C:\Users\david/src\Ligaturizer\.gitignore

Created by https://www.gitignore.io/api/font,linux,macos,python,fontforge,pycharm+all,sublimetext,visuals

FontForge

.sfd-

*.sfd~

No Binaries

*.ttc

*.pfb

*.pfa

*.pt3

*.suit

Linux

*~

temporary files which can be created if a process still has a handle open of a deleted file

.fuse_hidden*

KDE directory preferences

.directory

Linux trash folder which might appear on any partition or disk

.Trash-*

```
# .nfs files are created when an open file is removed but is still being accessed
.nfs*

### macOS ###
*.DS_Store
.AppleDouble
.LSOverride

# Icon must end with two \r
Icon

# Thumbnails
._*

# Files that might appear in the root of a volume
.DocumentRevisions-V100
.fseventsd
.Spotlight-V100
.TemporaryItems
.Trashes
.VolumeIcon.icns
.com.apple.timemachine.donotpresent

# Directories potentially created on remote AFP share
.AppleDB
.AppleDesktop
```

Network Trash Folder

Temporary Items

.apdisk

PyCharm+all

Covers JetBrains IDEs: IntelliJ, RubyMine, PhpStorm, AppCode, PyCharm, CLion, Android Studio and W

Reference: https://intellij-support.jetbrains.com/hc/en-us/articles/206544839

User-specific stuff:

.idea/**/workspace.xml

.idea/**/tasks.xml

.idea/dictionaries

Sensitive or high-churn files:

.idea/**/dataSources/

.idea/**/dataSources.ids

.idea/**/dataSources.xml

.idea/**/dataSources.local.xml

.idea/**/sqlDataSources.xml

.idea/**/dynamic.xml

.idea/**/uiDesigner.xml

Gradle:

.idea/**/gradle.xml

.idea/**/libraries

CMake

```
cmake-build-debug/

# Mongo Explorer plugin:
.idea/**/mongoSettings.xml

## File-based project format:
*.iws

## Plugin-specific files:

# IntelliJ
/out/

# mpeltonen/sbt-idea plugin
.idea_modules/

# JIRA plugin
atlassian-ide-plugin.xml

# Cursive Clojure plugin
.idea/replstate.xml

# Crashlytics plugin (for Android Studio and IntelliJ)
com_crashlytics_export_strings.xml
crashlytics.properties
crashlytics-build.properties
fabric.properties
```

```
### PyCharm+all Patch ###
# Ignores the whole idea folder
# See https://github.com/joeblau/gitignore.io/issues/186 and https://github.com/joeblau/gitignore.io/issues/3

.idea/

### Python ###
# Byte-compiled / optimized / DLL files
__pycache__/
*.py[cod]
*$py.class

# C extensions
*.so

# Distribution / packaging
.Python
env/
build/
develop-eggs/
dist/
downloads/
eggs/
.eggs/
lib/
lib64/
```

```
parts/
sdist/
var/
wheels/
*.egg-info/
.installed.cfg
*.egg

# PyInstaller
#  Usually these files are written by a python script from a template
#  before PyInstaller builds the exe, so as to inject date/other infos into it.
*.manifest
*.spec

# Installer logs
pip-log.txt
pip-delete-this-directory.txt

# Unit test / coverage reports
htmlcov/
.tox/
.coverage
.coverage.*
.cache
nosetests.xml
coverage.xml
*,cover
```

```
.hypothesis/

# Translations
*.mo
*.pot

# Django stuff:
*.log
local_settings.py

# Flask stuff:
instance/
.webassets-cache

# Scrapy stuff:
.scrapy

# Sphinx documentation
docs/_build/

# PyBuilder
target/

# Jupyter Notebook
.ipynb_checkpoints

# pyenv
```

```
.python-version

# celery beat schedule file
celerybeat-schedule

# SageMath parsed files
*.sage.py

# dotenv
.env

# virtualenv
.venv
venv/
ENV/

# Spyder project settings
.spyderproject
.spyproject

# Rope project settings
.ropeproject

# mkdocs documentation
/site

### SublimeText ###
```

```
# cache files for sublime text
*.tmlanguage.cache
*.tmPreferences.cache
*.stTheme.cache

# workspace files are user-specific
*.sublime-workspace

# project files should be checked into the repository, unless a significant
# proportion of contributors will probably not be using SublimeText
# *.sublime-project

# sftp configuration file
sftp-config.json

# Package control specific files
Package Control.last-run
Package Control.ca-list
Package Control.ca-bundle
Package Control.system-ca-bundle
Package Control.cache/
Package Control.ca-certs/
Package Control.merged-ca-bundle
Package Control.user-ca-bundle
oscrypto-ca-bundle.crt
bh_unicode_properties.cache
```

```
# Sublime-github package stores a github token in this file
# https://packagecontrol.io/packages/sublime-github
GitHub.sublime-settings

### VisualStudioCode ###
.vscode/*
!.vscode/settings.json
!.vscode/tasks.json
!.vscode/launch.json
!.vscode/extensions.json
.history

# End of https://www.gitignore.io/api/font,linux,macos,python,fontforge,pycharm+all,sublimetext,visualstudi
```

C:\Users\david/src\Ligaturizer\.gitmodules

```
[submodule "fira"]
 path = fonts/fira
 url = https://github.com/tonsky/FiraCode.git
 shallow = true
[submodule "codeface"]
 path = fonts/codeface
 url = https://github.com/chrissimpkins/codeface.git
 shallow = true
[submodule "plex"]
 path = fonts/plex
 url = https://github.com/IBM/plex.git
 shallow = true
[submodule "fonts/spacemono"]
 path = fonts/spacemono
 url = https://github.com/googlefonts/spacemono.git
[submodule "fonts/Montserrat"]
 path = fonts/Montserrat
 url = https://github.com/JulietaUla/Montserrat.git
```

C:\Users\david/src\Ligaturizer\build.py

```
#!/usr/bin/env python
#
# Rebuild script for ligaturized fonts.
# Uses ligaturize.py to do the heavy lifting; this file basically just contains
# the mapping from input font paths to output fonts.

#### User configurable settings ####

# For the prefixed_fonts below, what word do we stick in front of the font name?
LIGATURIZED_FONT_NAME_PREFIX = "Liga"

# Should we copy some individual punctuations characters like &, ~, and <>,
# as well as ligatures? The full list is in ligatures.py.
# You can also override this (and OUTPUT_DIR) automatically by passing
# --copy-character-glyphs on the command line.
COPY_CHARACTER_GLYPHS = False

# If copying individual characters, how different in width (relative to the font
# we're ligaturizing) should they be before we attempt to width-correct them?
# The default (0.1) means to width-correct if they're +/- 10%. Values >1.0
# effectively disable this feature.
SCALE_CHARACTER_GLYPHS_THRESHOLD = 0.1

# Where to put the generated fonts.
OUTPUT_DIR = "fonts/output/"
```

```
#### Fonts that should be prefixed with "Liga" when ligaturized. ####
# Don't put fonts licensed under UFL here, and don't put fonts licensed under
# SIL OFL here either unless they haven't specified a Reserved Font Name.

prefixed_fonts = [
    # Apache 2.0 license
    "fonts/codeface/fonts/cousine/*.ttf",
    "fonts/codeface/fonts/droid-sans-mono/*.ttf",
    "fonts/codeface/fonts/meslo/*.ttf",
    "fonts/codeface/fonts/roboto-mono/*.ttf",
    # MIT license
    "fonts/codeface/fonts/dejavu-sans-mono/*.ttf",
    "fonts/codeface/fonts/hack/*.ttf",
    # SIL OFL with no Reserved Font Name
    "fonts/codeface/fonts/edlo/*.ttf",
    "fonts/codeface/fonts/inconsolata/*.ttf",
    "fonts/spacemono/fonts/*.ttf",
    "fonts/Montserrat/fonts/otf/*.otf",
    "fonts/Montserrat/fonts/ttf/*.ttf",
    "fonts/SauceCodePro**",
]

#### Fonts that need to be renamed. ####
# These are fonts that either have name collisions with the prefixed_fonts
# above, or are released under licenses that permit modification only if we
# change the name of the modified fonts.
```

```
renamed_fonts = {
    # This doesn't have a reserved name, but if we don't rename it it'll collide
    # with its sibling Fantasque Sans Mono Normal, listed above.
    "fonts/FantasqueSansMono-Normal/*.otf": "Liga Fantasque Sans Mono",
    "fonts/FantasqueSansMono-Normal/*.ttf": "Liga Fantasque Sans Mono",
    "fonts/FantasqueSansMono-NoLoopK/*.otf": "Liga Fantasque Sans Mono NoLoopK",
    "fonts/FantasqueSansMono-NoLoopK/*.ttf": "Liga Fantasque Sans Mono NoLoopK",
    "fonts/FantasqueSansMono-LargeLineHeight/*.otf": "Liga Fantasque Sans Mono LargeLineHeight",
    "fonts/FantasqueSansMono-LargeLineHeight/*.ttf": "Liga Fantasque Sans Mono LargeLineHeight",
    "fonts/FantasqueSansMono-LargeLineHeight-NoLoopK/*.otf": "Liga Fantasque Sans Mono LargeLineHe
    "fonts/FantasqueSansMono-LargeLineHeight-NoLoopK/*.ttf": "Liga Fantasque Sans Mono LargeLineHei
    # SIL OFL with reserved name
    "fonts/codeface/fonts/anonymous-pro/*.ttf": "Liganymous",
    "fonts/plex/IBM-Plex-Mono/fonts/complete/ttf/*.ttf": "Ligalex Mono",
    "fonts/codeface/fonts/oxygen-mono/*.otf": "Liga O2 Mono",
    "fonts/codeface/fonts/source-code-pro/*.ttf": "LigaSrc Pro",
    "fonts/SourceCodeVariable*": "LigaSrc Variable",
    "fonts/Hermit/*.otf": "Ligamit",
    # UFL
    "fonts/codeface/fonts/ubuntu-mono/*.ttf": "Ubuntu Mono Ligaturized",
}

#### Fonts we can't ligaturize. ####
# Fonts that we can't ligaturize because their licences do not permit derivative
# works of any kind.
# Individual users may still be able to make ligaturized versions for personal
# use, but we can't check them into the repo or include them in releases.
```

```
# prefixed_fonts += [
#   'CamingoCode*',
#   'SFMono*',
# ]

#### No user serviceable parts below this line. ####

import sys
from glob import glob
from ligaturize import ligaturize_font

if "--copy-character-glyphs" in sys.argv:
    COPY_CHARACTER_GLYPHS = True
    OUTPUT_DIR = "fonts/output-with-characters"



for pattern in prefixed_fonts:
    files = glob(pattern)
    if not files:
        print("Error: pattern '%s' didn't match any files." % pattern)
        sys.exit(1)
    for input_file in files:
        ligaturize_font(
            input_file,
            ligature_font_file=None,
            output_dir=OUTPUT_DIR,
```

```
            prefix=LIGATURIZED_FONT_NAME_PREFIX,
            output_name=None,
            copy_character_glyphs=COPY_CHARACTER_GLYPHS,
            scale_character_glyphs_threshold=SCALE_CHARACTER_GLYPHS_THRESHOLD,
        )


for pattern, name in renamed_fonts.items():
    files = glob(pattern)
    if not files:
        print("Error: pattern '%s' didn't match any files." % pattern)
        sys.exit(1)
    for input_file in files:
        ligaturize_font(
            input_file,
            ligature_font_file=None,
            output_dir=OUTPUT_DIR,
            prefix=None,
            output_name=name,
            copy_character_glyphs=COPY_CHARACTER_GLYPHS,
            scale_character_glyphs_threshold=SCALE_CHARACTER_GLYPHS_THRESHOLD,
        )
```

C:\Users\david/src\Ligaturizer\char_dict.py

```
char_dict = {
    'ampersand': '&',
    'asciicircum': '^',
    'asciitilde': '~',
    'asterisk': '*',
    'backslash': '\\',
    'bar': '|',
    'colon': ':',
    'equal': '=',
    'exclam': '!',
    'greater': '>',
    'hyphen': '-',
    'less': '<',
    'numbersign': '#',
    'percent': '%',
    'period': '.',
    'plus': '+',
    'question': '?',
    'semicolon': ';',
    'slash': '/',
    'underscore': '_',
    'at': '@',
    'braceleft': '{',
    'braceright': '}',
    'bracketleft': '[',
    'bracketright': ']',
```

```
    'dollar': '$',
    'parenleft': '(',
    'parenright': ')',
    'w': 'w',
}
```

C:\Users\david/src\Ligaturizer\LICENSE

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Version 3, 29 June 2007

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```
C:\Users\david/src\Ligaturizer\ligatures.py
## This is the master list of ligatures that ligaturize.py will attempt to copy
## from Fira Code to your output font. Ligatures that aren't present in the
## version of Fira Code you're using will be skipped.
## To disable ligatures, simply comment them out in this file.
ligatures = [
    {
        ## These are all the punctuation characters used in Fira Code ligatures.
        ## Use the `--copy-character-glyphs` option to copy these into the output
        ## font along with the ligatures themselves.
        'chars': [
            ## These characters generally look good in most fonts and are
            ## enabled by default if you use `--copy-character-glyphs`.
            'ampersand', 'asciicircum', 'asciitilde', 'asterisk',
            'backslash', 'bar',
            'colon', 'equal', 'exclam', 'greater', 'hyphen',
            'less', 'numbersign', 'percent', 'period', 'plus',
            'question', 'semicolon', 'slash', 'underscore',

            ## These characters are also used by the ligatures, but are likely
            ## to look more out of place when spliced into another font.
            # 'at', 'braceleft', 'braceright', 'bracketleft', 'bracketright',
            # 'dollar', 'parenleft', 'parenright', 'underscore', 'w'
        ],
        'firacode_ligature_name': None,
    },
    ## These are traditional (i.e. present in most variable-width fonts)
```

```
## aesthetic ligatures. They are commented out here so that they don't
## overwrite similar ligatures present in the destination font.
# {   # Fl
#     'chars': ['F', 'l'],
#     'firacode_ligature_name': 'F_l.liga',
# },
# {   # Tl
#     'chars': ['T', 'l'],
#     'firacode_ligature_name': 'T_l.liga',
# },
# {   # fi
#     'chars': ['f', 'i'],
#     'firacode_ligature_name': 'f_i.liga',
# },
# {   # fj
#     'chars': ['f', 'j'],
#     'firacode_ligature_name': 'f_j.liga',
# },
# {   # fl
#     'chars': ['f', 'l'],
#     'firacode_ligature_name': 'f_l.liga',
# },
# {   # ft
#     'chars': ['f', 't'],
#     'firacode_ligature_name': 'f_t.liga',
# },
## Programming ligatures begin here.
```

```
{   # &&
    'chars': ['ampersand', 'ampersand'],
    'firacode_ligature_name': 'ampersand_ampersand.liga',
},
{   # ^=
    'chars': ['asciicircum', 'equal'],
    'firacode_ligature_name': 'asciicircum_equal.liga',
},
{   # ~~
    'chars': ['asciitilde', 'asciitilde'],
    'firacode_ligature_name': 'asciitilde_asciitilde.liga',
},
{   # ~~>
    'chars': ['asciitilde', 'asciitilde', 'greater'],
    'firacode_ligature_name': 'asciitilde_asciitilde_greater.liga',
},
{   # ~@
    'chars': ['asciitilde', 'at'],
    'firacode_ligature_name': 'asciitilde_at.liga',
},
{   # ~=
    'chars': ['asciitilde', 'equal'],
    'firacode_ligature_name': 'asciitilde_equal.liga',
},
{   # ~>
    'chars': ['asciitilde', 'greater'],
    'firacode_ligature_name': 'asciitilde_greater.liga',
```

```
},
{   # ~-
    'chars': ['asciitilde', 'hyphen'],
    'firacode_ligature_name': 'asciitilde_hyphen.liga',
},
{   # **
    'chars': ['asterisk', 'asterisk'],
    'firacode_ligature_name': 'asterisk_asterisk.liga',
},
{   # ***
    'chars': ['asterisk', 'asterisk', 'asterisk'],
    'firacode_ligature_name': 'asterisk_asterisk_asterisk.liga',
},
{   # *>
    'chars': ['asterisk', 'greater'],
    'firacode_ligature_name': 'asterisk_greater.liga',
},
{   # */
    'chars': ['asterisk', 'slash'],
    'firacode_ligature_name': 'asterisk_slash.liga',
},
{   # \/
    'chars': ['backslash', 'slash'],
    'firacode_ligature_name': 'backslash_slash.liga',
},
{   # ||
    'chars': ['bar', 'bar'],
```

```
    'firacode_ligature_name': 'bar_bar.liga',
},
{   # |||>
    'chars': ['bar', 'bar', 'bar', 'greater'],
    'firacode_ligature_name': 'bar_bar_bar_greater.liga',
},
{   # ||=
    'chars': ['bar', 'bar', 'equal'],
    'firacode_ligature_name': 'bar_bar_equal.liga',
},
{   # ||>
    'chars': ['bar', 'bar', 'greater'],
    'firacode_ligature_name': 'bar_bar_greater.liga',
},
{   # ||-
    'chars': ['bar', 'bar', 'hyphen'],
    'firacode_ligature_name': 'bar_bar_hyphen.liga',
},
{   # |}
    'chars': ['bar', 'braceright'],
    'firacode_ligature_name': 'bar_braceright.liga',
},
{   # |]
    'chars': ['bar', 'bracketright'],
    'firacode_ligature_name': 'bar_bracketright.liga',
},
{   # |=
```

```
    'chars': ['bar', 'equal'],
    'firacode_ligature_name': 'bar_equal.liga',
},
{   # |=>
    'chars': ['bar', 'equal', 'greater'],
    'firacode_ligature_name': 'bar_equal_greater.liga',
},
{   # |>
    'chars': ['bar', 'greater'],
    'firacode_ligature_name': 'bar_greater.liga',
},
{   # |-
    'chars': ['bar', 'hyphen'],
    'firacode_ligature_name': 'bar_hyphen.liga',
},
{   # |->
    'chars': ['bar', 'hyphen', 'greater'],
    'firacode_ligature_name': 'bar_hyphen_greater.liga',
},
{   # {|
    'chars': ['braceleft', 'bar'],
    'firacode_ligature_name': 'braceleft_bar.liga',
},
{   # [|
    'chars': ['bracketleft', 'bar'],
    'firacode_ligature_name': 'bracketleft_bar.liga',
},
```

```
{   # ]#
    'chars': ['bracketright', 'numbersign'],
    'firacode_ligature_name': 'bracketright_numbersign.liga',
},
{   # ::
    'chars': ['colon', 'colon'],
    'firacode_ligature_name': 'colon_colon.liga',
},
{   # :::
    'chars': ['colon', 'colon', 'colon'],
    'firacode_ligature_name': 'colon_colon_colon.liga',
},
{   # ::=
    'chars': ['colon', 'colon', 'equal'],
    'firacode_ligature_name': 'colon_colon_equal.liga',
},
{   # :=
    'chars': ['colon', 'equal'],
    'firacode_ligature_name': 'colon_equal.liga',
},
{   # :>
    'chars': ['colon', 'greater'],
    'firacode_ligature_name': 'colon_greater.liga',
},
{   # :<
    'chars': ['colon', 'less'],
    'firacode_ligature_name': 'colon_less.liga',
```

```
},
{   # $>
    'chars': ['dollar', 'greater'],
    'firacode_ligature_name': 'dollar_greater.liga',
},
{   # =:=
    'chars': ['equal', 'colon', 'equal'],
    'firacode_ligature_name': 'equal_colon_equal.liga',
},
{   # ==
    'chars': ['equal', 'equal'],
    'firacode_ligature_name': 'equal_equal.liga',
},
{   # ===
    'chars': ['equal', 'equal', 'equal'],
    'firacode_ligature_name': 'equal_equal_equal.liga',
},
{   # ==>
    'chars': ['equal', 'equal', 'greater'],
    'firacode_ligature_name': 'equal_equal_greater.liga',
},
{   # =!=
    'chars': ['equal', 'exclam', 'equal'],
    'firacode_ligature_name': 'equal_exclam_equal.liga',
},
{   # =>
    'chars': ['equal', 'greater'],
```

```
    'firacode_ligature_name': 'equal_greater.liga',
},
{   # =>>
    'chars': ['equal', 'greater', 'greater'],
    'firacode_ligature_name': 'equal_greater_greater.liga',
},
{   # =<<
    'chars': ['equal', 'less', 'less'],
    'firacode_ligature_name': 'equal_less_less.liga',
},
{   # =/=
    'chars': ['equal', 'slash', 'equal'],
    'firacode_ligature_name': 'equal_slash_equal.liga',
},
{   # !=
    'chars': ['exclam', 'equal'],
    'firacode_ligature_name': 'exclam_equal.liga',
},
{   # !==
    'chars': ['exclam', 'equal', 'equal'],
    'firacode_ligature_name': 'exclam_equal_equal.liga',
},
{   # !!
    'chars': ['exclam', 'exclam'],
    'firacode_ligature_name': 'exclam_exclam.liga',
},
{   # !!.
```

```
    'chars': ['exclam', 'exclam', 'period'],
    'firacode_ligature_name': 'exclam_exclam_period.liga',
},
{   # >:
    'chars': ['greater', 'colon'],
    'firacode_ligature_name': 'greater_colon.liga',
},
{   # >=
    'chars': ['greater', 'equal'],
    'firacode_ligature_name': 'greater_equal.liga',
},
{   # >=>
    'chars': ['greater', 'equal', 'greater'],
    'firacode_ligature_name': 'greater_equal_greater.liga',
},
{   # >>
    'chars': ['greater', 'greater'],
    'firacode_ligature_name': 'greater_greater.liga',
},
{   # >>=
    'chars': ['greater', 'greater', 'equal'],
    'firacode_ligature_name': 'greater_greater_equal.liga',
},
{   # >>>
    'chars': ['greater', 'greater', 'greater'],
    'firacode_ligature_name': 'greater_greater_greater.liga',
},
```

```
{   # >>-
    'chars': ['greater', 'greater', 'hyphen'],
    'firacode_ligature_name': 'greater_greater_hyphen.liga',
},
{   # >-
    'chars': ['greater', 'hyphen'],
    'firacode_ligature_name': 'greater_hyphen.liga',
},
{   # >->
    'chars': ['greater', 'hyphen', 'greater'],
    'firacode_ligature_name': 'greater_hyphen_greater.liga',
},
{   # -~
    'chars': ['hyphen', 'asciitilde'],
    'firacode_ligature_name': 'hyphen_asciitilde.liga',
},
{   # -|
    'chars': ['hyphen', 'bar'],
    'firacode_ligature_name': 'hyphen_bar.liga',
},
{   # ->
    'chars': ['hyphen', 'greater'],
    'firacode_ligature_name': 'hyphen_greater.liga',
},
{   # ->>
    'chars': ['hyphen', 'greater', 'greater'],
    'firacode_ligature_name': 'hyphen_greater_greater.liga',
```

```
},
{   # --
    'chars': ['hyphen', 'hyphen'],
    'firacode_ligature_name': 'hyphen_hyphen.liga',
},
{   # -->
    'chars': ['hyphen', 'hyphen', 'greater'],
    'firacode_ligature_name': 'hyphen_hyphen_greater.liga',
},
{   # ---
    'chars': ['hyphen', 'hyphen', 'hyphen'],
    'firacode_ligature_name': 'hyphen_hyphen_hyphen.liga',
},
{   # -<
    'chars': ['hyphen', 'less'],
    'firacode_ligature_name': 'hyphen_less.liga',
},
{   # -<<
    'chars': ['hyphen', 'less', 'less'],
    'firacode_ligature_name': 'hyphen_less_less.liga',
},
{   # <~
    'chars': ['less', 'asciitilde'],
    'firacode_ligature_name': 'less_asciitilde.liga',
},
{   # <~~
    'chars': ['less', 'asciitilde', 'asciitilde'],
```

```
    'firacode_ligature_name': 'less_asciitilde_asciitilde.liga',
},
{   # <~>
    'chars': ['less', 'asciitilde', 'greater'],
    'firacode_ligature_name': 'less_asciitilde_greater.liga',
},
{   # <*
    'chars': ['less', 'asterisk'],
    'firacode_ligature_name': 'less_asterisk.liga',
},
{   # <*>
    'chars': ['less', 'asterisk', 'greater'],
    'firacode_ligature_name': 'less_asterisk_greater.liga',
},
{   # <|
    'chars': ['less', 'bar'],
    'firacode_ligature_name': 'less_bar.liga',
},
{   # <||
    'chars': ['less', 'bar', 'bar'],
    'firacode_ligature_name': 'less_bar_bar.liga',
},
{   # <|||
    'chars': ['less', 'bar', 'bar', 'bar'],
    'firacode_ligature_name': 'less_bar_bar_bar.liga',
},
{   # <|>
```

```
    'chars': ['less', 'bar', 'greater'],
    'firacode_ligature_name': 'less_bar_greater.liga',
},
{   # <:
    'chars': ['less', 'colon'],
    'firacode_ligature_name': 'less_colon.liga',
},
{   # <$
    'chars': ['less', 'dollar'],
    'firacode_ligature_name': 'less_dollar.liga',
},
{   # <$>
    'chars': ['less', 'dollar', 'greater'],
    'firacode_ligature_name': 'less_dollar_greater.liga',
},
{   # <=
    'chars': ['less', 'equal'],
    'firacode_ligature_name': 'less_equal.liga',
},
{   # <=|
    'chars': ['less', 'equal', 'bar'],
    'firacode_ligature_name': 'less_equal_bar.liga',
},
{   # <==
    'chars': ['less', 'equal', 'equal'],
    'firacode_ligature_name': 'less_equal_equal.liga',
},
```

```
{   # <==>
    'chars': ['less', 'equal', 'equal', 'greater'],
    'firacode_ligature_name': 'less_equal_equal_greater.liga',
},
{   # <=>
    'chars': ['less', 'equal', 'greater'],
    'firacode_ligature_name': 'less_equal_greater.liga',
},
{   # <=<
    'chars': ['less', 'equal', 'less'],
    'firacode_ligature_name': 'less_equal_less.liga',
},
{   # <!--
    'chars': ['less', 'exclam', 'hyphen', 'hyphen'],
    'firacode_ligature_name': 'less_exclam_hyphen_hyphen.liga',
},
{   # <>
    'chars': ['less', 'greater'],
    'firacode_ligature_name': 'less_greater.liga',
},
{   # <-
    'chars': ['less', 'hyphen'],
    'firacode_ligature_name': 'less_hyphen.liga',
},
{   # <-|
    'chars': ['less', 'hyphen', 'bar'],
    'firacode_ligature_name': 'less_hyphen_bar.liga',
```

```
},
{   # <->
    'chars': ['less', 'hyphen', 'greater'],
    'firacode_ligature_name': 'less_hyphen_greater.liga',
},
{   # <--
    'chars': ['less', 'hyphen', 'hyphen'],
    'firacode_ligature_name': 'less_hyphen_hyphen.liga',
},
{   # <-<
    'chars': ['less', 'hyphen', 'less'],
    'firacode_ligature_name': 'less_hyphen_less.liga',
},
{   # <<
    'chars': ['less', 'less'],
    'firacode_ligature_name': 'less_less.liga',
},
{   # <<=
    'chars': ['less', 'less', 'equal'],
    'firacode_ligature_name': 'less_less_equal.liga',
},
{   # <<-
    'chars': ['less', 'less', 'hyphen'],
    'firacode_ligature_name': 'less_less_hyphen.liga',
},
{   # <<->>
    'chars': ['less', 'less', 'hyphen', 'greater', 'greater'],
```

```
    'firacode_ligature_name': 'less_less_hyphen_greater_greater.liga',
},
{   # <<<
    'chars': ['less', 'less', 'less'],
    'firacode_ligature_name': 'less_less_less.liga',
},
{   # <+
    'chars': ['less', 'plus'],
    'firacode_ligature_name': 'less_plus.liga',
},
{   # <+>
    'chars': ['less', 'plus', 'greater'],
    'firacode_ligature_name': 'less_plus_greater.liga',
},
{   # </
    'chars': ['less', 'slash'],
    'firacode_ligature_name': 'less_slash.liga',
},
{   # </>
    'chars': ['less', 'slash', 'greater'],
    'firacode_ligature_name': 'less_slash_greater.liga',
},
{   # #{
    'chars': ['numbersign', 'braceleft'],
    'firacode_ligature_name': 'numbersign_braceleft.liga',
},
{   # #[
```

```
    'chars': ['numbersign', 'bracketleft'],
    'firacode_ligature_name': 'numbersign_bracketleft.liga',
},
{   # #:
    'chars': ['numbersign', 'colon'],
    'firacode_ligature_name': 'numbersign_colon.liga',
},
{   # #=
    'chars': ['numbersign', 'equal'],
    'firacode_ligature_name': 'numbersign_equal.liga',
},
{   # #!
    'chars': ['numbersign', 'exclam'],
    'firacode_ligature_name': 'numbersign_exclam.liga',
},
{   # ##
    'chars': ['numbersign', 'numbersign'],
    'firacode_ligature_name': 'numbersign_numbersign.liga',
},
{   # ###
    'chars': ['numbersign', 'numbersign', 'numbersign'],
    'firacode_ligature_name': 'numbersign_numbersign_numbersign.liga',
},
{   # ####
    'chars': ['numbersign', 'numbersign', 'numbersign', 'numbersign'],
    'firacode_ligature_name': 'numbersign_numbersign_numbersign_numbersign.liga',
},
```

```
{   # #(
    'chars': ['numbersign', 'parenleft'],
    'firacode_ligature_name': 'numbersign_parenleft.liga',
},
{   # #?
    'chars': ['numbersign', 'question'],
    'firacode_ligature_name': 'numbersign_question.liga',
},
{   # #_
    'chars': ['numbersign', 'underscore'],
    'firacode_ligature_name': 'numbersign_underscore.liga',
},
{   # #_(
    'chars': ['numbersign', 'underscore', 'parenleft'],
    'firacode_ligature_name': 'numbersign_underscore_parenleft.liga',
},
{   # %%
    'chars': ['percent', 'percent'],
    'firacode_ligature_name': 'percent_percent.liga',
},
{   # .=
    'chars': ['period', 'equal'],
    'firacode_ligature_name': 'period_equal.liga',
},
{   # .-
    'chars': ['period', 'hyphen'],
    'firacode_ligature_name': 'period_hyphen.liga',
```

```
},
{   # ..
    'chars': ['period', 'period'],
    'firacode_ligature_name': 'period_period.liga',
},
{   # ..=
    'chars': ['period', 'period', 'equal'],
    'firacode_ligature_name': 'period_period_equal.liga',
},
{   # ..<
    'chars': ['period', 'period', 'less'],
    'firacode_ligature_name': 'period_period_less.liga',
},
{   # ...
    'chars': ['period', 'period', 'period'],
    'firacode_ligature_name': 'period_period_period.liga',
},
{   # .?
    'chars': ['period', 'question'],
    'firacode_ligature_name': 'period_question.liga',
},
{   # +>
    'chars': ['plus', 'greater'],
    'firacode_ligature_name': 'plus_greater.liga',
},
{   # ++
    'chars': ['plus', 'plus'],
```

```
    'firacode_ligature_name': 'plus_plus.liga',
},
{   # +++
    'chars': ['plus', 'plus', 'plus'],
    'firacode_ligature_name': 'plus_plus_plus.liga',
},
{   # ?:
    'chars': ['question', 'colon'],
    'firacode_ligature_name': 'question_colon.liga',
},
{   # ?=
    'chars': ['question', 'equal'],
    'firacode_ligature_name': 'question_equal.liga',
},
{   # ?.
    'chars': ['question', 'period'],
    'firacode_ligature_name': 'question_period.liga',
},
{   # ??
    'chars': ['question', 'question'],
    'firacode_ligature_name': 'question_question.liga',
},
{   # ;;
    'chars': ['semicolon', 'semicolon'],
    'firacode_ligature_name': 'semicolon_semicolon.liga',
},
{   # /*
```

```
    'chars': ['slash', 'asterisk'],
    'firacode_ligature_name': 'slash_asterisk.liga',
},
{   # /\
    'chars': ['slash', 'backslash'],
    'firacode_ligature_name': 'slash_backslash.liga',
},
{   # /=
    'chars': ['slash', 'equal'],
    'firacode_ligature_name': 'slash_equal.liga',
},
{   # /==
    'chars': ['slash', 'equal', 'equal'],
    'firacode_ligature_name': 'slash_equal_equal.liga',
},
{   # />
    'chars': ['slash', 'greater'],
    'firacode_ligature_name': 'slash_greater.liga',
},
{   # //
    'chars': ['slash', 'slash'],
    'firacode_ligature_name': 'slash_slash.liga',
},
{   # ///
    'chars': ['slash', 'slash', 'slash'],
    'firacode_ligature_name': 'slash_slash_slash.liga',
},
```

```
    {   # _|_
        'chars': ['underscore', 'bar', 'underscore'],
        'firacode_ligature_name': 'underscore_bar_underscore.liga',
    },
    {   # __
        'chars': ['underscore', 'underscore'],
        'firacode_ligature_name': 'underscore_underscore.liga',
    },
    {   # www
        'chars': ['w', 'w', 'w'],
        'firacode_ligature_name': 'w_w_w.liga',
    },
]
```

C:\Users\david/src\Ligaturizer\ligaturize.py

```
#!/usr/bin/env python
#
# usage: fontforge -lang=py ligaturize.py [options]
# Run with --help for detailed options, or use the `build.py` script to
# process lots of fonts at once.
#
# See ligatures.py for a list of all the ligatures (and, optionally, individual
# characters) that will be copied.

import fontforge
import psMat
import os
from os import path
import sys

from ligatures import ligatures
from char_dict import char_dict

# Constants
COPYRIGHT = '''
Programming ligatures added by Ilya Skriblovsky from FiraCode
FiraCode Copyright (c) 2015 by Nikita Prokopov'''

def get_ligature_source(fontname):
    # Become case-insensitive
    fontname = fontname.lower()
```

```
    for weight in ['Bold', 'Retina', 'Medium', 'Regular', 'Light']:
        if fontname.endswith('-' + weight.lower()):
            # Exact match for one of the Fira Code weights
            return 'fonts/fira/distr/otf/FiraCode-%s.otf' % weight

    # No exact match. Guess that we want 'Bold' if the font name has 'bold' or
    # 'heavy' in it, and 'Regular' otherwise.
    if 'bold' in fontname or 'heavy' in fontname:
        return 'fonts/fira/distr/otf/FiraCode-Bold.otf'
    return 'fonts/fira/distr/otf/FiraCode-Regular.otf'

class LigatureCreator(object):

    def __init__(self, font, firacode,
                 scale_character_glyphs_threshold,
                 copy_character_glyphs):
        self.font = font
        self.firacode = firacode
        self.scale_character_glyphs_threshold = scale_character_glyphs_threshold
        self.should_copy_character_glyphs = copy_character_glyphs
        self._lig_counter = 0

        # Scale firacode to correct em height.
        self.firacode.em = self.font.em
        self.emwidth = self.font[ord('m')].width

    def copy_ligature_from_source(self, ligature_name):
```

```
    try:
        self.firacode.selection.none()
        self.firacode.selection.select(ligature_name)
        self.firacode.copy()
        return True
    except ValueError:
        return False


def correct_character_width(self, glyph):
    """Width-correct copied individual characters (not ligatures!).

    This will correct the horizontal advance of characters to match the em
    width of the output font, and (depending on the width of the glyph, the
    em width of the output font, and the value of the command line option
    --scale-character-glyphs-threshold) optionally horizontally scale it.

    Glyphs that are not horizontally scaled, but which still need horizontal
    advance correction, will be centered instead.
    """

    if glyph.width == self.emwidth:
        # No correction needed.
        return

    widthdelta = float(abs(glyph.width - self.emwidth)) / self.emwidth
    if widthdelta >= self.scale_character_glyphs_threshold:
        # Character is too wide/narrow compared to output font; scale it.
```

```
            scale = float(self.emwidth) / glyph.width
            glyph.transform(psMat.scale(scale, 1.0))
        else:
            # Do not scale; just center copied characters in their hbox.
            # Fix horizontal advance first, to recalculate the bearings.
            glyph.width = self.emwidth
            # Correct bearings to center the glyph.
            glyph.left_side_bearing = (glyph.left_side_bearing + glyph.right_side_bearing) / 2
            glyph.right_side_bearing = glyph.left_side_bearing

        # Final adjustment of horizontal advance to correct for rounding
        # errors when scaling/centering -- otherwise small errors can result
        # in visible misalignment near the end of long lines.
        glyph.width = self.emwidth


    def copy_character_glyphs(self, chars):
        """Copy individual (non-ligature) characters from the ligature font."""
        if not self.should_copy_character_glyphs:
            return
        print("    ...copying %d character glyphs..." % (len(chars)))

        for char in chars:
            self.firacode.selection.none()
            self.firacode.selection.select(char)
            self.firacode.copy()
            self.font.selection.none()
```

```
            self.font.selection.select(char)
            self.font.paste()
            self.correct_character_width(self.font[ord(char_dict[char])])

    def correct_ligature_width(self, glyph):
        """Correct the horizontal advance and scale of a ligature."""

        if glyph.width == self.emwidth:
            return

        # TODO: some kind of threshold here, similar to the character glyph
        # scale threshold? The largest ligature uses 0.956 of its hbox, so if
        # the target font is within 4% of the source font size, we don't need to
        # resize -- but we may want to adjust the bearings. And we can't just
        # center it, because ligatures are characterized by very large negative
        # left bearings -- they advance 1em, but draw from (-(n-1))em to +1em.
        scale = float(self.emwidth) / glyph.width
        glyph.transform(psMat.scale(scale, 1.0))
        glyph.width = self.emwidth

    def add_ligature(self, input_chars, firacode_ligature_name):
        if firacode_ligature_name is None:
            # No ligature name -- we're just copying a bunch of individual characters.
            self.copy_character_glyphs(input_chars)
            return

        if not self.copy_ligature_from_source(firacode_ligature_name):
```

```
    # Ligature not in source font.
    return

self._lig_counter += 1
ligature_name = 'lig.{}'.format(self._lig_counter)

self.font.createChar(-1, ligature_name)
self.font.selection.none()
self.font.selection.select(ligature_name)
self.font.paste()
self.correct_ligature_width(self.font[ligature_name])

self.font.selection.none()
self.font.selection.select('space')
self.font.copy()

lookup_name = lambda i: 'lookup.{}.{}'.format(self._lig_counter, i)
lookup_sub_name = lambda i: 'lookup.sub.{}.{}'.format(self._lig_counter, i)
cr_name = lambda i: 'CR.{}.{}'.format(self._lig_counter, i)

for i, char in enumerate(input_chars):
    self.font.addLookup(lookup_name(i), 'gsub_single', (), ())
    self.font.addLookupSubtable(lookup_name(i), lookup_sub_name(i))

    if char not in self.font:
        # We assume here that this is because char is a single letter
        # (e.g. 'w') rather than a character name, and the font we're
```

```
        # editing doesn't have glyphnames for letters.
        self.font[ord(char_dict[char])].glyphname = char

    if i < len(input_chars) - 1:
        self.font.createChar(-1, cr_name(i))
        self.font.selection.none()
        self.font.selection.select(cr_name(i))
        self.font.paste()

        self.font[char].addPosSub(lookup_sub_name(i), cr_name(i))
    else:
        self.font[char].addPosSub(lookup_sub_name(i), ligature_name)

calt_lookup_name = 'calt.{}'.format(self._lig_counter)
self.font.addLookup(calt_lookup_name, 'gsub_contextchain', (),
    (('calt', (('DFLT', ('dflt',)),
                ('arab', ('dflt',)),
                ('armn', ('dflt',)),
                ('cyrl', ('SRB ', 'dflt')),
                ('geor', ('dflt',)),
                ('grek', ('dflt',)),
                ('lao ', ('dflt',)),
                ('latn', ('CAT ', 'ESP ', 'GAL ', 'ISM ', 'KSM ', 'LSM ', 'MOL ', 'NSM ', 'ROM ', 'SKS ', 'SSM ', 'dfl
                ('math', ('dflt',)),
                ('thai', ('dflt',)))),)),
#print('CALT %s (%s)' % (calt_lookup_name, firacode_ligature_name))
for i, char in enumerate(input_chars):
```

```
            self.add_calt(calt_lookup_name, 'calt.{}.{}'.format(self._lig_counter, i),
                '{prev} | {cur} @<{lookup}> | {next}',
                prev = ' '.join(cr_name(j) for j in range(i)),
                cur = char,
                lookup = lookup_name(i),
                next = ' '.join(input_chars[i+1:]))

        # Add ignore rules
        self.add_calt(calt_lookup_name, 'calt.{}.{}'.format(self._lig_counter, i+1),
            '| {first} | {rest} {last}',
            first = input_chars[0],
            rest = ' '.join(input_chars[1:]),
            last = input_chars[-1])
        self.add_calt(calt_lookup_name, 'calt.{}.{}'.format(self._lig_counter, i+2),
            '{first} | {first} | {rest}',
            first = input_chars[0],
            rest = ' '.join(input_chars[1:]))

    def add_calt(self, calt_name, subtable_name, spec, **kwargs):
        spec = spec.format(**kwargs)
        #print('    %s: %s ' % (subtable_name, spec))
        self.font.addContextualSubtable(calt_name, subtable_name, 'glyph', spec)


def replace_sfnt(font, key, value):
    font.sfnt_names = tuple(
        (row[0], key, value)
```

```
        if row[1] == key
        else row
        for row in font.sfnt_names
    )

def update_font_metadata(font, new_name):
    # Figure out the input font's real name (i.e. without a hyphenated suffix)
    # and hyphenated suffix (if present)
    old_name = font.familyname
    try:
        suffix = font.fontname.split('-')[1]
    except IndexError:
        suffix = None

    # Replace the old name with the new name whether or not a suffix was present.
    # If a suffix was present, append it accordingly.
    font.familyname = new_name
    if suffix:
        font.fullname = "%s %s" % (new_name, suffix)
        font.fontname = "%s-%s" % (new_name.replace(' ', ''), suffix)
    else:
        font.fullname = new_name
        font.fontname = new_name.replace(' ', '')

    print("Ligaturizing font %s (%s) as '%s'" % (
        path.basename(font.path), old_name, new_name))
```

```
    font.copyright = (font.copyright or '') + COPYRIGHT
    replace_sfnt(font, 'UniqueID', '%s; Ligaturized' % font.fullname)
    replace_sfnt(font, 'Preferred Family', new_name)
    replace_sfnt(font, 'Compatible Full', new_name)
    replace_sfnt(font, 'Family', new_name)
    replace_sfnt(font, 'WWS Family', new_name)

def ligaturize_font(input_font_file, output_dir, ligature_font_file,
                    output_name, prefix, **kwargs):
    font = fontforge.open(input_font_file)

    if not ligature_font_file:
        ligature_font_file = get_ligature_source(font.fontname)

    if output_name:
        name = output_name
    else:
        name = font.familyname
    if prefix:
        name = "%s %s" % (prefix, name)

    update_font_metadata(font, name)

    print('    ...using ligatures from %s' % ligature_font_file)
    firacode = fontforge.open(ligature_font_file)

    creator = LigatureCreator(font, firacode, **kwargs)
```

```
    ligature_length = lambda lig: len(lig['chars'])
    for lig_spec in sorted(ligatures, key = ligature_length):
        try:
            creator.add_ligature(lig_spec['chars'], lig_spec['firacode_ligature_name'])
        except Exception as e:
            print('Exception while adding ligature: {}'.format(lig_spec))
            raise

    # Work around a bug in Fontforge where the underline height is subtracted from
    # the underline width when you call generate().
    font.upos += font.uwidth

    # Generate font type (TTF or OTF) corresponding to input font extension
    # (defaults to TTF)
    if input_font_file[-4:].lower() == '.otf':
        output_font_type = '.otf'
    else:
        output_font_type = '.ttf'

    # Generate font & move to output directory
    output_font_file = path.join(output_dir, font.fontname + output_font_type)
    print("    ...saving to '%s' (%s)" % (output_font_file, font.fullname))
    font.generate(output_font_file)


def parse_args():
    from argparse import ArgumentParser
```

```
parser = ArgumentParser()
parser.add_argument("input_font_file",
    help="The TTF or OTF font to add ligatures to.")
parser.add_argument("--output-dir",
    help="The directory to save the ligaturized font in. The actual filename"
        " will be automatically generated based on the input font name and"
        " the --prefix and --output-name flags.")
parser.add_argument("--ligature-font-file",
    type=str, default='', metavar='PATH',
    help="The file to copy ligatures from. If unspecified, ligaturize will"
        " attempt to pick a suitable one from fonts/fira/distr/otf/ based on the input"
        " font's weight.")
parser.add_argument("--copy-character-glyphs",
    default=False, action='store_true',
    help="Copy glyphs for (some) individual characters from the ligature"
        " font as well. This will result in punctuation that matches the"
        " ligatures more closely, but may not fit in as well with the rest"
        " of the font.")
parser.add_argument("--scale-character-glyphs-threshold",
    type=float, default=0.1, metavar='THRESHOLD',
    help="When copying character glyphs, if they differ in width from the"
        " width of the input font by at least this much, scale them"
        " horizontally to match the input font even if this noticeably"
        " changes their aspect ratio. The default (0.1) means to scale if"
        " they are at least 10%% wider or narrower. A value of 0 will scale"
        " all copied character glyphs; a value of 2 effectively disables"
        " character glyph scaling.")
```

```
    parser.add_argument("--prefix",
        type=str, default="Liga",
        help="String to prefix the name of the generated font with.")
    parser.add_argument("--output-name",
        type=str, default="",
        help="Name of the generated font. Completely replaces the original.")
    return parser.parse_args()


def main():
    ligaturize_font(**vars(parse_args()))


if __name__ == '__main__':
    main()
```

C:\Users\david/src\Ligaturizer\Makefile

```
# To build with different settings (e.g. turn on character glyph copying),
# edit build.py and then "make".

default: without-characters

all: without-characters with-characters

clean:
 rm -rf fonts/output/* fonts/output-with-characters/* Ligaturized*.zip

release: clean all pack

pack:
 zip -r -9 -j LigaturizedFonts.zip fonts/output/
 zip -r -9 -j LigaturizedFontsWithCharacters.zip fonts/output-with-characters/

without-characters:
 fontforge -lang=py -script build.py 2>&1 \
 | grep -Fv 'This contextual rule applies no lookups.' \
 | grep -Fv 'Bad device table'

with-characters:
 fontforge -lang=py -script build.py --copy-character-glyphs 2>&1 \
 | grep -Fv 'This contextual rule applies no lookups.' \
 | grep -Fv 'Bad device table'
```

```
ligature-list:
 luajit name2dict.lua < fonts/fira/FiraCode.glyphs


testpattern:
 grep -F "{   #" ligatures.py \
  | grep -v absent \
  | cut -d'#' -f2 \
  | tr -d ' ' \
  | egrep '.' \
  | sed -E 's,\\,\\\\,g' \
  | xargs printf '| %6s %6s %6s %6s %6s %6s %6s %6s |\n'


.PHONY: testpattern
```

C:\Users\david/src\Ligaturizer\README.md

Ligaturizer

Add ligatures to any coding font!

This script copies the ligatures (glyphs and rendering information) from [Fira Code](https://github.com/tonsl

This repo contains a [Fontforge python script](ligaturize.py) that you can use to add the Fira Code ligatures

Pre-ligaturized versions are available under [releases](https://github.com/ToxicFrog/Ligaturizer/releases).

Here's a couple examples of the fonts generated: SF Mono & Menlo with ligatures (note the `!=` and `->`):

Requirements

This Repo: You'll need the repo and its submodules, so `git clone` with `--recurse-submodules`.

Using the Fonts: See the [FiraCode README](https://github.com/tonsky/FiraCode) for a list of supporte

Script: This script requires FontForge python bindings. For Debian/Ubuntu they are available in `python

Using the Script

Automatic

Use automatic mode to easily convert 1 or more font(s).

1. Put the font(s) you want into `fonts/`.
1. Edit `ligatures.py` to disable any ligatures you don't want, and/or enable any (non-ligature) characters y
1. Edit `build.py` to add your new font(s) to the `prefixed_fonts` list. It supports globbing, so if (e.g.) you wa
1. Run `make`.
1. Retrieve the ligaturized fonts from `fonts/output/`.
1. The output fonts will be renamed with the prefix "Liga".

Manual

1. Move/copy the font you want to ligaturize into `fonts/` (or somewhere else convenient).
1. Edit `ligatures.py` to disable any ligatures you don't want.
1. Run the script:

```
$ fontforge -lang py -script ligaturize.py path/to/input/font.ttf
    --output-dir=path/to/output/dir/ \
    --output-name='Name of Ligaturized Font'
```

e.g.

```
$ fontforge -lang py -script ligaturize.py fonts/Cousine-Regular.ttf
    --output-dir='fonts/output/' \
    --output-name='Ligaturized Cousine'
```

Which will produce `fonts/output/LigaturizedCousine-Regular.ttf`.

The font weight will be inherited from the original file; the font name will be replaced with whatever you spe

`ligatures.py` supports some additional command line options to (e.g.) change which font ligatures are copi

Misc.

Credit

This script was originally written by [IlyaSkriblovsky](https://github.com/IlyaSkriblovsky) for adding ligatures

Contributions

Contributions always welcome! Please submit a Pull Request, or create an Issue if you have an idea for a f

Related Projects

For more awesome programming fonts with ligatures, check out:

1. [FiraCode](https://github.com/tonsky/FiraCode)
2. [Hasklig](https://github.com/i-tu/Hasklig)

C:\Users\david/src\Ligaturizer\stat.py

```
#!/usr/bin/env python
#
# usage: fontforge -lang=py ligaturize.py <input file> <output file> [ligature file]
#
# It will copy input to output, updating the embedded font name and splicing
# in the ligatures from FiraCode-Medium.otf (which must be in $PWD). If the
# ligature file is not specified, it will try to guess an appropriate Fira Code
# OTF based on the name of the output file.
#
# See ligatures.py for a list of all the ligatures that will be copied.

import fontforge
import os
from os import path
import sys

input_font_path = sys.argv[1]
font = fontforge.open(input_font_path)

for field in dir(font):
  if field.startswith('__'):
    continue
  value = getattr(font, field)
  if 'built-in' in str(value):
    continue
  print("%s = %s" % (field, value))
```

```
#print "emwidth = %d" % (font['m'].width)

print("emwidth = %d" % (font[ord('m')].width))

print("aspect = %f" % (float(font[ord('m')].width)/font.em))


#print "font: %d %d %d " % (font.upos, font.capHeight, font.xHeight)
```

C:\Users\david/src\Ligaturizer\testpattern

~!@#$%^&*()_+ `1234567890-=

QWERTYUIOP{}| qwertyuiop[]\

ASDFGHJKL:" asdfghjkl;'

ZXCVBNM< >? zxcvbnm,./

regenerate with 'make testpattern >> testpattern'

| { { { { { { && ^= |

| ~~ ~~> ~@ ~= ~> ~- ** *** |

| *> */ / || |||> ||= ||> ||- |

| |} |] |= |=> |> |- |-> {| |

| [|] :: ::: ::= := :> :< |

| $> =:= == === ==> =!= => =>> |

| =<< =/= != !== !! !!. >: >= |

| >=> >> >>= >>> >>- >- >-> -~ |

| -| -> ->> -- --> --- -< -<< |

| <~ <~~ <~> <* <*> <| <|| <||| |

| <|> <: <$ <$> <= <=| <== <==> |

| <=> <=< <!-- <> <- <-| <-> <-- |

| <-< << <<= <<- <<->> <<< <+ <+> |

| </ </> %% .= .- .. ..= ..< |

| ... .? +> ++ +++ ?: ?= ?. |

| ?? ;; /* //= /== /> // /// |

| _|_ __ www |

C:\Users\david/src\Ligaturizer\.git\config

```
[core]
 repositoryformatversion = 0
 filemode = false
 bare = false
 logallrefupdates = true
 symlinks = false
 ignorecase = true
[remote "origin"]
 url = git@github.com:ToxicFrog/Ligaturizer.git
 fetch = +refs/heads/*:refs/remotes/origin/*
[branch "master"]
 remote = origin
 merge = refs/heads/master
```

C:\Users\david/src\Ligaturizer\.git\description

Unnamed repository; edit this file 'description' to name the repository.

C:\Users\david/src\Ligaturizer\.git\FETCH_HEAD

c4065187a544a8fab40826fc91db1c6180a2d342 branch 'master' of github.com:ToxicFrog/Ligaturizer

C:\Users\david/src\Ligaturizer\.git\HEAD

ref: refs/heads/master

C:\Users\david/src\Ligaturizer\.git\index

C:\Users\david/src\Ligaturizer\.git\packed-refs

pack-refs with: peeled fully-peeled sorted

c4065187a544a8fab40826fc91db1c6180a2d342 refs/remotes/origin/master

01b7c2bb014acfe733100596cc2bcf8ff64fafa5 refs/tags/v1

5389c7c2b33f515b9de6a220894c0203662d86f6 refs/tags/v2

ff89b86078871c24b4c48a7420ed87580aae51df refs/tags/v3

6d3070ae1c6b1a6ec196db486be813d713c7ce9c refs/tags/v4

c4065187a544a8fab40826fc91db1c6180a2d342 refs/tags/v5

C:\Users\david/src\Ligaturizer\.git\hooks\applypatch-msg.sample

```
#!/bin/sh
#
# An example hook script to check the commit log message taken by
# applypatch from an e-mail message.
#
# The hook should exit with non-zero status after issuing an
# appropriate message if it wants to stop the commit.  The hook is
# allowed to edit the commit message file.
#
# To enable this hook, rename this file to "applypatch-msg".

. git-sh-setup
commitmsg="$(git rev-parse --git-path hooks/commit-msg)"
test -x "$commitmsg" && exec "$commitmsg" ${1+"$@"}
:
```

C:\Users\david/src\Ligaturizer\.git\hooks\commit-msg.sample

```
#!/bin/sh
#
# An example hook script to check the commit log message.
# Called by "git commit" with one argument, the name of the file
# that has the commit message.  The hook should exit with non-zero
# status after issuing an appropriate message if it wants to stop the
# commit.  The hook is allowed to edit the commit message file.
#
# To enable this hook, rename this file to "commit-msg".


# Uncomment the below to add a Signed-off-by line to the message.
# Doing this in a hook is a bad idea in general, but the prepare-commit-msg
# hook is more suited to it.
#
# SOB=$(git var GIT_AUTHOR_IDENT | sed -n 's/^\(.*>\).*$/Signed-off-by: \1/p')
# grep -qs "^$SOB" "$1" || echo "$SOB" >> "$1"


# This example catches duplicate Signed-off-by lines.


test "" = "$(grep '^Signed-off-by: ' "$1" |
  sort | uniq -c | sed -e '/^[  ]*1[  ]/d')" || {
 echo >&2 Duplicate Signed-off-by lines.
 exit 1
}
```

C:\Users\david/src\Ligaturizer\.git\hooks\fsmonitor-watchman.sample

```
#!/usr/bin/perl

use strict;
use warnings;
use IPC::Open2;

# An example hook script to integrate Watchman
# (https://facebook.github.io/watchman/) with git to speed up detecting
# new and modified files.
#
# The hook is passed a version (currently 2) and last update token
# formatted as a string and outputs to stdout a new update token and
# all files that have been modified since the update token. Paths must
# be relative to the root of the working tree and separated by a single NUL.
#
# To enable this hook, rename this file to "query-watchman" and set
# 'git config core.fsmonitor .git/hooks/query-watchman'
#
my ($version, $last_update_token) = @ARGV;

# Uncomment for debugging
# print STDERR "$0 $version $last_update_token\n";

# Check the hook interface version
if ($version ne 2) {
 die "Unsupported query-fsmonitor hook version '$version'.\n" .
```

```
    "Falling back to scanning...\n";
}

my $git_work_tree = get_working_dir();

my $retry = 1;

my $json_pkg;
eval {
 require JSON::XS;
 $json_pkg = "JSON::XS";
 1;
} or do {
 require JSON::PP;
 $json_pkg = "JSON::PP";
};

launch_watchman();

sub launch_watchman {
 my $o = watchman_query();
 if (is_work_tree_watched($o)) {
  output_result($o->{clock}, @{$o->{files}});
 }
}

sub output_result {
```

```
 my ($clockid, @files) = @_;

 # Uncomment for debugging watchman output
 # open (my $fh, ">", ".git/watchman-output.out");
 # binmode $fh, ":utf8";
 # print $fh "$clockid\n@files\n";
 # close $fh;

 binmode STDOUT, ":utf8";
 print $clockid;
 print "\0";
 local $, = "\0";
 print @files;
}

sub watchman_clock {
 my $response = qx/watchman clock "$git_work_tree"/;
 die "Failed to get clock id on '$git_work_tree'.\n" .
  "Falling back to scanning...\n" if $? != 0;

 return $json_pkg->new->utf8->decode($response);
}

sub watchman_query {
 my $pid = open2(\*CHLD_OUT, \*CHLD_IN, 'watchman -j --no-pretty')
 or die "open2() failed: $!\n" .
 "Falling back to scanning...\n";
```

```
# In the query expression below we're asking for names of files that
# changed since $last_update_token but not from the .git folder.
#
# To accomplish this, we're using the "since" generator to use the
# recency index to select candidate nodes and "fields" to limit the
# output to file names only. Then we're using the "expression" term to
# further constrain the results.
my $last_update_line = "";
if (substr($last_update_token, 0, 1) eq "c") {
 $last_update_token = "\"$last_update_token\"";
 $last_update_line = qq[\n"since": $last_update_token,];
}
my $query = <<" END";
 ["query", "$git_work_tree", {$last_update_line
  "fields": ["name"],
  "expression": ["not", ["dirname", ".git"]]
 }]
END

# Uncomment for debugging the watchman query
# open (my $fh, ">", ".git/watchman-query.json");
# print $fh $query;
# close $fh;

print CHLD_IN $query;
close CHLD_IN;
```

```
 my $response = do {local $/; <CHLD_OUT>};

 # Uncomment for debugging the watch response
 # open ($fh, ">", ".git/watchman-response.json");
 # print $fh $response;
 # close $fh;

 die "Watchman: command returned no output.\n" .
 "Falling back to scanning...\n" if $response eq "";
 die "Watchman: command returned invalid output: $response\n" .
 "Falling back to scanning...\n" unless $response =~ /^\{/;

 return $json_pkg->new->utf8->decode($response);
}

sub is_work_tree_watched {
 my ($output) = @_;
 my $error = $output->{error};
 if ($retry > 0 and $error and $error =~ m/unable to resolve root .* directory (.*) is not watched/) {
  $retry--;
  my $response = qx/watchman watch "$git_work_tree"/;
  die "Failed to make watchman watch '$git_work_tree'.\n" .
      "Falling back to scanning...\n" if $? != 0;
  $output = $json_pkg->new->utf8->decode($response);
  $error = $output->{error};
  die "Watchman: $error.\n" .
  "Falling back to scanning...\n" if $error;
```

```
 # Uncomment for debugging watchman output
 # open (my $fh, ">", ".git/watchman-output.out");
 # close $fh;

 # Watchman will always return all files on the first query so
 # return the fast "everything is dirty" flag to git and do the
 # Watchman query just to get it over with now so we won't pay
 # the cost in git to look up each individual file.
 my $o = watchman_clock();
 $error = $output->{error};

 die "Watchman: $error.\n" .
 "Falling back to scanning...\n" if $error;

 output_result($o->{clock}, ("/"));
 $last_update_token = $o->{clock};

 eval { launch_watchman() };
 return 0;
}

die "Watchman: $error.\n" .
"Falling back to scanning...\n" if $error;

return 1;
}
```

```
sub get_working_dir {
 my $working_dir;
 if ($^O =~ 'msys' || $^O =~ 'cygwin') {
  $working_dir = Win32::GetCwd();
  $working_dir =~ tr/\\/\/;
 } else {
  require Cwd;
  $working_dir = Cwd::cwd();
 }

 return $working_dir;
}
```

C:\Users\david/src\Ligaturizer\.git\hooks\post-update.sample

```
#!/bin/sh
#
# An example hook script to prepare a packed repository for use over
# dumb transports.
#
# To enable this hook, rename this file to "post-update".

exec git update-server-info
```

C:\Users\david/src\Ligaturizer\.git\hooks\pre-applypatch.sample

```
#!/bin/sh
#
# An example hook script to verify what is about to be committed
# by applypatch from an e-mail message.
#
# The hook should exit with non-zero status after issuing an
# appropriate message if it wants to stop the commit.
#
# To enable this hook, rename this file to "pre-applypatch".

. git-sh-setup
precommit="$(git rev-parse --git-path hooks/pre-commit)"
test -x "$precommit" && exec "$precommit" ${1+"$@"}
:
```

C:\Users\david/src\Ligaturizer\.git\hooks\pre-commit.sample

```
#!/bin/sh
#
# An example hook script to verify what is about to be committed.
# Called by "git commit" with no arguments.  The hook should
# exit with non-zero status after issuing an appropriate message if
# it wants to stop the commit.
#
# To enable this hook, rename this file to "pre-commit".

if git rev-parse --verify HEAD >/dev/null 2>&1
then
 against=HEAD
else
 # Initial commit: diff against an empty tree object
 against=$(git hash-object -t tree /dev/null)
fi

# If you want to allow non-ASCII filenames set this variable to true.
allownonascii=$(git config --type=bool hooks.allownonascii)

# Redirect output to stderr.
exec 1>&2

# Cross platform projects tend to avoid non-ASCII filenames; prevent
# them from being added to the repository. We exploit the fact that the
# printable range starts at the space character and ends with tilde.
```

```
if [ "$allownonascii" != "true" ] &&
 # Note that the use of brackets around a tr range is ok here, (it's
 # even required, for portability to Solaris 10's /usr/bin/tr), since
 # the square bracket bytes happen to fall in the designated range.
 test $(git diff --cached --name-only --diff-filter=A -z $against |
   LC_ALL=C tr -d '[ -~]\0' | wc -c) != 0
then
 cat <<\EOF
Error: Attempt to add a non-ASCII file name.

This can cause problems if you want to work with people on other platforms.

To be portable it is advisable to rename the file.

If you know what you are doing you can disable this check using:

  git config hooks.allownonascii true
EOF
 exit 1
fi

# If there are whitespace errors, print the offending file names and fail.
exec git diff-index --check --cached $against --
```

C:\Users\david/src\Ligaturizer\.git\hooks\pre-merge-commit.sample

```
#!/bin/sh
#
# An example hook script to verify what is about to be committed.
# Called by "git merge" with no arguments.  The hook should
# exit with non-zero status after issuing an appropriate message to
# stderr if it wants to stop the merge commit.
#
# To enable this hook, rename this file to "pre-merge-commit".

. git-sh-setup
test -x "$GIT_DIR/hooks/pre-commit" &&
        exec "$GIT_DIR/hooks/pre-commit"
:
```

C:\Users\david/src\Ligaturizer\.git\hooks\pre-push.sample

```
#!/bin/sh

# An example hook script to verify what is about to be pushed.  Called by "git
# push" after it has checked the remote status, but before anything has been
# pushed.  If this script exits with a non-zero status nothing will be pushed.
#
# This hook is called with the following parameters:
#
# $1 -- Name of the remote to which the push is being done
# $2 -- URL to which the push is being done
#
# If pushing without using a named remote those arguments will be equal.
#
# Information about the commits which are being pushed is supplied as lines to
# the standard input in the form:
#
#   <local ref> <local oid> <remote ref> <remote oid>
#
# This sample shows how to prevent push of commits where the log message starts
# with "WIP" (work in progress).

remote="$1"
url="$2"

zero=$(git hash-object --stdin </dev/null | tr '[0-9a-f]' '0')
```

```
while read local_ref local_oid remote_ref remote_oid
do
 if test "$local_oid" = "$zero"
 then
  # Handle delete
  :
 else
  if test "$remote_oid" = "$zero"
  then
   # New branch, examine all commits
   range="$local_oid"
  else
   # Update to existing branch, examine new commits
   range="$remote_oid..$local_oid"
  fi

  # Check for WIP commit
  commit=$(git rev-list -n 1 --grep '^WIP' "$range")
  if test -n "$commit"
  then
   echo >&2 "Found WIP commit in $local_ref, not pushing"
   exit 1
  fi
 fi
done

exit 0
```

C:\Users\david/src\Ligaturizer\.git\hooks\pre-rebase.sample

```
#!/bin/sh
#
# Copyright (c) 2006, 2008 Junio C Hamano
#
# The "pre-rebase" hook is run just before "git rebase" starts doing
# its job, and can prevent the command from running by exiting with
# non-zero status.
#
# The hook is called with the following parameters:
#
# $1 -- the upstream the series was forked from.
# $2 -- the branch being rebased (or empty when rebasing the current branch).
#
# This sample shows how to prevent topic branches that are already
# merged to 'next' branch from getting rebased, because allowing it
# would result in rebasing already published history.

publish=next
basebranch="$1"
if test "$#" = 2
then
 topic="refs/heads/$2"
else
 topic=`git symbolic-ref HEAD` ||
 exit 0 ;# we do not interrupt rebasing detached HEAD
fi
```

```
case "$topic" in
refs/heads/??/*)
 ;;
*)
 exit 0 ;# we do not interrupt others.
 ;;
esac

# Now we are dealing with a topic branch being rebased
# on top of master.  Is it OK to rebase it?

# Does the topic really exist?
git show-ref -q "$topic" || {
 echo >&2 "No such branch $topic"
 exit 1
}

# Is topic fully merged to master?
not_in_master=`git rev-list --pretty=oneline ^master "$topic"`
if test -z "$not_in_master"
then
 echo >&2 "$topic is fully merged to master; better remove it."
 exit 1 ;# we could allow it, but there is no point.
fi

# Is topic ever merged to next?  If so you should not be rebasing it.
```

```
only_next_1=`git rev-list ^master "^$topic" ${publish} | sort`
only_next_2=`git rev-list ^master           ${publish} | sort`
if test "$only_next_1" = "$only_next_2"
then
 not_in_topic=`git rev-list "^$topic" master`
 if test -z "$not_in_topic"
 then
  echo >&2 "$topic is already up to date with master"
  exit 1 ;# we could allow it, but there is no point.
 else
  exit 0
 fi
else
 not_in_next=`git rev-list --pretty=oneline ^${publish} "$topic"`
 /usr/bin/perl -e '
  my $topic = $ARGV[0];
  my $msg = "* $topic has commits already merged to public branch:\n";
  my (%not_in_next) = map {
   /^([0-9a-f]+) /;
   ($1 => 1);
  } split(/\n/, $ARGV[1]);
  for my $elem (map {
    /^([0-9a-f]+) (.*)$/;
    [$1 => $2];
   } split(/\n/, $ARGV[2])) {
   if (!exists $not_in_next{$elem->[0]}) {
    if ($msg) {
```

```
     print STDERR $msg;
     undef $msg;
    }
    print STDERR " $elem->[1]\n";
   }
  }
 ' "$topic" "$not_in_next" "$not_in_master"
 exit 1
fi

<<\DOC_END

This sample hook safeguards topic branches that have been
published from being rewound.

The workflow assumed here is:

 * Once a topic branch forks from "master", "master" is never
   merged into it again (either directly or indirectly).

 * Once a topic branch is fully cooked and merged into "master",
   it is deleted.  If you need to build on top of it to correct
   earlier mistakes, a new topic branch is created by forking at
   the tip of the "master".  This is not strictly necessary, but
   it makes it easier to keep your history simple.

 * Whenever you need to test or publish your changes to topic
```

branches, merge them into "next" branch.

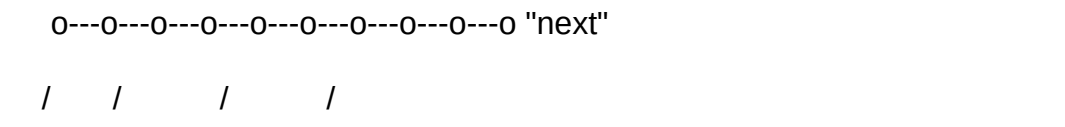
The script, being an example, hardcodes the publish branch name
to be "next", but it is trivial to make it configurable via
$GIT_DIR/config mechanism.

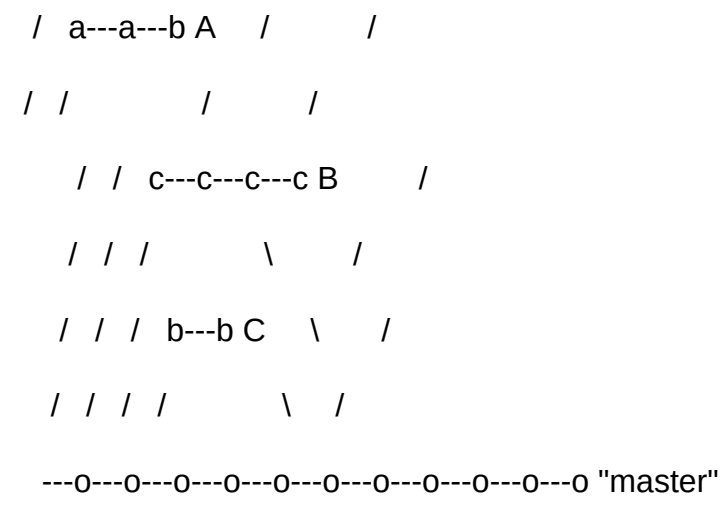
With this workflow, you would want to know:

(1) ... if a topic branch has ever been merged to "next". Young
topic branches can have stupid mistakes you would rather
clean up before publishing, and things that have not been
merged into other branches can be easily rebased without
affecting other people. But once it is published, you would
not want to rewind it.

(2) ... if a topic branch has been fully merged to "master".
Then you can delete it. More importantly, you should not
build on top of it -- other people may already want to
change things related to the topic as patches against your
"master", so if you need further changes, it is better to
fork the topic (perhaps with the same name) afresh from the
tip of "master".

Let's look at this example:





A, B and C are topic branches.

* A has one fix since it was merged up to "next".

* B has finished. It has been fully merged up to "master" and "next",
  and is ready to be deleted.

* C has not merged to "next" at all.

We would want to allow C to be rebased, refuse A, and encourage
B to be deleted.

To compute (1):

```
git rev-list ^master ^topic next
git rev-list ^master        next
```

if these match, topic has not merged in next at all.

To compute (2):

git rev-list master..topic

if this is empty, it is fully merged to "master".

DOC_END

C:\Users\david/src\Ligaturizer\.git\hooks\pre-receive.sample

```
#!/bin/sh
#
# An example hook script to make use of push options.
# The example simply echoes all push options that start with 'echoback='
# and rejects all pushes when the "reject" push option is used.
#
# To enable this hook, rename this file to "pre-receive".

if test -n "$GIT_PUSH_OPTION_COUNT"
then
 i=0
 while test "$i" -lt "$GIT_PUSH_OPTION_COUNT"
 do
  eval "value=\$GIT_PUSH_OPTION_$i"
  case "$value" in
  echoback=*)
   echo "echo from the pre-receive-hook: ${value#*=}" >&2
   ;;
  reject)
   exit 1
  esac
  i=$((i + 1))
 done
fi
```

C:\Users\david/src\Ligaturizer\.git\hooks\prepare-commit-msg.sample

```
#!/bin/sh
#
# An example hook script to prepare the commit log message.
# Called by "git commit" with the name of the file that has the
# commit message, followed by the description of the commit
# message's source.  The hook's purpose is to edit the commit
# message file.  If the hook fails with a non-zero status,
# the commit is aborted.
#
# To enable this hook, rename this file to "prepare-commit-msg".

# This hook includes three examples. The first one removes the
# "# Please enter the commit message..." help message.
#
# The second includes the output of "git diff --name-status -r"
# into the message, just before the "git status" output.  It is
# commented because it doesn't cope with --amend or with squashed
# commits.
#
# The third example adds a Signed-off-by line to the message, that can
# still be edited.  This is rarely a good idea.

COMMIT_MSG_FILE=$1
COMMIT_SOURCE=$2
SHA1=$3
```

```
/usr/bin/perl -i.bak -ne 'print unless(m/^. Please enter the commit message/..m/^#$/)' "$COMMIT_MSG_FIL


# case "$COMMIT_SOURCE,$SHA1" in
#  ,|template,)
#    /usr/bin/perl -i.bak -pe '
#       print "\n" . `git diff --cached --name-status -r`
#   if /^#/ && $first++ == 0' "$COMMIT_MSG_FILE" ;;
#  *) ;;
# esac


# SOB=$(git var GIT_COMMITTER_IDENT | sed -n 's/^\(.*>\).*$/Signed-off-by: \1/p')
# git interpret-trailers --in-place --trailer "$SOB" "$COMMIT_MSG_FILE"
# if test -z "$COMMIT_SOURCE"
# then
#   /usr/bin/perl -i.bak -pe 'print "\n" if !$first_line++' "$COMMIT_MSG_FILE"
# fi
```

C:\Users\david/src\Ligaturizer\.git\hooks\push-to-checkout.sample

```
#!/bin/sh

# An example hook script to update a checked-out tree on a git push.
#
# This hook is invoked by git-receive-pack(1) when it reacts to git
# push and updates reference(s) in its repository, and when the push
# tries to update the branch that is currently checked out and the
# receive.denyCurrentBranch configuration variable is set to
# updateInstead.
#
# By default, such a push is refused if the working tree and the index
# of the remote repository has any difference from the currently
# checked out commit; when both the working tree and the index match
# the current commit, they are updated to match the newly pushed tip
# of the branch. This hook is to be used to override the default
# behaviour; however the code below reimplements the default behaviour
# as a starting point for convenient modification.
#
# The hook receives the commit with which the tip of the current
# branch is going to be updated:
commit=$1

# It can exit with a non-zero status to refuse the push (when it does
# so, it must not modify the index or the working tree).
die () {
 echo >&2 "$*"
```

```
 exit 1
}

# Or it can make any necessary changes to the working tree and to the
# index to bring them to the desired state when the tip of the current
# branch is updated to the new commit, and exit with a zero status.
#
# For example, the hook can simply run git read-tree -u -m HEAD "$1"
# in order to emulate git fetch that is run in the reverse direction
# with git push, as the two-tree form of git read-tree -u -m is
# essentially the same as git switch or git checkout that switches
# branches while keeping the local changes in the working tree that do
# not interfere with the difference between the branches.

# The below is a more-or-less exact translation to shell of the C code
# for the default behaviour for git's push-to-checkout hook defined in
# the push_to_deploy() function in builtin/receive-pack.c.
#
# Note that the hook will be executed from the repository directory,
# not from the working tree, so if you want to perform operations on
# the working tree, you will have to adapt your code accordingly, e.g.
# by adding "cd .." or using relative paths.

if ! git update-index -q --ignore-submodules --refresh
then
 die "Up-to-date check failed"
fi
```

```
if ! git diff-files --quiet --ignore-submodules --
then
 die "Working directory has unstaged changes"
fi

# This is a rough translation of:
#
#   head_has_history() ? "HEAD" : EMPTY_TREE_SHA1_HEX
if git cat-file -e HEAD 2>/dev/null
then
 head=HEAD
else
 head=$(git hash-object -t tree --stdin </dev/null)
fi

if ! git diff-index --quiet --cached --ignore-submodules $head --
then
 die "Working directory has staged changes"
fi

if ! git read-tree -u -m "$commit"
then
 die "Could not update working tree to new HEAD"
fi
```

C:\Users\david/src\Ligaturizer\.git\hooks\sendemail-validate.sample

```
#!/bin/sh

# An example hook script to validate a patch (and/or patch series) before
# sending it via email.
#
# The hook should exit with non-zero status after issuing an appropriate
# message if it wants to prevent the email(s) from being sent.
#
# To enable this hook, rename this file to "sendemail-validate".
#
# By default, it will only check that the patch(es) can be applied on top of
# the default upstream branch without conflicts in a secondary worktree. After
# validation (successful or not) of the last patch of a series, the worktree
# will be deleted.
#
# The following config variables can be set to change the default remote and
# remote ref that are used to apply the patches against:
#
#   sendemail.validateRemote (default: origin)
#   sendemail.validateRemoteRef (default: HEAD)
#
# Replace the TODO placeholders with appropriate checks according to your
# needs.

validate_cover_letter () {
 file="$1"
```

```
 # TODO: Replace with appropriate checks (e.g. spell checking).
 true
}

validate_patch () {
 file="$1"
 # Ensure that the patch applies without conflicts.
 git am -3 "$file" || return
 # TODO: Replace with appropriate checks for this patch
 # (e.g. checkpatch.pl).
 true
}

validate_series () {
 # TODO: Replace with appropriate checks for the whole series
 # (e.g. quick build, coding style checks, etc.).
 true
}

# main -----------------------------------------------------------------

if test "$GIT_SENDEMAIL_FILE_COUNTER" = 1
then
 remote=$(git config --default origin --get sendemail.validateRemote) &&
 ref=$(git config --default HEAD --get sendemail.validateRemoteRef) &&
 worktree=$(mktemp --tmpdir -d sendemail-validate.XXXXXXX) &&
 git worktree add -fd --checkout "$worktree" "refs/remotes/$remote/$ref" &&
```

```
 git config --replace-all sendemail.validateWorktree "$worktree"
else
 worktree=$(git config --get sendemail.validateWorktree)
fi || {
 echo "sendemail-validate: error: failed to prepare worktree" >&2
 exit 1
}

unset GIT_DIR GIT_WORK_TREE
cd "$worktree" &&

if grep -q "^diff --git " "$1"
then
 validate_patch "$1"
else
 validate_cover_letter "$1"
fi &&

if test "$GIT_SENDEMAIL_FILE_COUNTER" = "$GIT_SENDEMAIL_FILE_TOTAL"
then
 git config --unset-all sendemail.validateWorktree &&
 trap 'git worktree remove -ff "$worktree"' EXIT &&
 validate_series
fi
```

C:\Users\david/src\Ligaturizer\.git\hooks\update.sample

```
#!/bin/sh
#
# An example hook script to block unannotated tags from entering.
# Called by "git receive-pack" with arguments: refname sha1-old sha1-new
#
# To enable this hook, rename this file to "update".
#
# Config
# ------
# hooks.allowunannotated
#   This boolean sets whether unannotated tags will be allowed into the
#   repository.  By default they won't be.
# hooks.allowdeletetag
#   This boolean sets whether deleting tags will be allowed in the
#   repository.  By default they won't be.
# hooks.allowmodifytag
#   This boolean sets whether a tag may be modified after creation. By default
#   it won't be.
# hooks.allowdeletebranch
#   This boolean sets whether deleting branches will be allowed in the
#   repository.  By default they won't be.
# hooks.denycreatebranch
#   This boolean sets whether remotely creating branches will be denied
#   in the repository.  By default this is allowed.
#
```

```
# --- Command line
refname="$1"
oldrev="$2"
newrev="$3"

# --- Safety check
if [ -z "$GIT_DIR" ]; then
 echo "Don't run this script from the command line." >&2
 echo " (if you want, you could supply GIT_DIR then run" >&2
 echo "  $0 <ref> <oldrev> <newrev>)" >&2
 exit 1
fi

if [ -z "$refname" -o -z "$oldrev" -o -z "$newrev" ]; then
 echo "usage: $0 <ref> <oldrev> <newrev>" >&2
 exit 1
fi

# --- Config
allowunannotated=$(git config --type=bool hooks.allowunannotated)
allowdeletebranch=$(git config --type=bool hooks.allowdeletebranch)
denycreatebranch=$(git config --type=bool hooks.denycreatebranch)
allowdeletetag=$(git config --type=bool hooks.allowdeletetag)
allowmodifytag=$(git config --type=bool hooks.allowmodifytag)

# check for no description
projectdesc=$(sed -e '1q' "$GIT_DIR/description")
```

```
case "$projectdesc" in
"Unnamed repository"* | "")
 echo "*** Project description file hasn't been set" >&2
 exit 1
 ;;
esac

# --- Check types
# if $newrev is 0000...0000, it's a commit to delete a ref.
zero=$(git hash-object --stdin </dev/null | tr '[0-9a-f]' '0')
if [ "$newrev" = "$zero" ]; then
 newrev_type=delete
else
 newrev_type=$(git cat-file -t $newrev)
fi

case "$refname","$newrev_type" in
 refs/tags/*,commit)
  # un-annotated tag
  short_refname=${refname##refs/tags/}
  if [ "$allowunannotated" != "true" ]; then
   echo "*** The un-annotated tag, $short_refname, is not allowed in this repository" >&2
   echo "*** Use 'git tag [ -a | -s ]' for tags you want to propagate." >&2
   exit 1
  fi
  ;;
 refs/tags/*,delete)
```

```
 # delete tag
 if [ "$allowdeletetag" != "true" ]; then
  echo "*** Deleting a tag is not allowed in this repository" >&2
  exit 1
 fi
 ;;
refs/tags/*,tag)
 # annotated tag
 if [ "$allowmodifytag" != "true" ] && git rev-parse $refname > /dev/null 2>&1
 then
  echo "*** Tag '$refname' already exists." >&2
  echo "*** Modifying a tag is not allowed in this repository." >&2
  exit 1
 fi
 ;;
refs/heads/*,commit)
 # branch
 if [ "$oldrev" = "$zero" -a "$denycreatebranch" = "true" ]; then
  echo "*** Creating a branch is not allowed in this repository" >&2
  exit 1
 fi
 ;;
refs/heads/*,delete)
 # delete branch
 if [ "$allowdeletebranch" != "true" ]; then
  echo "*** Deleting a branch is not allowed in this repository" >&2
  exit 1
```

```
  fi
  ;;
 refs/remotes/*,commit)
  # tracking branch
  ;;
 refs/remotes/*,delete)
  # delete tracking branch
  if [ "$allowdeletebranch" != "true" ]; then
   echo "*** Deleting a tracking branch is not allowed in this repository" >&2
   exit 1
  fi
  ;;
 *)
  # Anything else (is there anything else?)
  echo "*** Update hook: unknown type of update to ref $refname of type $newrev_type" >&2
  exit 1
  ;;
esac

# --- Finished
exit 0
```

C:\Users\david/src\Ligaturizer\.git\info\exclude

git ls-files --others --exclude-from=.git/info/exclude

Lines that start with '#' are comments.

For a project mostly in C, the following would be a good set of

exclude patterns (uncomment them if you want to use them):

*.[oa]

*~

C:\Users\david/src\Ligaturizer\.git\logs\HEAD

0000000000000000000000000000000000000000 c4065187a544a8fab40826fc91db1c6180a2d342 Ian <ia

C:\Users\david/src\Ligaturizer\.git\logs\refs\heads\master

0000000000000000000000000000000000000000 c4065187a544a8fab40826fc91db1c6180a2d342 Ian <ia

C:\Users\david/src\Ligaturizer\.git\logs\refs\remotes\origin\HEAD

0000000000000000000000000000000000000000 c4065187a544a8fab40826fc91db1c6180a2d342 Ian <ia

C:\Users\david/src\Ligaturizer\.git\objects\pack\pack-cfc472a771c38e2e9643a7479b0c6df7fa208daa.idx

C:\Users\david/src\Ligaturizer\.git\objects\pack\pack-cfc472a771c38e2e9643a7479b0c6df7fa208daa.pack

C:\Users\david/src\Ligaturizer\.git\objects\pack\pack-cfc472a771c38e2e9643a7479b0c6df7fa208daa.rev

C:\Users\david/src\Ligaturizer\.git\refs\heads\master

c4065187a544a8fab40826fc91db1c6180a2d342

C:\Users\david/src\Ligaturizer\.git\refs\remotes\origin\HEAD

ref: refs/remotes/origin/master

C:\Users\david/src\Ligaturizer\.mypy_cache\.gitignore

```
# Automatically created by mypy

*
```

C:\Users\david/src\Ligaturizer\.mypy_cache\CACHEDIR.TAG

Signature: 8a477f597d28d172789f06886806bc55

This file is a cache directory tag automatically created by mypy.

For information about cache directory tags see https://bford.info/cachedir/

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\@plugins_snapshot.json

{}

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\abc.data.json

{".class":"MypyFile","_fullname":"abc","future_import_flags":[],"is_partial_stub_package":false,"is_stub":true

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\abc.meta.json

{"data_mtime":1708019931,"dep_lines":[4,1,2,5,6,1],"dep_prios":[5,5,10,5,5,5],"dependencies":["collections

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\build.data.json

{".class":"MypyFile","_fullname":"build","future_import_flags":[],"is_partial_stub_package":false,"is_stub":fal

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\build.meta.json

{"id":"build","path":"c:\\Users\\david\\src\\Ligaturizer\\build.py","mtime":1708020064,"size":5114,"hash":"0a5

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\builtins.data.json

{".class":"MypyFile","_fullname":"builtins","future_import_flags":[],"is_partial_stub_package":false,"is_stub":

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\builtins.meta.json

{"data_mtime":1708019931,"dep_lines":[30,1,2,3,4,5,31,35,56,1,1],"dep_prios":[5,10,5,10,5,5,5,5,5,30,30],

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\char_dict.data.json

{".class":"MypyFile","_fullname":"char_dict","future_import_flags":[],"is_partial_stub_package":false,"is_stub

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\char_dict.meta.json

{"data_mtime":1708019932,"dep_lines":[1,1,1],"dep_prios":[5,30,30],"dependencies":["builtins","abc","typin

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\codecs.data.json

{".class":"MypyFile","_fullname":"codecs","future_import_flags":[],"is_partial_stub_package":false,"is_stub":

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\codecs.meta.json

{"data_mtime":1708019931,"dep_lines":[6,1,2,3,4,5,7,8,1,1],"dep_prios":[5,10,10,5,5,5,5,5,5,30],"depender

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\contextlib.data.json

{".class":"MypyFile","_fullname":"contextlib","future_import_flags":[],"is_partial_stub_package":false,"is_stu

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\contextlib.meta.json

{"data_mtime":1708019931,"dep_lines":[5,1,2,3,6,7,8,1,1],"dep_prios":[5,5,10,5,5,5,5,5,30],"dependencies"

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\dataclasses.data.json

{".class":"MypyFile","_fullname":"dataclasses","future_import_flags":[],"is_partial_stub_package":false,"is_s

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\dataclasses.meta.json

{"data_mtime":1708019931,"dep_lines":[6,1,2,3,4,5,7,8,1],"dep_prios":[5,10,10,5,5,5,5,5,30],"dependencies

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\enum.data.json

{".class":"MypyFile","_fullname":"enum","future_import_flags":[],"is_partial_stub_package":false,"is_stub":tr

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\enum.meta.json

{"data_mtime":1708019931,"dep_lines":[6,1,2,3,5,7,8,1],"dep_prios":[5,5,10,10,5,5,5,30],"dependencies":["

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\genericpath.data.json

{".class":"MypyFile","_fullname":"genericpath","future_import_flags":[],"is_partial_stub_package":false,"is_s

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\genericpath.meta.json

{"data_mtime":1708019931,"dep_lines":[3,1,2,4,5,1,1],"dep_prios":[5,10,5,5,5,5,30],"dependencies":["colle

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\glob.data.json

{".class":"MypyFile","_fullname":"glob","future_import_flags":[],"is_partial_stub_package":false,"is_stub":tru

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\glob.meta.json

{"data_mtime":1708019932,"dep_lines":[3,1,2,4,1,1],"dep_prios":[5,10,5,5,5,30],"dependencies":["collection

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\io.data.json

{".class":"MypyFile","_fullname":"io","future_import_flags":[],"is_partial_stub_package":false,"is_stub":true,"

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\io.meta.json

{"data_mtime":1708019930,"dep_lines":[6,1,2,3,4,5,7,8,9,10,1],"dep_prios":[5,10,10,10,10,5,5,5,5,5,30],"de

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ligatures.data.json

{".class":"MypyFile","_fullname":"ligatures","future_import_flags":[],"is_partial_stub_package":false,"is_stub

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ligatures.meta.json

{"data_mtime":1708019932,"dep_lines":[1,1,1],"dep_prios":[5,30,30],"dependencies":["builtins","abc","typin

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ligaturize.data.json

{".class":"MypyFile","_fullname":"ligaturize","future_import_flags":[],"is_partial_stub_package":false,"is_stub

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ligaturize.meta.json

{"data_mtime":1708019932,"dep_lines":[13,12,14,16,17,1,1,1,1,1,10,11],"dep_prios":[10,10,10,5,5,5,30,30

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ntpath.data.json

{".class":"MypyFile","_fullname":"ntpath","future_import_flags":[],"is_partial_stub_package":false,"is_stub":t

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\ntpath.meta.json

{"data_mtime":1708019930,"dep_lines":[1,2,3,16,19,45,46,1,1],"dep_prios":[10,5,5,5,5,5,5,5,30],"depender

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\pathlib.data.json

{".class":"MypyFile","_fullname":"pathlib","future_import_flags":[],"is_partial_stub_package":false,"is_stub":t

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\pathlib.meta.json

{"data_mtime":1708019930,"dep_lines":[12,1,2,13,14,15,16,17,1,1,1],"dep_prios":[5,10,5,5,5,5,5,5,5,30,30

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\posixpath.data.json

{".class":"MypyFile","_fullname":"posixpath","future_import_flags":[],"is_partial_stub_package":false,"is_stu

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\posixpath.meta.json

{"data_mtime":1708019930,"dep_lines":[3,1,2,4,17,18,19,1,1],"dep_prios":[5,10,5,5,5,5,5,5,30],"dependenc

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\re.data.json

{".class":"MypyFile","_fullname":"re","future_import_flags":[],"is_partial_stub_package":false,"is_stub":true,"

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\re.meta.json

{"data_mtime":1708019930,"dep_lines":[5,1,2,3,4,6,7,8,11,1,1,1],"dep_prios":[5,10,10,10,5,5,5,5,5,5,30,30

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_compile.data.json

{".class":"MypyFile","_fullname":"sre_compile","future_import_flags":[],"is_partial_stub_package":false,"is_s

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_compile.meta.json

{"data_mtime":1708019930,"dep_lines":[1,2,4,5,1,1],"dep_prios":[5,5,5,5,5,30],"dependencies":["re","sre_c

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_constants.data.json

{".class":"MypyFile","_fullname":"sre_constants","future_import_flags":[],"is_partial_stub_package":false,"is

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_constants.meta.json

{"data_mtime":1708019930,"dep_lines":[1,2,3,1,1,1],"dep_prios":[10,5,5,5,30,30],"dependencies":["sys","ty

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_parse.data.json

{".class":"MypyFile","_fullname":"sre_parse","future_import_flags":[],"is_partial_stub_package":false,"is_stu

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sre_parse.meta.json

{"data_mtime":1708019930,"dep_lines":[2,1,3,4,6,7,1,1,1],"dep_prios":[5,10,5,5,5,5,5,30,30],"dependencies

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\subprocess.data.json

{".class":"MypyFile","_fullname":"subprocess","future_import_flags":[],"is_partial_stub_package":false,"is_s

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\subprocess.meta.json

{"data_mtime":1708019930,"dep_lines":[3,1,2,4,5,6,2603,1,1,1,1],"dep_prios":[5,10,5,5,5,5,5,5,30,30,30],"d

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sys.data.json

{".class":"MypyFile","_fullname":"sys","future_import_flags":[],"is_partial_stub_package":false,"is_stub":true

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\sys.meta.json

{"data_mtime":1708019930,"dep_lines":[4,5,6,2,3,7,8,9,10,1,1],"dep_prios":[5,5,5,5,5,5,5,5,5,30,30],"deper

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\types.data.json

{".class":"MypyFile","_fullname":"types","future_import_flags":[],"is_partial_stub_package":false,"is_stub":tr

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\types.meta.json

{"data_mtime":1708019930,"dep_lines":[3,16,1,2,19,20,631,1,1],"dep_prios":[5,5,10,5,5,5,5,30,30],"depend

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\typing.data.json

{".class":"MypyFile","_fullname":"typing","future_import_flags":[],"is_partial_stub_package":false,"is_stub":tr

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\typing.meta.json

{"data_mtime":1708019930,"dep_lines":[1,2,3,4,5,6,7,8,9,1],"dep_prios":[10,10,5,5,5,5,5,5,5,5],"dependenc

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\typing_extensions.data.json

{".class":"MypyFile","_fullname":"typing_extensions","future_import_flags":[],"is_partial_stub_package":fals

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\typing_extensions.meta.json

{"data_mtime":1708019930,"dep_lines":[454,1,2,3,4,5,6,74,1],"dep_prios":[5,10,10,10,5,5,5,5,5],"depender

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_ast.data.json

{".class":"MypyFile","_fullname":"_ast","future_import_flags":[],"is_partial_stub_package":false,"is_stub":tru

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_ast.meta.json

{"data_mtime":1708019931,"dep_lines":[1,2,3,1,1,1,1],"dep_prios":[10,5,5,5,30,30,30],"dependencies":["sys

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_codecs.data.json

{".class":"MypyFile","_fullname":"_codecs","future_import_flags":[],"is_partial_stub_package":false,"is_stub

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_codecs.meta.json

{"data_mtime":1708019931,"dep_lines":[4,1,2,3,5,6,1,1,1],"dep_prios":[5,10,10,5,5,5,5,30,30],"dependenci

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_collections_abc.data.json

{".class":"MypyFile","_fullname":"_collections_abc","future_import_flags":[],"is_partial_stub_package":false,

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_collections_abc.meta.json

{"data_mtime":1708019931,"dep_lines":[1,2,3,4,35,1,1],"dep_prios":[10,5,5,5,5,5,30],"dependencies":["sys"

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_winapi.data.json

{".class":"MypyFile","_fullname":"_winapi","future_import_flags":[],"is_partial_stub_package":false,"is_stub"

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12_winapi.meta.json

{"data_mtime":1708019931,"dep_lines":[3,1,2,4,5,1,1,1],"dep_prios":[5,10,5,5,5,5,30,30],"dependencies":["

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\collections\abc.data.json

{".class":"MypyFile","_fullname":"collections.abc","future_import_flags":[],"is_partial_stub_package":false,"is

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\collections\abc.meta.json

{"data_mtime":1708019931,"dep_lines":[1,1,1,1],"dep_prios":[5,5,30,30],"dependencies":["_collections_abc

C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\collections__init__.data.json

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C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\importlib\machinery.meta.json

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C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\importlib__init__.data.json

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C:\Users\david/src\Ligaturizer\.mypy_cache\3.12\importlib\metadata__init__.meta.json

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C:\Users\david/src\Ligaturizer\fonts\FantasqueSansMono-Normal\FantasqueSansMono-BoldItalic.ttf

C:\Users\david/src\Ligaturizer\fonts\FantasqueSansMono-Normal\FantasqueSansMono-Italic.otf

C:\Users\david/src\Ligaturizer\fonts\FantasqueSansMono-Normal\FantasqueSansMono-Italic.ttf

C:\Users\david/src\Ligaturizer\fonts\FantasqueSansMono-Normal\FantasqueSansMono-Regular.otf

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C:\Users\david/src\Ligaturizer\fonts\Hermit\Hermit-Regular.otf

C:\Users\david/src\Ligaturizer\fonts\Hermit\Hermit-RegularItalic.otf

C:\Users\david/src\Ligaturizer\fonts\output\.gitignore

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C:\Users\david/src\Ligaturizer\fonts\output-with-characters\.gitignore

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C:\Users\david/src\Ligaturizer\images\menlo.png

C:\Users\david/src\Ligaturizer\images\sf-mono.png