="0395
131 \global\lccode"1F20="1F20 \global\uccode"1F20="0397
132 \global\lccode"1F21="1F21 \global\uccode"1F21="0397
133 \global\lccode"1F22="1F22 \global\uccode"1F22="0397
134 \global\lccode"1F23="1F23 \global\uccode"1F23="0397
135 \global\lccode"1F24="1F24 \global\uccode"1F24="0397
136 \global\lccode"1F25="1F25 \global\uccode"1F25="0397
137 \global\lccode"1F26="1F26 \global\uccode"1F26="0397
138 \global\lccode"1F27="1F27 \global\uccode"1F27="0397
139 \global\lccode"1F28="1F20 \global\uccode"1F28="0397
140 \global\lccode"1F29="1F21 \global\uccode"1F29="0397
141 \global\lccode"1F2A="1F22 \global\uccode"1F2A="0397
142 \global\lccode"1F2B="1F23 \global\uccode"1F2B="0397
143 \global\lccode"1F2C="1F24 \global\uccode"1F2C="0397
144 \global\lccode"1F2D="1F25 \global\uccode"1F2D="0397
145 \global\lccode"1F2E="1F26 \global\uccode"1F2E="0397
146 \global\lccode"1F2F="1F27 \global\uccode"1F2F="0397
147 \global\lccode"1F30="1F30 \global\uccode"1F30="0399
148 \global\lccode"1F31="1F31 \global\uccode"1F31="0399
149 \global\lccode"1F32="1F32 \global\uccode"1F32="0399
150 \global\lccode"1F33="1F33 \global\uccode"1F33="0399
151 \global\lccode"1F34="1F34 \global\uccode"1F34="0399
152 \global\lccode"1F35="1F35 \global\uccode"1F35="0399
153 \global\lccode"1F36="1F36 \global\uccode"1F36="0399
154 \global\lccode"1F37="1F37 \global\uccode"1F37="0399

```

```

155 \global\lccode"1F38="1F30 \global\uccode"1F38="0399
156 \global\lccode"1F39="1F31 \global\uccode"1F39="0399
157 \global\lccode"1F3A="1F32 \global\uccode"1F3A="0399
158 \global\lccode"1F3B="1F33 \global\uccode"1F3B="0399
159 \global\lccode"1F3C="1F34 \global\uccode"1F3C="0399
160 \global\lccode"1F3D="1F35 \global\uccode"1F3D="0399
161 \global\lccode"1F3E="1F36 \global\uccode"1F3E="0399
162 \global\lccode"1F3F="1F37 \global\uccode"1F3F="0399
163 \global\lccode"1F40="1F40 \global\uccode"1F40="039F
164 \global\lccode"1F41="1F41 \global\uccode"1F41="039F
165 \global\lccode"1F42="1F42 \global\uccode"1F42="039F
166 \global\lccode"1F43="1F43 \global\uccode"1F43="039F
167 \global\lccode"1F44="1F44 \global\uccode"1F44="039F
168 \global\lccode"1F45="1F45 \global\uccode"1F45="039F
169 \global\lccode"1F48="1F40 \global\uccode"1F48="039F
170 \global\lccode"1F49="1F41 \global\uccode"1F49="039F
171 \global\lccode"1F4A="1F42 \global\uccode"1F4A="039F
172 \global\lccode"1F4B="1F43 \global\uccode"1F4B="039F
173 \global\lccode"1F4C="1F44 \global\uccode"1F4C="039F
174 \global\lccode"1F4D="1F45 \global\uccode"1F4D="039F
175 \global\lccode"1F50="1F50 \global\uccode"1F50="03A5
176 \global\lccode"1F51="1F51 \global\uccode"1F51="03A5
177 \global\lccode"1F52="1F52 \global\uccode"1F52="03A5
178 \global\lccode"1F53="1F53 \global\uccode"1F53="03A5
179 \global\lccode"1F54="1F54 \global\uccode"1F54="03A5
180 \global\lccode"1F55="1F55 \global\uccode"1F55="03A5
181 \global\lccode"1F56="1F56 \global\uccode"1F56="03A5
182 \global\lccode"1F57="1F57 \global\uccode"1F57="03A5
183 \global\lccode"1F59="1F51 \global\uccode"1F59="03A5
184 \global\lccode"1F5B="1F53 \global\uccode"1F5B="03A5
185 \global\lccode"1F5D="1F55 \global\uccode"1F5D="03A5
186 \global\lccode"1F5F="1F57 \global\uccode"1F5F="03A5
187 \global\lccode"1F60="1F60 \global\uccode"1F60="03A9
188 \global\lccode"1F61="1F61 \global\uccode"1F61="03A9
189 \global\lccode"1F62="1F62 \global\uccode"1F62="03A9
190 \global\lccode"1F63="1F63 \global\uccode"1F63="03A9
191 \global\lccode"1F64="1F64 \global\uccode"1F64="03A9
192 \global\lccode"1F65="1F65 \global\uccode"1F65="03A9
193 \global\lccode"1F66="1F66 \global\uccode"1F66="03A9
194 \global\lccode"1F67="1F67 \global\uccode"1F67="03A9
195 \global\lccode"1F68="1F60 \global\uccode"1F68="03A9
196 \global\lccode"1F69="1F61 \global\uccode"1F69="03A9
197 \global\lccode"1F6A="1F62 \global\uccode"1F6A="03A9
198 \global\lccode"1F6B="1F63 \global\uccode"1F6B="03A9
199 \global\lccode"1F6C="1F64 \global\uccode"1F6C="03A9
200 \global\lccode"1F6D="1F65 \global\uccode"1F6D="03A9
201 \global\lccode"1F6E="1F66 \global\uccode"1F6E="03A9
202 \global\lccode"1F6F="1F67 \global\uccode"1F6F="03A9
203 \global\lccode"1F70="1F70 \global\uccode"1F70="0391
204 \global\lccode"1F71="1F71 \global\uccode"1F71="0391

```

205 \global\lccode"1F72="1F72 \global\uccode"1F72="0395
 206 \global\lccode"1F73="1F73 \global\uccode"1F73="0395
 207 \global\lccode"1F74="1F74 \global\uccode"1F74="0397
 208 \global\lccode"1F75="1F75 \global\uccode"1F75="0397
 209 \global\lccode"1F76="1F76 \global\uccode"1F76="0399
 210 \global\lccode"1F77="1F77 \global\uccode"1F77="0399
 211 \global\lccode"1F78="1F78 \global\uccode"1F78="039F
 212 \global\lccode"1F79="1F79 \global\uccode"1F79="039F
 213 \global\lccode"1F7A="1F7A \global\uccode"1F7A="03A5
 214 \global\lccode"1F7B="1F7B \global\uccode"1F7B="03A5
 215 \global\lccode"1F7C="1F7C \global\uccode"1F7C="03A9
 216 \global\lccode"1F7D="1F7D \global\uccode"1F7D="03A9
 217 \global\lccode"1F80="1F80 \global\uccode"1F80="1FBC
 218 \global\lccode"1F81="1F81 \global\uccode"1F81="1FBC
 219 \global\lccode"1F82="1F82 \global\uccode"1F82="1FBC
 220 \global\lccode"1F83="1F83 \global\uccode"1F83="1FBC
 221 \global\lccode"1F84="1F84 \global\uccode"1F84="1FBC
 222 \global\lccode"1F85="1F85 \global\uccode"1F85="1FBC
 223 \global\lccode"1F86="1F86 \global\uccode"1F86="1FBC
 224 \global\lccode"1F87="1F87 \global\uccode"1F87="1FBC
 225 \global\lccode"1F88="1F80 \global\uccode"1F88="1FBC
 226 \global\lccode"1F89="1F81 \global\uccode"1F89="1FBC
 227 \global\lccode"1F8A="1F82 \global\uccode"1F8A="1FBC
 228 \global\lccode"1F8B="1F83 \global\uccode"1F8B="1FBC
 229 \global\lccode"1F8C="1F84 \global\uccode"1F8C="1FBC
 230 \global\lccode"1F8D="1F85 \global\uccode"1F8D="1FBC
 231 \global\lccode"1F8E="1F86 \global\uccode"1F8E="1FBC
 232 \global\lccode"1F8F="1F87 \global\uccode"1F8F="1FBC
 233 \global\lccode"1F90="1F90 \global\uccode"1F90="1FCC
 234 \global\lccode"1F91="1F91 \global\uccode"1F91="1FCC
 235 \global\lccode"1F92="1F92 \global\uccode"1F92="1FCC
 236 \global\lccode"1F93="1F93 \global\uccode"1F93="1FCC
 237 \global\lccode"1F94="1F94 \global\uccode"1F94="1FCC
 238 \global\lccode"1F95="1F95 \global\uccode"1F95="1FCC
 239 \global\lccode"1F96="1F96 \global\uccode"1F96="1FCC
 240 \global\lccode"1F97="1F97 \global\uccode"1F97="1FCC
 241 \global\lccode"1F98="1F90 \global\uccode"1F98="1FCC
 242 \global\lccode"1F99="1F91 \global\uccode"1F99="1FCC
 243 \global\lccode"1F9A="1F92 \global\uccode"1F9A="1FCC
 244 \global\lccode"1F9B="1F93 \global\uccode"1F9B="1FCC
 245 \global\lccode"1F9C="1F94 \global\uccode"1F9C="1FCC
 246 \global\lccode"1F9D="1F95 \global\uccode"1F9D="1FCC
 247 \global\lccode"1F9E="1F96 \global\uccode"1F9E="1FCC
 248 \global\lccode"1F9F="1F97 \global\uccode"1F9F="1FCC
 249 \global\lccode"1FA0="1FA0 \global\uccode"1FA0="1FFC
 250 \global\lccode"1FA1="1FA1 \global\uccode"1FA1="1FFC
 251 \global\lccode"1FA2="1FA2 \global\uccode"1FA2="1FFC
 252 \global\lccode"1FA3="1FA3 \global\uccode"1FA3="1FFC
 253 \global\lccode"1FA4="1FA4 \global\uccode"1FA4="1FFC
 254 \global\lccode"1FA5="1FA5 \global\uccode"1FA5="1FFC

255 \global\lccode"1FA6="1FA6 \global\uccode"1FA6="1FFC
 256 \global\lccode"1FA7="1FA7 \global\uccode"1FA7="1FFC
 257 \global\lccode"1FA8="1FA0 \global\uccode"1FA8="1FFC
 258 \global\lccode"1FA9="1FA1 \global\uccode"1FA9="1FFC
 259 \global\lccode"1FAA="1FA2 \global\uccode"1FAA="1FFC
 260 \global\lccode"1FAB="1FA3 \global\uccode"1FAB="1FFC
 261 \global\lccode"1FAC="1FA4 \global\uccode"1FAC="1FFC
 262 \global\lccode"1FAD="1FA5 \global\uccode"1FAD="1FFC
 263 \global\lccode"1FAE="1FA6 \global\uccode"1FAE="1FFC
 264 \global\lccode"1FAF="1FA7 \global\uccode"1FAF="1FFC
 265 \global\lccode"1FB0="1FB0 \global\uccode"1FB0="1FB8
 266 \global\lccode"1FB1="1FB1 \global\uccode"1FB1="1FB9
 267 \global\lccode"1FB2="1FB2 \global\uccode"1FB2="1FBC
 268 \global\lccode"1FB3="1FB3 \global\uccode"1FB3="1FBC
 269 \global\lccode"1FB4="1FB4 \global\uccode"1FB4="1FBC
 270 \global\lccode"1FB6="1FB6 \global\uccode"1FB6="0391
 271 \global\lccode"1FB7="1FB7 \global\uccode"1FB7="1FBC
 272 \global\lccode"1FB8="1FB0 \global\uccode"1FB8="1FB8
 273 \global\lccode"1FB9="1FB1 \global\uccode"1FB9="1FB9
 274 \global\lccode"1FBA="1F70 \global\uccode"1FBA="0391
 275 \global\lccode"1FBB="1F71 \global\uccode"1FBB="0391
 276 \global\lccode"1FBC="1FB3 \global\uccode"1FBC="1FBC
 277 \global\lccode"1FBD="1FBD \global\uccode"1FBD="1FBD
 278 \global\lccode"1FC2="1FC2 \global\uccode"1FC2="1FCC
 279 \global\lccode"1FC3="1FC3 \global\uccode"1FC3="1FCC
 280 \global\lccode"1FC4="1FC4 \global\uccode"1FC4="1FCC
 281 \global\lccode"1FC6="1FC6 \global\uccode"1FC6="0397
 282 \global\lccode"1FC7="1FC7 \global\uccode"1FC7="1FCC
 283 \global\lccode"1FC8="1F72 \global\uccode"1FC8="0395
 284 \global\lccode"1FC9="1F73 \global\uccode"1FC9="0395
 285 \global\lccode"1FCA="1F74 \global\uccode"1FCA="0397
 286 \global\lccode"1FCB="1F75 \global\uccode"1FCB="0397
 287 \global\lccode"1FCC="1FC3 \global\uccode"1FCC="1FCC
 288 \global\lccode"1FD0="1FD0 \global\uccode"1FD0="1FD8
 289 \global\lccode"1FD1="1FD1 \global\uccode"1FD1="1FD9
 290 \global\lccode"1FD2="1FD2 \global\uccode"1FD2="03AA
 291 \global\lccode"1FD3="1FD3 \global\uccode"1FD3="03AA
 292 \global\lccode"1FD6="1FD6 \global\uccode"1FD6="0399
 293 \global\lccode"1FD7="1FD7 \global\uccode"1FD7="03AA
 294 \global\lccode"1FD8="1FD0 \global\uccode"1FD8="1FD8
 295 \global\lccode"1FD9="1FD1 \global\uccode"1FD9="1FD9
 296 \global\lccode"1FDA="1F76 \global\uccode"1FDA="0399
 297 \global\lccode"1FDB="1F77 \global\uccode"1FDB="0399
 298 \global\lccode"1FE0="1FE0 \global\uccode"1FE0="1FE8
 299 \global\lccode"1FE1="1FE1 \global\uccode"1FE1="1FE9
 300 \global\lccode"1FE2="1FE2 \global\uccode"1FE2="03AB
 301 \global\lccode"1FE3="1FE3 \global\uccode"1FE3="03AB
 302 \global\lccode"1FE4="1FE4 \global\uccode"1FE4="03A1
 303 \global\lccode"1FE5="1FE5 \global\uccode"1FE5="03A1
 304 \global\lccode"1FE6="1FE6 \global\uccode"1FE6="03A5

```

305 \global\lccode"1FE7="1FE7 \global\uccode"1FE7="03AB
306 \global\lccode"1FE8="1FE0 \global\uccode"1FE8="1FE8
307 \global\lccode"1FE9="1FE1 \global\uccode"1FE9="1FE9
308 \global\lccode"1FEA="1F7A \global\uccode"1FEA="03A5
309 \global\lccode"1FEB="1F7B \global\uccode"1FEB="03A5
310 \global\lccode"1FEC="1FE5 \global\uccode"1FEC="1FEC
311 \global\lccode"1FF2="1FF2 \global\uccode"1FF2="1FFC
312 \global\lccode"1FF3="1FF3 \global\uccode"1FF3="1FFC
313 \global\lccode"1FF4="1FF4 \global\uccode"1FF4="1FFC
314 \global\lccode"1FF6="1FF6 \global\uccode"1FF6="03A9
315 \global\lccode"1FF7="1FF7 \global\uccode"1FF7="1FFC
316 \global\lccode"1FF8="1F78 \global\uccode"1FF8="039F
317 \global\lccode"1FF9="1F79 \global\uccode"1FF9="039F
318 \global\lccode"1FFA="1F7C \global\uccode"1FFA="03A9
319 \global\lccode"1FFB="1F7D \global\uccode"1FFB="03A9
320 \global\lccode"1FFC="1FF3 \global\uccode"1FFC="1FFC

```

Next I define the various strings that correspond to the standard \LaTeX captions.
I first define the strings for monotonic Greek.

```

321 \def\prefacename{Πρόλογος}%
322 \def\refname{Αναφορές}%
323 \def\abstractname{Περίληψη}%
324 \def\bibname{Βιβλιογραφία}%
325 \def\chaptername{Κεφάλαιο}%
326 \def\appendixname{Παράρτημα}%
327 \def\contentsname{Περιεχόμενα}%
328 \def\listfigurename{Κατάλογος σχημάτων}%
329 \def\listtablename{Κατάλογος πινάκων}%
330 \def\indexname{Ευρετήριο}%
331 \def\figurename{Σχήμα}%
332 \def\tablename{Πίνακας}%
333 \def\partname{Μέρος}%
334 \def\enclname{Συνημμένα}%
335 \def\ccname{Κοινοποίηση}%
336 \def\headtoname{Προς}%
337 \def\pagename{Σελίδα}%
338 \def\seename{βλέπε}%
339 \def\alsoname{βλέπε επίσης}%
340 \def\proofname{Απόδειξη}%
341 \def\glossaryname{Γλωσσάρι}%

```

Macro `\polytonicn@mes` is invoked when polytonic Greek is the main language of the document.

```

342 \def\polytonicn@mes{%
343   \def\refname{Αναφορές}%
344   \def\indexname{Ευρετήριο}%
345   \def\figurename{Σχήμα}%
346   \def\headtoname{Πρός}%
347   \def\alsoname{βλέπε επίσης}%
348   \def\proofname{Απόδειξη}%
349 }

```


Macro `\@ncientn@mes` is invoked when ancient Greek is the main language of the document.

```

350 \def\@ncientn@mes{%
351   \def\prefacename{Προοίμιον}%
352   \def\abstractname{Περίληψις}%
353   \def\bibname{Βιβλιογραφία}%
354   \def\chaptername{Κεφάλαιον}%
355   \def\appendixname{Παράρτημα}%
356   \def\contentsname{Περιεχόμενα}%
357   \def\listfigurename{Κατάλογος σχημάτων}%
358   \def\listtablename{Κατάλογος πινάκων}%
359   \def\indexname{Εύρετήριο}%
360   \def\tablename{Πίναξ}%
361   \def\partname{Μέρος}%
362   \def\enclname{Συνημμένως}%
363   \def\ccname{Κοινοποιήσις}%
364   \def\headtoname{Πρός}%
365   \def\pagename{Σελίς}%
366   \def\seename{ὁρα}%
367   \def\alsoname{ὁρα ὡσαύτως}%
368   \def\proofname{Απόδειξις}%
369   \def\glossaryname{Γλωσσάριον}%
370   \def\refname{Αναφοραί}%
371   \def\figurename{Σχῆμα}%
372   \def\headtoname{Πρός}%
373 }

```

I redefine `\today` so as to produce dates in Greek. The names of months are defined by the macro `\gr@month`.

```

374 \def\gr@month{%
375   \ifcase\month\or Ιανουαρίου\or Φεβρουαρίου\or Μαρτίου\or Απριλίου\or
376     Μαΐου\or Ιουνίου\or Ιουλίου\or Αυγούστου\or
377     Σεπτεμβρίου\or Οκτωβρίου\or Νοεμβρίου\or Δεκεμβρίου\fi}
378 \def\today{\number\day \space \gr@month\space \number\year}

```

When either polytonic Greek or ancient Greek is the main language of the document, then the macro `\gr@c@month` becomes active.

```

379 \def\gr@c@month{%
380   \ifcase\month\or Ἰανουαρίου\or Φεβρουαρίου\or Μαρτίου\or Ἀπριλίου\or
381     Μαΐου\or Ἰουνίου\or Ἰουλίου\or Αὐγούστου\or Σεπτεμβρίου\or
382     Ὀκτωβρίου\or Νοεμβρίου\or Δεκεμβρίου\fi}

```

Next, I define a few macros that allow one to access characters that are not usually easily accessible from the keyboard (e.g., the sampi or the koppa symbol). The list includes a command for the unicode symbol GREEK ANO TELEIA, which, in some systems, is confused with MIDDLE DOT. The use of command `\numer@lsign` will be explained later.

```

383 \def\anwtonos{'} %GREEK NUMERAL SIGN
384 \let\numer@lsign\anwtonos
385 \def\katwtonos{,} %GREEK LOWER NUMERAL SIGN

```

```

386 \def\koppa{\char"03DF\relax}
387 \def\sampi{\char"03E1\relax}
388 \def\Digamma{\char"03DC\relax}
389 \def\ddigamma{\char"03DD\relax}
390 \def\anoteleia{\char"0387\relax}
391 \def\euro{\char"20AC\relax}
392 \def\permill{\char"2030\relax}

```

Many users prefer the use of the letters sigma and tau instead of the stigma symbol in Greek numerals, therefore, by default the `\stigma` command expands to “ $\sigma\tau$ ”.

```

393 \def\stigma{\sigma\tau\relax}

```

The following commands take care of the basic rules of typography. Note that the first command changes the way space is added after punctuation symbols and the last two commands force \LaTeX to add indentation space to the first paragraph after a header. Since a number of users need, for their own reasons, to be able to disable this particular feature I have introduced a new package option, namely `noindentfirst`, which restores the default behavior. In order to be able to do this I need the original value of the boolean variable `\@afterindentfalse`.

```

394 \frenchspacing
395 \let\@saveafterindentfalse\@afterindentfalse
396 \let\@afterindentfalse\@afterindenttrue
397 \@afterindenttrue

```

\LaTeX and \XeTeX have different ways to load hyphenation patterns. Package `luahyphenrules` by Javier Bezos facilitates this process for people who want to use \LaTeX and the “traditional” way to load hyphenation patterns. To ensure proper inclusion of \LuaTeX stuff, I use the following “idiom”:

```

\ifx\directlua\undefined non  $\text{\LuaTeX}$  code\else  $\text{\LuaTeX}$  code\fi

```

```

398 \ifx\directlua\undefined\else\RequirePackage{luahyphenrules}\fi

```

The code that follows specifies which hyphenation patterns will be active. The \XeTeX code is quite standard and depends on the `babel` pattern loading mechanism, while the \LaTeX code uses the `\HyphenRules` macro, which has essentially the functionality of the `\selectlanguage` macro.

```

399 \DeclareOption{monogreek}{%
400   \ifx\directlua\undefined%
401     \language\l@monogreek\else\HyphenRules{monogreek}\fi%
402 }
403 \DeclareOption{polygreek}{%
404   \ifx\directlua\undefined%
405     \language\l@polygreek\else\HyphenRules{polygreek}\fi%
406   \polytonicn@mes%
407   \let\gr@month\gr@cc@month%
408 }
409 \DeclareOption{ancientgreek}{%
410   \ifx\directlua\undefined%
411     \language\l@ancientgreek\else\HyphenRules{ancientgreek}\fi%
412   \@ncientn@mes%

```

```

413 \let\gr@month\gr@c@month%
414 }

```

If a user wants to use the stigma symbol in Greek numerals, she should use the `stigma` option.

```

415 \DeclareOption{stigma}{%
416   \def\stigma{\char"03DB\relax}
417 }

```

As noted above, the new option `noindentfirst` restores the default \LaTeX behavior of adding no indentation to the first paragraph after any header.

```

418 \DeclareOption{noindentfirst}{%
419   \let\@afterindentfalse\@saveafterindentfalse
420 }

```

Nowadays it is customary in Greece to use Greek numerals without the GREEK NUMERAL SIGN at the end of numeral. Thus, the `nonumeral sign` option disables the typesetting of the GREEK NUMERAL SIGN at the end of Greek numerals.

```

421 \DeclareOption{nonumeral sign}{%
422   \let\numer@l sign\relax
423 }

```

Package `listings` does not work properly with UTF-8 encoded files. So this option should be used whenever one wants to use this package and see Greek text come out correctly.

```

424 \newif\if@mylistings
425 \@mylistingsfalse
426 \DeclareOption{listings}{%
427   \@mylistingstrue
428 }

```

By default the `monogreek` option is activated.

```

429 \ExecuteOptions{monogreek}
430 \ProcessOptions

```

If the user has enabled the `listings` option, then it loads the package `listings` and makes a few changes to it. In particular, it redefines the command `\lst@DefEC` and the new command makes all characters in the range 128–255 plus the Greek letters to be treated as letters.

```

431 \if@mylistings
432 \RequirePackage{listings}
433 \lstset{inputencoding=utf8}
434 \lst@InputCatcodes
435 \gdef\lst@DefEC{%
436   \lst@CCECUse \lst@ProcessLetter
437   ~80~81~82~83~84~85~86~87~88~89~8a~8b~8c~8d~8e~8f%
438   ~90~91~92~93~94~95~96~97~98~99~9a~9b~9c~9d~9e~9f%
439   ~a0~a1~a2~a3~a4~a5~a6~a7~a8~a9~aa~ab~ac~ad~ae~af%
440   ~b0~b1~b2~b3~b4~b5~b6~b7~b8~b9~ba~bb~bc~bd~be~bf%
441   ~c0~c1~c2~c3~c4~c5~c6~c7~c8~c9~ca~cb~cc~cd~ce~cf%

```

```

442 ~d0~d1~d2~d3~d4~d5~d6~d7~d8~d9~da~db~dc~dd~de~df%
443 ~e0~e1~e2~e3~e4~e5~e6~e7~e8~e9~ea~eb~ec~ed~ee~ef%
444 ~f0~f1~f2~f3~f4~f5~f6~f7~f8~f9~fa~fb~fc~fd~fe~ff%
445 ~~~~0396~~~~0388~~~~0389~~~~038a~~~~038c% <--- Begin of Greek Letters
446 ~~~~038e~~~~038f~~~~0390~~~~0391~~~~0392%
447 ~~~~0393~~~~0394~~~~0395~~~~0396~~~~0397%
448 ~~~~0398~~~~0399~~~~039a~~~~039b~~~~039c%
449 ~~~~039d~~~~039e~~~~039f~~~~03a0~~~~03a1%
450 ~~~~03a3~~~~03a4~~~~03a5~~~~03a6~~~~03a7%
451 ~~~~03a8~~~~03a9~~~~03aa~~~~03ab~~~~03ac%
452 ~~~~03ad~~~~03ae~~~~03af~~~~03b0~~~~03b1%
453 ~~~~03b2~~~~03b3~~~~03b4~~~~03b5~~~~03b6%
454 ~~~~03b7~~~~03b8~~~~03b9~~~~03ba~~~~03bb%
455 ~~~~03bc~~~~03bd~~~~03be~~~~03bf~~~~03c0%
456 ~~~~03c1~~~~03c2~~~~03c3~~~~03c4~~~~03c5%
457 ~~~~03c6~~~~03c7~~~~03c8~~~~03c9~~~~03ca%
458 ~~~~03cb~~~~03cc~~~~03cd~~~~03ce% <--- End of Greek Letters
459 ~00}%
460 \lst@RestoreCatcodes
461 \fi

```

Now I am going to define the macros that typeset alphabetic Greek numerals. The code is borrowed from the greek option for the babel package.

```

\gr@ill@value When the argument of \greeknumeral has a value outside of the acceptable
                bounds ( $0 < x < 999999$ ) a warning will be issued (and nothing will be printed).
462 \def\gr@ill@value#1{%
463   \PackageWarning{xgreek}{Illegal value (#1) for greeknumeral}}

```

```

\anw@true When a large number with three trailing zeros is to be printed those zeros and
\anw@false the numeric mark need to be discarded. As each ‘digit’ is processed by a separate
\anw@print macro and because the processing needs to be expandable we need some helper
                macros that help remember to not print the numeric mark (\number@lsign).

```

The command `\anw@false` switches the printing of the numeric mark off by making `\anw@print` expand to nothing. The command `\anw@true` (re)enables the printing of the numeric marc. These macro’s need to be robust in order to prevent improper expansion during writing to files or during `\uppercase`.

```

464 \DeclareRobustCommand\anw@false{%
465   \DeclareRobustCommand\anw@print{}}
466 \DeclareRobustCommand\anw@true{%
467   \DeclareRobustCommand\anw@print{\number@lsign}}
468 \anw@true

```

```

\@greeknumeral This command is used to get Greek numerals. The command uses \number@lsign
                to get the NUMERAL SIGN. Obviously, when the user has specified the no-
numeralsign option, then numeral comes out without the trailing NUMERAL
                SIGN. However, when a user wants to typeset a Greek numeral, the numeral
                must come out correctly, regardless of what appears in headers, etc. And that
                is exactly the reason why this command is inaccessible to users. The command

```

`\@greeknumeral` needs to be *fully* expandable in order to get the right information in auxiliary files. Therefore we use a big `\if`-construction to check the value of the argument and start the parsing at the right level.

```
469 \def\@greeknumeral#1{%
```

If the value is negative or zero nothing is printed and a warning is issued.

```
470 \ifnum#1<\@ne\space\gr@ill@value{#1}%
471 \else
472 \ifnum#1<10\expandafter\gr@num@i\number#1%
473 \else
474 \ifnum#1<100\expandafter\gr@num@ii\number#1%
475 \else
```

The available shorthands for 1.000 (`\@m`) and 10.000 (`\@M`) are used to save a few tokens.

```
476 \ifnum#1<\@m\expandafter\gr@num@iii\number#1%
477 \else
478 \ifnum#1<\@M\expandafter\gr@num@iv\number#1%
479 \else
480 \ifnum#1<100000\expandafter\gr@num@v\number#1%
481 \else
482 \ifnum#1<1000000\expandafter\gr@num@vi\number#1%
483 \else
```

If the value is too large, nothing is printed and a warning is issued.

```
484 \space\gr@ill@value{#1}%
485 \fi
486 \fi
487 \fi
488 \fi
489 \fi
490 \fi
491 \fi
492 }
```

What is left to make complete the definition of command `\greeknumeral` is a set of macros to produce the various digits.

`\gr@num@i` As there is no “digit” representing 0 in this system, the zeros are simply discarded.
`\gr@num@ii` When there is a large number with three *trailing* zeros also the numeric mark is discarded. Therefore these macros need to pass the information to each other about the (non-)translation of a zero.
`\gr@num@iii`

```
493 \def\gr@num@i#1{%
494 \ifcase#1\or \alpha\or \beta\or \gamma\or \delta\or \epsilon\or \stigma\or \zeta\or \eta\or \theta\fi
495 \ifnum#1=\z@\else\anw@true\fi\anw@print}
496 \def\gr@num@ii#1{%
497 \ifcase#1\or \iota\or \kappa\or \lambda\or \mu\or \nu\or \xi\or \omicron\or \pi\or \koppa\fi
498 \ifnum#1=\z@\else\anw@true\fi\gr@num@i}
499 \def\gr@num@iii#1{%
500 \ifcase#1\or \rho\or \sigma\or \tau\or \upsilon\or \phi\or \chi\or \psi\or \omega\or \sampi\fi
501 \ifnum#1=\z@\anw@false\else\anw@true\fi\gr@num@ii}
```

`\gr@num@iv` The first three “digits” always have the numeric mark, except when one is discarded because it’s value is zero.

`\gr@num@v`

`\gr@num@vi`

```

502 \def\gr@num@iv#1{%
503   \ifnum#1=\z@\else\katwtonos\fi
504   \ifcase#1\or \alpha\or \beta\or \gamma\or \delta\or \epsilon\or \sigma\or \zeta\or \eta\or \theta\fi
505   \gr@num@iii}
506 \def\gr@num@v#1{%
507   \ifnum#1=\z@\else\katwtonos\fi
508   \ifcase#1\or \iota\or \kappa\or \lambda\or \mu\or \nu\or \xi\or \omicron\or \pi\or \koppa\fi
509   \gr@num@iv}
510 \def\gr@num@vi#1{%
511   \katwtonos
512   \ifcase#1\or \rho\or \sigma\or \tau\or \upsilon\or \phi\or \chi\or \psi\or \omega\or \sampi\fi
513   \gr@num@v}

```

`\@Greeknatural` The command `\@Greeknatural` prints uppercase Greek numerals. The parsing is performed by the macro `\@greeknatural`. The printing of the NUMERAL SIGN depends on the value of `\number@lsign`.

```

514 \def\@Greeknatural#1{%
515   \expandafter\MakeUppercase\expandafter{\@greeknatural{#1}}

```

`\greeknatural` This command prints lowercase Greek numerals and the NUMERAL SIGN is always printed.

```

516 \def\greeknatural#1{%
517   \let\number@lsign\number@lsign%
518   \let\number@lsign\anwtonos%
519   \@greeknatural{#1}
520   \let\number@lsign\number@lsign}

```

`\Greeknatural` This command prints uppercase Greek numerals and the NUMERAL SIGN is always printed.

```

521 \def\Greeknatural#1{%
522   \let\number@lsign\number@lsign%
523   \let\number@lsign\anwtonos%
524   \@Greeknatural{#1}
525   \let\number@lsign\number@lsign}

```

The alphabetic numbering system is not the only numbering system employed by Greeks. In fact, Greeks used various systems that are now known as *acrophonic* numbering systems. Many scholars are familiar with the acrophonic Attic numbering system and the the command `\atticnum` can be used to generate acrophonic Attic numerals. The acrophonic Attic numbering system, like the Roman one, employs letters to denote important numbers. Multiple occurrence of a letter denote a multiple of the “important” number, e.g., the letter I denotes 1, so III denotes 3. Here are the basic digits used in the acrophonic Attic numbering system:

- I denotes the number one (1)

- Π denotes the number five (5)
- Δ denotes the number ten (10)
- H denotes the number one hundred (100)
- X denotes the number one thousand (1000)
- M denotes the number ten thousands (10000)

Moreover, the letters Δ , H, X, and M under the letter Γ (a form of Π) denote five times their original value. In particular, the symbol \mathbb{P} , denotes the number 50, the symbol \mathbb{P}^2 denotes the number 500, the symbol \mathbb{P}^3 denotes the number 5000, and the symbol \mathbb{P}^4 denotes the number 50,000. It must be noted that the numbering system does not provide negative numerals or a symbol for zero.

`\@@atticnum` Now, let me definite the macro `\@@atticnum`. This macro uses one integer variable (or counter in \TeX 's jargon.)

526 `\newcount\@attic@num`

The macro `\@@atticnum` is also defined as a robust command.

527 `\DeclareRobustCommand*\@@atticnum}[1]{%`

After assigning to variable `\@attic@num` the value of the macro's argument, we make sure that the argument is in the expected range, i.e., it is greater than zero, and less or equal to 249999. In case it isn't, it simply produces a `\space`, warns the user about it and quits. Although, the `\atticnum` macro is capable to produce an Athenian numeral for even greater intergers, the following argument by Claudio Beccari convised me to place this upper limit:

According to psychological perception studies (that ancient Athenians and Romans perfectly knew without needing to study Freud and Jung) living beings (which includes at least all vertebrates, not only humans) can perceive up to four randomly set objects of the same kind without the need of counting, the latter activity being a specific acquired ability of human kind; the biquinary numbering notation used by the Athenians and the Romans exploits this natural characteristic of human beings.

```

528     \@attic@num#1\relax
529     \ifnum\@attic@num<\@one%
530         \space%
531         \PackageWarning{xgreek}{%
532             Illegal value (\the\@attic@num) for acrophonic
533             Attic numeral}%
534     \else\ifnum\@attic@num>249999%
535         \space%
536         \PackageWarning{xgreek}{%
537             Value too large (\the\@attic@num) for acrophonic
538             Attic numeral}%
539     \else

```

Having done all the necessary checks, it is possible to proceed with the actual computation. If the number is greater than 49999, then it certainly has at least one \mathbb{F} “digit”. The macro finds all such digits by continuously subtracting 50000 from $\backslash\texttt{@attic@num}$, until $\backslash\texttt{@attic@num}$ becomes less than 50000.

```
540      \@whilenum\@attic@num>49999\do{%
541          ~~~~~~010147\advance\@attic@num-50000}%
```

Next the macro checks for tens of thousands.

```
542      \@whilenum\@attic@num>9999\do{%
543          M\advance\@attic@num-\@M}%
```

Since a number can have only one \mathbb{F} “digit” (equivalent to 5000), it is easy to check whether it should have one and produce the corresponding numeral when it does have one.

```
544      \ifnum\@attic@num>4999%
545          ~~~~~~010146\advance\@attic@num-5000%
546      \fi\relax
```

The macro should also check for thousands, the same way it checked for tens of thousands.

```
547      \@whilenum\@attic@num>999\do{%
548          X\advance\@attic@num-\@m}%
```

Since a numeral can have at most one \mathbb{F} “digit” (equivalent to 500), this should be handled the way the macro handled the case of the five thousands “digit”.

```
549      \ifnum\@attic@num>499%
550          ~~~~~~010145\advance\@attic@num-500%
551      \fi\relax
```

It is time to check hundreds, which follow the same pattern as thousands.

```
552      \@whilenum\@attic@num>99\do{%
553          H\advance\@attic@num-100}%
```

A numeral can have only one \mathbb{F} “digit” (equivalent to 50).

```
554      \ifnum\@attic@num>49%
555          ~~~~~~010144\advance\@attic@num-50%
556      \fi\relax
```

The macro now checks now for tens digit.

```
557      \@whilenum\@attic@num>9\do{%
558          Δ\advance\@attic@num by-10}%
```

Finally, it has to check for fives and the digits 1, 2, 3, and 4.

```
559      \@whilenum\@attic@num>4\do{%
560          Π\advance\@attic@num-5}%
561      \ifcase\@attic@num\or I\or II\or III\or IIII\fi%
562      \fi\fi}
```

$\backslash\texttt{@atticnum}$ The command $\backslash\texttt{@atticnum}$ has one argument, which is a counter. It calls the command $\backslash\texttt{@@atticnum}$ to process the value of the counter.

```
563 \def\@atticnum#1{%
564     \expandafter\@@atticnum\expandafter{\the#1}}
```


`\atticnum` The command `\atticnum` is a wrapper that declares a new counter in a local scope, assigns to it the value of the argument of the command and calls the macro `\@atticnum`. This way the command can process correctly either a number or a counter.

```

565 \def\atticnum#1{%
566     \@atticnum#1\relax
567     \@atticnum{\@atticnum}}

```

`\greek@alph` Here I redefine the macros `\@alph` and `\@Alph`. First, I define some placeholders

`\greek@Alph`

```

568 \let\latin@alph\@alph
569 \let\latin@Alph\@Alph

```

Then I define the Greek versions; the additional `\expandafte`rs are needed in order to make sure the table of contents will be correct (e.g., when there are appendices).

```

570 \def\greek@alph#1{\expandafter\@greeknumeral\expandafter{\the#1}}
571 \def\greek@Alph#1{\expandafter\@Greeknatural\expandafter{\the#1}}

```

By default Greek alphabetic numerals instead of Latin numerals are used to enumerate items in an enumeration environment.

```

572 \let\@alph\greek@alph
573 \let\@Alph\greek@Alph

```

If for some reason, one needs to have the Latin numerals back, then she has to invoke command `\nogreekalph`. And if she wants to switch back, then she has to use the `\greekalph` command:

```

574 \def\nogreekalph{%
575     \let\@alph\latin@alph
576     \let\@Alph\latin@Alph}
577 \def\greekalph{%
578     \let\@alph\greek@alph
579     \let\@Alph\greek@Alph}

```

`\setlanguage` We provide the `\setlanguage` command which activates the hyphenation patterns of some other language. It is similar to babel's `\selectlanguage`, but we opted to use a new name to avoid possible name conflicts. Valid arguments include `monogreek`, `polygreek`, `ancientgreek`, and `american`. As was noted previously, package `luahyphenrules` provides the command `\HyphenRules` which has exactly the same functionality as this command. So when using `LuaLaTeX` users will actually use the `\HyphenRules` command.

```

580 \ifx\directlua\undefined%
581     \def\setlanguage#1{%
582         \expandafter\ifx\csname l@#1\endcsname\relax%
583         \typeout{^^J Error: No hyphenation pattern for}%
584         \typeout{ language #1 are loaded,}%
585         \typeout{ default hyphenation patterns are used.^^J}%
586         \language=0%
587         \else\language=\csname l@#1\endcsname\fi}
588 \else

```

```

589 \let\setlanguage\HyphenRules
590 \fi

```

The macros `\grtoday` and `\Grtoday` produces the current date, only that the month and the day are shown as greek numerals instead of arabic as it is usually the case. In addition, the two commands differ in that the later produces the Greek numerals in uppercase.

```

591 \def\grtoday{%
592   \expandafter\greeknumeral\expandafter{\the\day}\space
593   \gr@cc@month\space
594   \expandafter\greeknumeral\expandafter{\the\year}}
595 \def\Grtoday{%
596   \expandafter\Greeknatural\expandafter{\the\day}\space
597   \gr@cc@month\space
598   \expandafter\Greeknatural\expandafter{\the\year}}
599 \</xgreek>

```