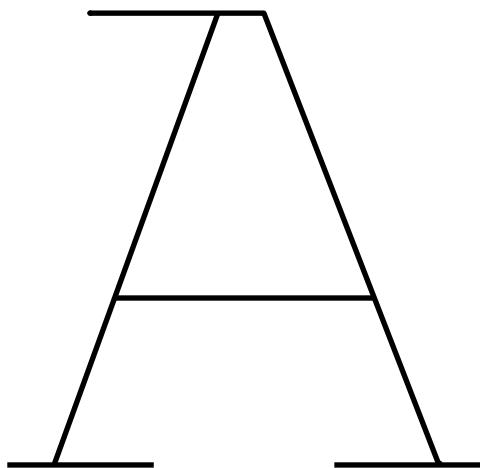# Font Rendering

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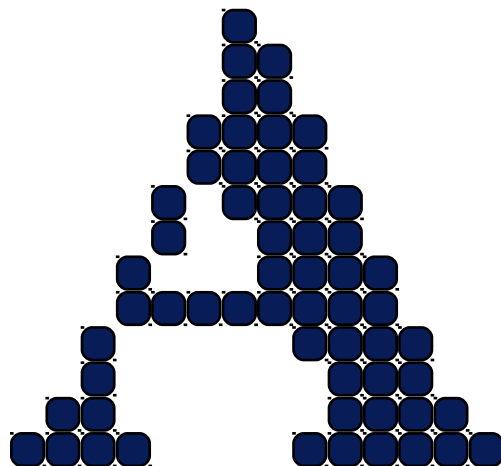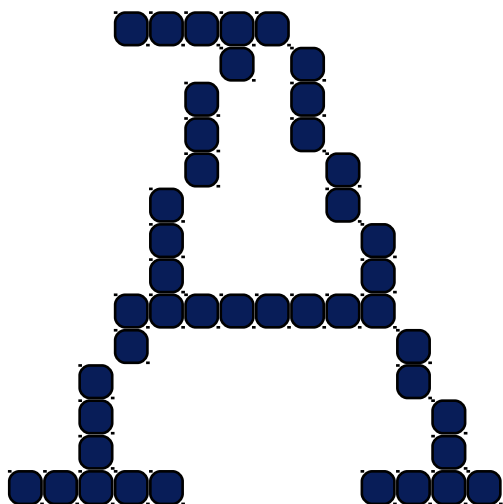pepca@cgg.mff.cuni.cz

http://cgg.mff.cuni.cz/~pepca/

Font Types

Vector Fonts
(line and solid)

Raster Fonts

Font Types

◆ **Vector fonts**:

  – Outlines of the letters are stored as lines or curves

  – Before display, these must be converted to bitmap format

  – They can be easily scaled or rotated

◆ **Raster fonts**:

  – Letters have to be constructed for each size manually as bitmaps

  – Efficient drawing

„Font cache"

◆ Conversion of **vector fonts** to raster form is time consuming
  – Individual letters repeat over and over again
  – Raster versions of letters are placed in a „font cache"

◆ Elements of the **„font cache"**:
  – Typeface (font name), size (in pt), orientation, character code, size of the raster image (in pixels)
  – **„bitmap"** or reference to a common bit field

Using the „font cache"

- ◆ To draw a specific letter **X**, one first searches the cache
  - – For fast searching, **hashing** is used
  - – If a letter is found, draw it via „BitBlt"

- ◆ In case of **not** finding anything in the „font cache":
  - – Convert letter to bitmap form, add to cache
  - – From the cache, the least commonly used items are periodically removed

End

Further Information:

- **J. Foley, A. van Dam, S. Feiner, J. Hughes**: *Computer Graphics, Principles and Practice*, 127-131, 976-979

- **Jiří Žára a kol.**: *Počítačová grafika*, principy a algoritmy, 119-126