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This is part 1 of five parts of the first Usenet distribution of the Hershey Fonts. See the README file for more details.

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This distribution is made possible through the collective encouragement of the Usenet Font Consortium, a mailing list that sprang to life to get this accomplished and that will now most likely disappear into the mists of time... Thanks are especially due to Jim Hurt, who provided the packed font data for the distribution, along with a lot of other help.

This file describes the Hershey Fonts in general, along with a description of the other files in this distribution and a simple re-distribution restriction.

USE RESTRICTION:

This distribution of the Hershey Fonts may be used by anyone for any purpose, commercial or otherwise, providing that:

1. The following acknowledgements must be distributed with the font data:

- The Hershey Fonts were originally created by Dr. A. V. Hershey while working at the U. S. National Bureau of Standards.
- The format of the Font data in this distribution was originally created by  
James Hurt  
Cognition, Inc.  
900 Technology Park Drive  
Billerica, MA 01821  
(mit-eddie!ci-dandelion!hurt)

2. The font data in this distribution may be converted into any other format \*EXCEPT\* the format distributed by the U.S. NTIS (which organization holds the rights to the distribution and use of the font data in that particular format). Not that anybody would really \*want\* to use their format... each point is described in eight bytes as "xxx yyy:", where xxx and yyy are the coordinate values as ASCII numbers.

\*PLEASE\* be reassured: The legal implications of NTIS' attempt to control a particular form of the Hershey Fonts \*are\* troubling. HOWEVER: We have been endlessly and repeatedly assured by NTIS that they do not care what we do with our version of the font data, they do not want to know about it, they understand that we are distributing this information all over the world, etc etc etc... but because it isn't in their \*exact\* distribution format, they

just don't care!!! So go ahead and use the data with a clear conscience! (If you feel bad about it, take a smaller deduction for something on your taxes next week...)

#### The Hershey Fonts:

- are a set of more than 2000 glyph (symbol) descriptions in vector ( <x,y> point-to-point ) format
- can be grouped as almost 20 'occidental' (english, greek, cyrillic) fonts, 3 or more 'oriental' (Kanji, Hiragana, and Katakana) fonts, and a few hundred miscellaneous symbols (mathematical, musical, cartographic, etc etc)
- are suitable for typographic quality output on a vector device (such as a plotter) when used at an appropriate scale.
- were digitized by Dr. A. V. Hershey while working for the U.S. Government National Bureau of Standards (NBS).
- are in the public domain, with a few caveats:
  - They are available from NTIS (National Technical Info. Service) in a computer-readable form which is \*not\* in the public domain. This format is described in a hardcopy publication "Tables of Coordinates for Hershey's Repertory of Occidental Type Fonts and Graphic Symbols" available from NTIS for less than \$20 US (phone number +1 703 487 4763).
  - NTIS does not care about and doesn't want to know about what happens to Hershey Font data that is not distributed in their exact format.
  - This distribution is not in the NTIS format, and thus is only subject to the simple restriction described at the top of this file.

Hard Copy samples of the Hershey Fonts are best obtained by purchasing the book described above from NTIS. It contains a sample of all of the Occidental symbols (but none of the Oriental symbols).

#### This distribution:

- contains
  - \* a complete copy of the Font data using the original glyph-numbering sequence
  - \* a set of translation tables that could be used to generate ASCII-sequence fonts in various tpestyles
  - \* a couple of sample programs in C and Fortran that are capable of parsing the font data and displaying it on a graphic device (we recommend that if you wish to write programs using the fonts, you should hack up one of these until it works on your system)
- consists of the following files...
  - hershey.doc - details of the font data format, tpestyles and symbols included, etc.
  - hersh.oc[1-4] - The Occidental font data (these files can be catenated into one large database)
  - hersh.or[1-4] - The Oriental font data (likewise here)
  - \*.hmp - Occidental font map files. Each file is a translation table from Hershey glyph numbers to ASCII sequence for a particular tpestyle.
  - hershey.f77 - A fortran program that reads and displays all of the glyphs in a Hershey font file.
  - hershey.c - The same, in C, using GKS, for MS-DOS and the PC-Color Graphics Adaptor.

Additional Work To Be Done (volunteers welcome!):

- Integrate this complete set of data with the hershey font typesetting program recently distributed to mod.sources
- Come up with an integrated data structure and supporting routines that make use of the ASCII translation tables
- Digitize additional characters for the few places where non-ideal symbol substitutions were made in the ASCII translation tables.
- Make a version of the demo program (hershey.c or hershey.f77) that uses the standard Un\*x plot routines.
- Write a banner-style program using Hershey Fonts for input and non-graphic terminals or printers for output.
- Anything else you'd like!

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This file provides a brief description of the contents of the Occidental Hershey Font Files. For a complete listing of the fonts in hard copy, order NBS Special Publication 424, "A contribution to computer typesetting techniques: Tables of Coordinates for Hershey's Repertory of Occidental Type Fonts and Graphic Symbols". You can get it from NTIS (phone number is +1 703 487 4763) for less than twenty dollars US.

Basic Glyph (symbol) data:

herish.oc1	- numbers 1 to 1199
herish.oc2	- numbers 1200 to 2499
herish.oc3	- numbers 2500 to 3199
herish.oc4	- numbers 3200 to 3999

These four files contain approximately 19 different fonts in the A-Z alphabet plus greek and cyrillic, along with hundreds of special symbols, described generically below.

There are also four files of Oriental fonts (herish.or[1-4]). These files contain symbols from three Japanese alphabets (Kanji, Hiragana, and Katakana). It is unknown what other symbols may be contained therein, nor is it known what order the symbols are in (I don't know Japanese!).

Back to the Occidental files:

Fonts:

Roman: Plain, Simplex, Duplex, Complex Small, Complex, Triplex  
Italic: Complex Small, Complex, Triplex  
Script: Simplex, Complex  
Gothic: German, English, Italian  
Greek: Plain, Simplex, Complex Small, Complex  
Cyrillic: Complex

Symbols:

Mathematical (227-229, 232, 727-779, 732, 737-740, 1227-1270, 2227-2270, 1294-1412, 2294-2295, 2401-2412)  
Daggers (for footnotes, etc) (1276-1279, 2276-2279)  
Astronomical (1281-1293, 2281-2293)  
Astrological (2301-2312)  
Musical (2317-2382)  
Typesetting (ffl, fl, fi sorts of things) (miscellaneous places)  
Miscellaneous (mostly in 741-909, but also elsewhere):

- Playing card suits
- Meteorology
- Graphics (lines, curves)
- Electrical
- Geometric (shapes)
- Cartographic
- Naval
- Agricultural
- Highways
- Etc...

ASCII sequence translation files:

The Hershey glyphs, while in a particular order, are not in an ASCII sequence. I have provided translation files that give the sequence of glyph numbers that will most closely approximate the ASCII printing sequence (from space through ~, with the degree circle tacked on at the end) for each of the above fonts:

File names are made up of ffffffft.hmp,

where fffffff is the font style, one of:

roman	Roman
greek	Greek
italic	Italic
script	Script
cyril	Cyrillic (some characters not placed in the ASCII sequence)
gothgr	Gothic German
gothgb	Gothic English
gothit	Gothic Italian

and tt is the font type, one of:

p	Plain (very small, no lower case)
s	Simplex (plain, normal size, no serifs)
d	Duplex (normal size, no serifs, doubled lines)
c	Complex (normal size, serifs, doubled lines)
t	Triplex (normal size, serifs, tripled lines)
cs	Complex Small (Complex, smaller than normal size)

The three sizes are coded with particular base line (bottom of a capital letter) and cap line (top of a capital letter) values for 'y':

Size	Base Line	Cap Line
Very Small	-5	+4
Small	-6	+7
Normal	-9	+12

(Note: some glyphs in the 'Very Small' fonts are actually 'Small')

The top line and bottom line, which are normally used to define vertical spacing, are not given. Maybe somebody can determine appropriate values for these!

The left line and right line, which are used to define horizontal spacing, are provided with each character in the database.

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Format of Hershey glyphs:

5 bytes - glyphnumber  
3 bytes - length of data length in 16-bit words including left&right numbers  
1 byte - x value of left margin  
1 byte - x value of right margin  
(length\*2)-2 bytes - stroke data

left&right margins and stroke data are biased by the value of the letter 'R'  
Subtract the letter 'R' to get the data.

e.g. if the data byte is 'R', the data is 0  
if the data byte is 'T', the data is +2  
if the data byte is 'J', the data is -8

and so on...

The coordinate system is x-y, with the origin (0,0) in the center of the  
glyph. X increases to the right and y increases \*down\*.

The stroke data is pairs of bytes, one byte for x followed by one byte for y.

A 'R' in the stroke data indicates a 'lift pen and move' instruction.