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"""
file: main_template.py
author: xxxxx
description: template for a command line python script
"""

import os
import sys
import logging
import errno
import time
import traceback
import binascii
from stat import *

class Application:
    """
        This class defines the functionality for the script. It is instantiated in
        the global
        processing handler for __main__
    """
    def __init__(self):
        """
            Setsups the member variable for the application object.
        """
        import datetime
        from stat import ST_MTIME

        # set the script name variable
        self.scriptname = sys.argv[0]
        # initialize logging, it depends on the script name variable for the
        file name
        self.logger()
        # check platform, it depends on logging being initialized
        self.scriptplatform = self.platform()
        # these are needed by self.usage()
        self.versionno = "1.0"
        self.build = str(datetime.date.fromtimestamp(os.stat(self.scriptname)
[ST_MTIME]).replace("-", "."))

        #
        # Member variables for the application.
        #
        self.InputFiles = []

        # Turn this on to true if the unittest() function should run by default
e.g.
        # currently requires the caller to specifically invoke the -u option.
        self.RunUnitTest = True

        return

    # dependencies: self.scriptname
    #
    def logger(self):
        """
            Setsups the python logging for application. By default it logs to both
            the console window and to a log file in the current directory.

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"""
import logging
import logging.handlers

try:
    (logfile, ext) =
os.path.splitext(os.path.basename(self.scriptname));
    logging.basicConfig(
        filename = logfile + ".log",
        format = '%(asctime)s %(levelname)s %(message)s',
        datefmt = '%Y-%m-%d %H:%M:%S',
        filemode = 'a',
        level = logging.DEBUG)
    console = logging.StreamHandler()
    console.setLevel(logging.INFO)
    formatter = logging.Formatter('%(message)s')
    console.setFormatter(formatter)
    logging.getLogger('').addHandler(console)

    # print a self test logging message
    logging.info('log file %s.log' % (logfile))
    logging.info('logging started at %s' % (time.strftime("%Y-%m-%d
%H:%M:%S", time.gmtime())))
except Exception, e:
    print >> sys.stderr, 'Failed to initialize logging. ' + str(e)
    raise e

return

# dependencies: self.logger()
#
def platform(self):
    import platform

    scriptplatform = platform.system().lower()

    if scriptplatform == 'windows' or scriptplatform == 'microsoft':
        logging.info("platform %s" % (scriptplatform))
        return 'windows'
    elif ("linux" == scriptplatform):
        strDistro = os.popen('lsb_release -i').read()
        import re
        p = re.compile('Distributor ID:\s+(.*)')
        arrDistro = p.findall(strDistro)
        linuxdistro = arrDistro[0].lower()
        logging.info("platform %s" % (linuxdistro))
        if (not len(linuxdistro) > 0):
            raise StandardError("Unable to determine linux distribution
on this platform.")

        if 'ubuntu' == linuxdistro:
            return 'linux'
        elif 'fedora' == linuxdistro or 'fedora' == linuxdistro:
            return 'fedora'
    else:
        logging.info("platform %s" % (scriptplatform))

return 'other'

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# dependencies: self.versionno, self.build
#
def version(self):
    """
        Formats the version number of the script as a string.
    """
    return "%s.%s" % (self.versionno, self.build)

#
# utility functions
#

def environ(self, name, default = None):
    """
        Helper method for looking up environment variables. Writes a warning to
        the application log, if the environment variable can not be found. It
does
        not propagate the exception if the environment variable does not exist.
    """

    value = ""
    try:
        value = os.environ[ name ]
    except Exception:
        logging.warning("Environment variable '%s' does not exist" %
(name))
        if None != default:
            value = default

    return value

def shellspawn(self, binPath, binArgs = None):
    """
        Runs a shell command and does not wait for the command to complete.
    """

    if None != binArgs and len(binArgs) > 0:
        # verify that the binary file does exist
        if not os.path.exists(binPath):
            logging.warning('Unable to locate binary image \'%s\'!' %
binPath)

        # build the command line for the binary file
        commandLine = "%s %s" % (binPath, binArgs)

        # execute the command line
        logging.info("shellspawn: %s" % (commandLine))
        spawnArgs = binArgs.split(" ")
        os.spawnv(os.P_NOWAIT, binPath, spawnArgs)
    else:
        # build the command line for the binary file
        commandLine = "%s" % (binPath)

        # execute the command line
        logging.info("shellspawn: %s" % (commandLine))
        os.spawnl(os.P_NOWAIT, binPath)

    return True

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def shellexec(self, binPath, binArgs = None):
    """
    Runs a shell command and waits for the command to complete before
returning.
    """

    if None != binArgs and len(binArgs) > 0:
        # verify that the binary file does exist
        if not os.path.exists(binPath):
            logging.warning('Unable to locate binary image \'%s\'!' % binPath)

        # build the command line for the binary file
        commandLine = "\"%s\" %s" % (binPath, binArgs)
    else:
        # build the command line for the binary file
        commandLine = "%s" % (binPath)

    # execute the command line
    logging.info("shellexec: %s" % (commandLine))
    #retcode = os.system(commandLine)
    strStdOut = os.popen("\"%s\"" % (commandLine)).read()
    if None != strStdOut and len(strStdOut) > 0:
        logging.info(strStdOut)

    return True

def copyExistingFile(self, srcFile, dstFile):
    """
    Copies a file from the source to the destination. Imports the python
modules
    locally so it is a nice copy and paste function. It logs warnings or
errors
    if it can not find the file as expected. A successful operation
generates no
    logs.
    """

    import shutil
    import stat
    from stat import S_ISDIR

    # verify that the binary file does exist
    if not os.path.exists(srcFile):
        logging.warning('MISSING: \'%s\'' % srcFile)
        return False

    # lookup the path attributes
    attrib = os.stat(srcFile)

    # if the file is read-only
    if (stat.S_ISDIR(attrib.st_mode)):
        logging.error('Source file \'%s\' is a directory!' % srcFile)
        return False

    # check if the dst file already exists
    if os.path.exists(dstFile):
        logging.warning('REPLACING: \'%s\'' % dstFile)

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shutil.copyfile(srcFile, dstFile)

# verify that the dst file now exists
if not os.path.exists(dstFile):
    logging.error('MISSING: \'%s\'' % dstFile)
    return False

return True

#
# Application functionality
#
def unittest(self):
    """
        This is the default action for the application. It should generally be
a self
    test.
    """

batch1BlockSizeInBytes = 1024
blockOffsets = [ 0, 45056, 46080, 47104, 48128, 51200 ]
batch2BlockSizeInBytes = 4

for f in self.InputFiles:
    print("file: %s" % (f))

    # lookup the path attributes
    attrib = os.stat(f)
    cb = attrib.st_size
    print("size: %d" % (cb))

    for b in blockOffsets:
        batch2BlockBegin = b
        batch2BlockEnd = b + batch1BlockSizeInBytes
        for i in xrange(batch2BlockBegin, batch2BlockEnd,
batch2BlockSizeInBytes):
            batch2BlockLength = batch2BlockSizeInBytes
            if (i + batch2BlockSizeInBytes > cb):
                batch2BlockLength = cb - i

            #print("block %d[%d]" % (i, blockLength))
            nf = "%s-%d(%d)-%d(%d).exe" %
(os.path.splitext(os.path.basename(f))[0], b, batch1BlockSizeInBytes, i,
batch2BlockLength)
            #print("%s\n" % nf)

            print("writing %s" % nf)
            fd1 = open(f, "rb")
            fd2 = open(nf, "wb")
            randBlock = os.urandom(batch2BlockLength)

            if (i > 0):
                d1 = fd1.read(i)
                fd2.write(d1)
                fd2.write(randBlock)

            else:

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                fd2.write(randBlock)

        fd1.seek(i + batch2BlockLength, os.SEEK_SET)
        cbRemain = cb - (i + batch2BlockLength)
        d2 = fd1.read(cbRemain)
        fd2.write(d2)

    fd1.close()
    fd2.close()

return

def usage(self):
    """
    Prints the help text for the application.
    """
    print >> sys.stderr, os.path.basename(self.scriptname)
    print >> sys.stderr, 'Version:', self.version()
    print >> sys.stderr, ''
    print >> sys.stderr, 'This application ...'
    print >> sys.stderr, ''
    print >> sys.stderr, 'Usage:', os.path.basename(self.scriptname), '[-?]'
    print >> sys.stderr, ''
    print >> sys.stderr, '      -? Prints this message.'
    print >> sys.stderr, '      -o Specifies the output folder or files.'
    print >> sys.stderr, '      -t Specifies the test folder.'
    print >> sys.stderr, ''
    print >> sys.stderr, 'Examples:'
    print >> sys.stderr, ''
    print >> sys.stderr, os.path.basename(self.scriptname), '-i foo'
    print >> sys.stderr, ''
return

def main(self, argv):
    """
    Entry point for the application. Command line processing should be done here.
    Note the usage() function is nearby and should be updated as well.
    """
    self.logger()

    # parse the command line using getopt
    import getopt
    long_opts = []
    long_opts.append('help')
    long_opts.append('unittest')
    long_opts.append('input=')
    long_opts.append('output=')
    short_opts = ''
    # default the short option string based on the long options if not specified
    if 0 == len(short_opts):
        sopts = []
        for lopt in long_opts:
            if 0 == len(lopt):
                continue
            sopts.append(lopt[0])
            if '=' == lopt[len(lopt) - 1]:
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        sopts.append(':')
short_opts = ''.join(sopts)

import getopt
(opts, args) = getopt.getopt(argv[1:], short_opts, long_opts)
for opt in opts:
    if opt[0] == '-?' or opt[0] == '--help':
        return self.usage()
    if opt[0] == '-u' or opt[0] == '--unittest':
        self.RunUnitTest = True
    if opt[0] == '-o' or opt[0] == '--output':
        if not os.path.exists(opt[1]):
            if not os.mkdir(opt[1]):
                print >> sys.stderr, ('Could not create
folder \'%s\'' % opt[1])
                return
            self.OutputDirectory = opt[1]
    if opt[0] == '-i' or opt[0] == '--input':
        if os.path.exists(opt[1]):
            self.InputFiles.append(opt[1])
        else:
            print >> sys.stderr, ('File \'%s\' not found!' %
opt[1])
            return

# if specified run the unit test algorithm
if self.RunUnitTest:
    self unittest()

# otherwise validate the command line and do something useful
return

# call the script main function
if __name__ == "__main__":
    application = Application()
    sys.exit(application.main(sys.argv))

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