

CS 203: Software Tools & Techniques for AI
IIT Gandhinagar
Sem-II - 2024-25

LAB 03 Assignment

Team 3

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GitHub Repo Link: https://github.com/xsinh19/SSTA_A3_Team3.git

Het

Task 1

Execute the “history -c , history -w” and “sudo apt list | grep -i python3.10” commands

- **wget**
<https://www.python.org/ftp/python/3.10.13/Python-3.10.13.tgz>
z: Downloads the Python 3.10 tarball.

```

hetpathak@hetpathak:~$ history -c && history -w
hetpathak@hetpathak:~$ history
  1  history
hetpathak@hetpathak:~$ sudo apt list | grep -i python3.10
[sudo] password for hetpathak:

WARNING: apt does not have a stable CLI interface. Use with caution in scripts.

hetpathak@hetpathak:~$ wget https://www.python.org/ftp/python/3.10.13/Python-3.10.13.tgz
--2025-01-27 03:39:01-- https://www.python.org/ftp/python/3.10.13/Python-3.10.13.tgz
Resolving www.python.org (www.python.org)... 151.101.0.223, 151.101.128.223, 151.101.64.223, ...
Connecting to www.python.org (www.python.org)|151.101.0.223|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 26111363 (25M) [application/octet-stream]
Saving to: 'Python-3.10.13.tgz'

Python-3.10.13.tgz          100%[=====]
2025-01-27 03:41:52 (149 KB/s) - 'Python-3.10.13.tgz' saved [26111363/26111363]

hetpathak@hetpathak:~$ ls
CS203_Lab_01  Python-3.10.13.tgz  app.py  folder
hetpathak@hetpathak:~$ |

```

- Tarball installation of Python
- `tar -xvzf Python-3.10.13.tgz`: Extracts the tarball into a directory.

```

hetpathak@hetpathak:~$ python3 -V
Python 3.12.3
hetpathak@hetpathak:~$ pip -V
pip 24.0 from /usr/lib/python3/dist-packages/pip (python 3.12)
hetpathak@hetpathak:~$ tar -xvzf Python-3.10.13.tgz
Python-3.10.13/
Python-3.10.13/Mac/
Python-3.10.13/Mac/README.rst
Python-3.10.13/Mac/Icons/
Python-3.10.13/Mac/Icons/PythonLauncher.icns
Python-3.10.13/Mac/Icons/IDLE.icns
Python-3.10.13/Mac/Icons/PythonCompiled.icns
Python-3.10.13/Mac/Icons/ReadMe.txt
Python-3.10.13/Mac/Icons/PythonSource.icns
Python-3.10.13/Mac/Icons/Disk Image.icns
Python-3.10.13/Mac/Icons/Python Folder.icns
Python-3.10.13/Mac/Tools/
Python-3.10.13/Mac/Tools/pythonw.c
Python-3.10.13/Mac/Tools/plistlib_generate_testdata.py

```

- `cd Python-3.10.13`: Navigates to the extracted directory.
- `./configure --enable-optimizations`: Prepares the Python build with optimizations enabled.

```

Python-3.10.13/Objects/listsort.txt
Python-3.10.13/Objects/dictnotes.txt
Python-3.10.13/Programs/
Python-3.10.13/Programs/README
Python-3.10.13/Programs/python.c
Python-3.10.13/Programs/_testembed.c
Python-3.10.13/Programs/_freeze_importlib.c
hetpathak@hetpathak:~$ ls
CS203_Lab_01 Python-3.10.13 Python-3.10.13.tgz app.py folder
hetpathak@hetpathak:~$ cd Python-3.10.13
hetpathak@hetpathak:~/Python-3.10.13$ ./configure --enable-optimizations
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for python3.10... no
checking for python3... python3
checking for --enable-universalsdk... no
checking for --with-universal-archs... no
checking MACHDEP... "linux"
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out

```

- **make** and **make altinstall**: Compiles and installs Python 3.10 without overwriting the system Python.

```

config.status: creating Makefile.pre
config.status: creating Misc/python.pc
config.status: creating Misc/python-embed.pc
config.status: creating Misc/python-config.sh
config.status: creating Modules/ld_so_aix
config.status: creating pyconfig.h
creating Modules/Setup.local
creating Makefile
hetpathak@hetpathak:~/Python-3.10.13$ make
Running code to generate profile data (this can take a while):
# First, we need to create a clean build with profile generation
# enabled.
make profile-gen-stamp
make[1]: Entering directory '/home/hetpathak/Python-3.10.13'
make clean
make[2]: Entering directory '/home/hetpathak/Python-3.10.13'
find . -depth -name '__pycache__' -exec rm -rf {} ';'
find . -name '*.py[co]' -exec rm -f {} ';'
find . -name '*.loa' -exec rm -f {} ';'

```

```

107 | #include <ffi.h>
    |         ^~~~~~
compilation terminated.

The necessary bits to build these optional modules were not found:
_bz2                _curses                _curses_panel
_dbm                 _gdbm                 _hashlib
_lzma                _sqlite3              _ssl
_tkinter             _uuid                nis
readline

To find the necessary bits, look in setup.py in detect_modules() for the module

The following modules found by detect_modules() in setup.py, have been
built by the Makefile instead, as configured by the Setup files:
_abc                 pwd                    time

Failed to build these modules:
_ctypes

Could not build the ssl module!
Python requires a OpenSSL 1.1.1 or newer

running build_scripts
copying and adjusting /home/hetpathak/Python-3.10.13/Tools/scripts/pydoc3 -> bui
copying and adjusting /home/hetpathak/Python-3.10.13/Tools/scripts/idle3 -> bui
copying and adjusting /home/hetpathak/Python-3.10.13/Tools/scripts/2to3 -> build
changing mode of build/scripts-3.10/pydoc3 from 664 to 775
changing mode of build/scripts-3.10/idle3 from 664 to 775
changing mode of build/scripts-3.10/2to3 from 664 to 775
renaming build/scripts-3.10/pydoc3 to build/scripts-3.10/pydoc3.10
renaming build/scripts-3.10/idle3 to build/scripts-3.10/idle3.10
renaming build/scripts-3.10/2to3 to build/scripts-3.10/2to3-3.10
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall -fno-s
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration -fvisi
I./Include -DPy_BUILD_CORE -o Programs/_testembed.o ./Programs/_testembed.c
gcc -fno-semantic-interposition -Xlinker -export-dynamic -o Programs/_testemb
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13'
hetpathak@hetpathak:~/Python-3.10.13$ |

```

```

I./Include -DPy_BUILD_CORE -o Programs/_testembed.o ./Programs/_testembed.c
gcc -fno-semantic-interposition -Xlinker -export-dynamic -o Programs/_testembed Programs/_testembed.o libpython3.10.a -lc
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13'
hetpathak@hetpathak:~/Python-3.10.13$ wget https://www.openssl.org/source/openssl-1.1.1.tar.gz
--2025-01-27 04:46:40-- https://www.openssl.org/source/openssl-1.1.1.tar.gz
Resolving www.openssl.org (www.openssl.org)... 34.49.79.89, 2600:1901:0:d50b::
Connecting to www.openssl.org (www.openssl.org)|34.49.79.89|:443... connected.
HTTP request sent, awaiting response... 301 Moved Permanently
Location: https://github.com/openssl/openssl/releases/download/OpenSSL_1_1_1/openssl-1.1.1.tar.gz [following]
--2025-01-27 04:46:41-- https://github.com/openssl/openssl/releases/download/OpenSSL_1_1_1/openssl-1.1.1.tar.gz
Resolving github.com (github.com)... 20.207.73.82

```

```
HTTP request sent, awaiting response... 200 OK
Length: 8337920 (8.0M) [application/octet-stream]
Saving to: 'openssl-1.1.1.tar.gz'
```

```
openssl-1.1.1.tar.gz 100%[=====
```

```
2025-01-27 04:47:44 (134 KB/s) - 'openssl-1.1.1.tar.gz' saved [8337920/8337920]
```

```
hetpathak@hetpathak:~/Python-3.10.13$ tar -xvzf openssl-1.1.1.tar.gz
```

```
openssl-1.1.1/
openssl-1.1.1/CONTRIBUTING
openssl-1.1.1/ms/
openssl-1.1.1/ms/uplink-x86.pl
openssl-1.1.1/ms/uplink.c
openssl-1.1.1/ms/cmp.pl
openssl-1.1.1/ms/uplink-common.pl
openssl-1.1.1/ms/applink.c
```

```
openssl-1.1.1/engines/e_dasync.txt
openssl-1.1.1/engines/e_dasync.c
openssl-1.1.1/FAQ
openssl-1.1.1/e_os.h
hetpathak@hetpathak:~/Python-3.10.13$ cd openssl-1.1.1
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ ./config --prefix=$HOME/openssl --openssldir=$HOME/openssl
Operating system: x86_64-whatever-linux2
Configuring OpenSSL version 1.1.1 (0x1010100fL) for linux-x86_64
Using os-specific seed configuration
Creating configdata.pm
Creating Makefile
```

```
*****
***                                     ***
*** If you want to report a building issue, please include the ***
*** output from this command: ***
***                                     ***
*** perl configdata.pm --dump ***
***                                     ***
*****
```

```
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ make
/usr/bin/perl "-I." -Mconfigdata "util/dofile.pl" \
  "-oMakefile" crypto/include/internal/bn_conf.h.in > crypto/include/internal/bn_conf.h
/usr/bin/perl "-I." -Mconfigdata "util/dofile.pl" \
  "-oMakefile" crypto/include/internal/dso_conf.h.in > crypto/include/internal/dso_conf.h
```

```
  "-oMakefile" apps/tsget.in > "apps/tsget.pl"
chmod a+x apps/tsget.pl
/usr/bin/perl "-I." -Mconfigdata "util/dofile.pl" \
  "-oMakefile" tools/c_rehash.in > "tools/c_rehash"
chmod a+x tools/c_rehash
/usr/bin/perl "-I." -Mconfigdata "util/dofile.pl" \
  "-oMakefile" util/shlib_wrap.sh.in > "util/shlib_wrap.sh"
chmod a+x util/shlib_wrap.sh
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13/openssl-1.1.1'
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ make install
make depend && make _all
make[1]: Entering directory '/home/hetpathak/Python-3.10.13/openssl-1.1.1'
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13/openssl-1.1.1'
make[1]: Entering directory '/home/hetpathak/Python-3.10.13/openssl-1.1.1'
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13/openssl-1.1.1'
*** Installing development files
created directory '/home/hetpathak/openssl'
created directory '/home/hetpathak/openssl/include'
```

```

/home/hetpathak/openssl/share/doc/openssl/html/man7/ssl.html
/home/hetpathak/openssl/share/doc/openssl/html/man7/X25519.html
/home/hetpathak/openssl/share/doc/openssl/html/man7/X448.html -> /home/hetpathak/openssl/share/doc/openssl/html/man7/X25519
/home/hetpathak/openssl/share/doc/openssl/html/man7/x509.html
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ export LD_LIBRARY_PATH=$HOME/openssl/lib:$LD_LIBRARY_PATH
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ export PATH=$HOME/openssl/bin:$PATH
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ export PKG_CONFIG_PATH=$HOME/openssl/lib/pkgconfig:$PKG_CONFIG_PATH
hetpathak@hetpathak:~/Python-3.10.13/openssl-1.1.1$ cd ..
hetpathak@hetpathak:~/Python-3.10.13$ make clean
find . -depth -name '__pycache__' -exec rm -rf {} ';'
find . -name '*.py[co]' -exec rm -f {} ';'
find . -name '*.loa' -exec rm -f {} ';'
find . -name '*.s[ol]' -exec rm -f {} ';'
find . -name '*.so.[0-9]*.[0-9]*' -exec rm -f {} ';'
find . -name '*.lst' -exec rm -f {} ';'
find build -name 'fficonfig.h' -exec rm -f {} ';' || true
find build -name '*.py' -exec rm -f {} ';' || true

```

```

rm -rf /home/hetpathak/Python-3.10.13/lcov-report
rm -f profile-run-stamp
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13'
hetpathak@hetpathak:~/Python-3.10.13$ ./configure --with-openssl=$HOME/openssl --enable-optimizations
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for python3.10... no
checking for python3... python3
checking for --enable-universalsdk... no
checking for --with-universal-archs... no

```

```

config.status: creating Misc/python-embed.pc
config.status: creating Misc/python-config.sh
config.status: creating Modules/ld_so_aix
config.status: creating pyconfig.h
config.status: pyconfig.h is unchanged
creating Modules/Setup.local
creating Makefile
hetpathak@hetpathak:~/Python-3.10.13$ make altinstall
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration
rograms/python.o ./Programs/python.c
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration
arser/token.o Parser/token.c
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration

```

```

ena.o Python/pyctype.o Python/pytype.o Python/pynash.o Python/pycyclic.o Python/pymach.o Pyth
trap_hash.o Python/structmember.o Python/symtable.o Python/sysmodule.o Python/thread.o Python/tr
o Python/pystrhex.o Python/dtoa.o Python/formatter_unicode.o Python/fileutils.o Python/suggestio
ath.o Modules/main.o Modules/gcmodule.o Modules/posixmodule.o Modules/errnomodule.o Modules/pw
_weakref.o Modules/_functoolsmodule.o Modules/_operator.o Modules/_collectionsmodule.o Modul
Modules/signalmodule.o Modules/_stat.o Modules/timemodule.o Modules/_threadmodule.o Module
les/fileio.o Modules/bytesio.o Modules/bufferedio.o Modules/textio.o Modules/stringio.o Modules
ule.o Modules/xxsubtype.o Python/frozen.o
gcc -fno-semantic-interposition -Xlinker -export-dynamic -o python Programs/python.o libpytho
if test "no-framework" = "no-framework" ; then \
    /usr/bin/install -c python /usr/local/bin/python3.10; \
else \
    /usr/bin/install -c -s Mac/pythonw /usr/local/bin/python3.10; \
fi
/usr/bin/install: cannot create regular file '/usr/local/bin/python3.10': Permission denied
make: *** [Makefile:1329: altbininstall] Error 1
hetpathak@hetpathak:~/Python-3.10.13$ |

```

```

if test "no-framework" = "no-framework" ; then \
    /usr/bin/install -c python /usr/local/bin/python3.10; \
else \
    /usr/bin/install -c -s Mac/pythonw /usr/local/bin/python3.10; \
fi
/usr/bin/install: cannot create regular file '/usr/local/bin/python3.10': Permission denied
make: *** [Makefile:1329: altbininstall] Error 1
hetpathak@hetpathak:~/Python-3.10.13$ ./configure --prefix=$HOME/python3.10 --with-openssl=$HOME/openssl --enable-optimizations
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for python3.10... no
checking for python3... python3
checking for --enable-universalsdk... no
checking for --with-universal-archs... no
checking MACHDEP... "linux"
checking for gcc... gcc
checking whether the C compiler works... yes
checking for C compiler default output file name... a.out
checking for suffix of executables...
checking whether we are cross compiling... no

```

```

config.status: creating pyconfig.h
config.status: pyconfig.h is unchanged
creating Modules/Setup.local
creating Makefile
hetpathak@hetpathak:~/Python-3.10.13$ make altinstall
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall -fno-semi-
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration -fvisibi
-DABIFLAGS="" \
-DMULTIARCH="\x86_64-linux-gnu\" \
-o Python/sysmodule.o ./Python/sysmodule.c
gcc -c -Wno-unused-result -Wsign-compare -DNDEBUG -g -fwrapv -O3 -Wall -fno-semi-
ter -Wno-missing-field-initializers -Werror=implicit-function-declaration -fvisibi
-DSOABI="'cpython-310-x86_64-linux-gnu'" \
-o Python/dynload/_lib.so ./Python/dynload/_lib.c

```

```

rm -r /home/hetpathak/python3.10/lib/python3.10/lib-dynload/_pycache__
Creating directory /home/hetpathak/python3.10/share/man
Creating directory /home/hetpathak/python3.10/share/man/man1
/usr/bin/install -c -m 644 ./Misc/python.man \
/home/hetpathak/python3.10/share/man/man1/python3.10.1
if test "xupgrade" != "xno" ; then \
    case upgrade in \
        upgrade) ensurepip="--altinstall --upgrade" ;; \
        install|*) ensurepip="--altinstall" ;; \
    esac; \
    ./python -E -m ensurepip \
        $ensurepip --root=/ ; \
fi
Looking in links: /tmp/tmp2yg27ntw
Processing /tmp/tmp2yg27ntw/setuptools-65.5.0-py3-none-any.whl
Processing /tmp/tmp2yg27ntw/pip-23.0.1-py3-none-any.whl
Installing collected packages: setuptools, pip
WARNING: The script pip3.10 is installed in '/home/hetpathak/python3.10/bin' which is not on PATH.
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pip-23.0.1 setuptools-65.5.0
hetpathak@hetpathak:~/Python-3.10.13$

```

- **python3.10 -V**: Confirms the version of Python 3.10.

```

$ensurepip --root=/ ; \
fi
Looking in links: /tmp/tmp2yg27ntw
Processing /tmp/tmp2yg27ntw/setuptools-65.5.0-py3-none-any.whl
Processing /tmp/tmp2yg27ntw/pip-23.0.1-py3-none-any.whl
Installing collected packages: setuptools, pip
WARNING: The script pip3.10 is installed in '/home/hetpathak/python3.10/bin' which is not on PATH.
Consider adding this directory to PATH or, if you prefer to suppress this warning, use --no-warn-script-location.
Successfully installed pip-23.0.1 setuptools-65.5.0
hetpathak@hetpathak:~/Python-3.10.13$ export PATH=$HOME/python3.10/bin:$PATH
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -V
Python 3.10.13
hetpathak@hetpathak:~/Python-3.10.13$

```

- **python3.10 -m ssl** and **python3.10 -c "import sqlite3;**


```
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -V
Python 3.10.13
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -m ssl
hetpathak@hetpathak:~/Python-3.10.13$ pip -V
pip 24.0 from /usr/lib/python3/dist-packages/pip (python 3.12)
hetpathak@hetpathak:~/Python-3.10.13$ |
```

- `python3.10 -m venv ~/pip_env_3.10`: Creates a virtual environment for Python 3.10.

```
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -V
Python 3.10.13
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -m ssl
hetpathak@hetpathak:~/Python-3.10.13$ pip -V
pip 24.0 from /usr/lib/python3/dist-packages/pip (python 3.12)
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -m pip -V
pip 23.0.1 from /home/hetpathak/python3.10/lib/python3.10/site-packages/pip (python 3.10)
hetpathak@hetpathak:~/Python-3.10.13$ cd
hetpathak@hetpathak:~$ python3.10 -m venv ~/pip_env_3.10
hetpathak@hetpathak:~$ ls
CS203_Lab_01 Python-3.10.13 Python-3.10.13.tgz app.py folder openssl pip_env_3.10 python3.10
hetpathak@hetpathak:~$ rm -rf Python-3.10.13.tgz
hetpathak@hetpathak:~$ ls
CS203_Lab_01 Python-3.10.13 app.py folder openssl pip_env_3.10 python3.10
hetpathak@hetpathak:~$ |
```

- `source ~/pip_env_3.10/bin/activate`: Activates the virtual environment.
- `pip install label-studio`: Installs the `label-studio` annotation tool.

```
CS203_Lab_01 Python-3.10.13 app.py folder openssl pip_env_3.10 python3.10
hetpathak@hetpathak:~$ source pip_env_3.10/bin/activate
(pip_env_3.10) hetpathak@hetpathak:~$ pip install label-studio
Collecting label-studio
  Downloading label_studio-1.15.0-py3-none-any.whl (60.6 MB)
    60.6/60.6 MB 38.6 kB/s eta 0:00:00
Collecting ujson>=3.0.0
  Downloading ujson-5.10.0-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (53 kB)
    53.6/53.6 kB 30.0 kB/s eta 0:00:00
Collecting django-annoying==0.10.6
  Downloading django_annoying-0.10.6-py2.py3-none-any.whl (9.5 kB)
```



```

File "/home/hetpathak/python3.10/lib/python3.10/importlib/_init_.py", line 126, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
File "<frozen importlib._bootstrap>", line 1050, in _gcd_import
File "<frozen importlib._bootstrap>", line 1027, in _find_and_load
File "<frozen importlib._bootstrap>", line 1006, in _find_and_load_unlocked
File "<frozen importlib._bootstrap>", line 688, in _load_unlocked
File "<frozen importlib._bootstrap_external>", line 883, in exec_module
File "<frozen importlib._bootstrap>", line 241, in _call_with_frames_removed
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/contrib/auth/models.py", line 3, in <module>
    from django.contrib.auth.base_user import AbstractBaseUser, BaseUserManager
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/contrib/auth/base_user.py", line 57, in <module>
    class AbstractBaseUser(models.Model):
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/models/base.py", line 143, in __new__
    new_class.add_to_class("_meta", Options(meta, app_label))
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/models/base.py", line 371, in add_to_class
    value.contribute_to_class(cls, name)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/models/options.py", line 243, in contribute_to_class
    self.db_table, connection.ops.max_name_length())
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/utils/connection.py", line 15, in __getattr__
    return getattr(self._connections[self._alias], item)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/utils/connection.py", line 62, in __getitem__
    conn = self.create_connection(alias)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/utils.py", line 193, in create_connection
    backend = load_backend(db["ENGINE"])
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/utils.py", line 113, in load_backend
    return import_module("%s.base" % backend_name)
File "/home/hetpathak/python3.10/lib/python3.10/importlib/_init_.py", line 126, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/backends/sqlite3/base.py", line 9, in <module>
    from sqlite3 import dbapi2 as Database
File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/_init_.py", line 57, in <module>
    from sqlite3.dbapi2 import *
File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/dbapi2.py", line 27, in <module>
    from _sqlite3 import *
ModuleNotFoundError: No module named '_sqlite3'
(pip_env_3.10) hetpathak@hetpathak:~$ |

```

```

Press Ctrl-C to quit
(pip_env_3.10) hetpathak@hetpathak:~$ python3.10 -m test.test_support
.....sF.....
=====
FAIL: test_ignored_deprecations_are_silent (__main__.TestSupport)
Test support.ignore_deprecations_from() silences warnings
=====
Traceback (most recent call last):
  File "/home/hetpathak/python3.10/lib/python3.10/test/test_support.py", line 53, in test_ignored_deprecations_are_silent
    self.assertEqual(len(messages), 0, messages)
AssertionError: 1 != 0 : ['You should NOT be seeing this.']

-----
Ran 44 tests in 10.123s

FAILED (failures=1, skipped=1)
(pip_env_3.10) hetpathak@hetpathak:~$ |

```

Install and Compile SQLite:

- `wget` commands: Download SQLite tarball.
- `tar -xvzf sqlite-autoconf-3480000.tar.gz` and `cd sqlite-autoconf-3480000`: Extract and navigate to the SQLite source directory.

```
(pip_env_3.10) hetpathak@hetpathak:~$ wget https://www.sqlite.org/2025/sqlite-src-3480000.zip
--2025-01-27 07:42:43-- https://www.sqlite.org/2025/sqlite-src-3480000.zip
Resolving www.sqlite.org (www.sqlite.org)... 45.33.6.223, 2600:3c00::f03c:91ff:fe96:b959
Connecting to www.sqlite.org (www.sqlite.org)|45.33.6.223|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 14350897 (14M) [application/zip]
Saving to: 'sqlite-src-3480000.zip'

sqlite-src-3480000.zip      100%[=====] 13.69M  952KB/s  in 15s

2025-01-27 07:42:43 (910 KB/s) - 'sqlite-src-3480000.zip' saved [14350897/14350897]

(pip_env_3.10) hetpathak@hetpathak:~$ tar -xvzf sqlite-src-3480000.zip
gzip: stdin has more than one entry--rest ignored
tar: Child returned status 2
tar: Error is not recoverable: exiting now
(pip_env_3.10) hetpathak@hetpathak:~$
```

```
(pip_env_3.10) hetpathak@hetpathak:~$ rm -rf sqlite-src-3480000.zip
(pip_env_3.10) hetpathak@hetpathak:~$ wget https://www.sqlite.org/2025/sqlite-autoconf-3480000.tar.gz
--2025-01-27 07:45:22-- https://www.sqlite.org/2025/sqlite-autoconf-3480000.tar.gz
Resolving www.sqlite.org (www.sqlite.org)... 45.33.6.223, 2600:3c00::f03c:91ff:fe96:b959
Connecting to www.sqlite.org (www.sqlite.org)|45.33.6.223|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 3337615 (3.2M) [application/x-gzip]
Saving to: 'sqlite-autoconf-3480000.tar.gz'

sqlite-autoconf-3480000.tar.gz  100%[=====]

2025-01-27 07:45:28 (753 KB/s) - 'sqlite-autoconf-3480000.tar.gz' saved [3337615/3337615]

(pip_env_3.10) hetpathak@hetpathak:~$ tar -xvzf sqlite-autoconf-3480000.tar.gz
sqlite-autoconf-3480000/
sqlite-autoconf-3480000/compile
sqlite-autoconf-3480000/sqlite3.c
sqlite-autoconf-3480000/sqlite3.rc
```

`./configure --prefix=$HOME/sqlite`: Configures the SQLite build to install in a custom directory.

```
sqlite-autoconf-3480000/sqlite3ext.h
sqlite-autoconf-3480000/configure
sqlite-autoconf-3480000/Replace.cs
sqlite-autoconf-3480000/sqlite3rc.h
sqlite-autoconf-3480000/sqlite3.pc.in
(pip_env_3.10) hetpathak@hetpathak:~$ cd sqlite-autoconf-3480000
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ ./configure --prefix=$HOME/sqlite
checking for a BSD-compatible install... /usr/bin/install -c
checking whether build environment is sane... yes
checking for a race-free mkdir -p... /usr/bin/mkdir -p
checking for gawk... gawk
checking whether make sets $(MAKE)... yes
checking whether make supports nested variables... yes
checking whether make supports the include directive... yes (GNU style)
```

```

/usr/bin/install -c -m 644 sqlite3.1 '/home/hetpathak/sqlite/share/man/man1'
/usr/bin/mkdir -p '/home/hetpathak/sqlite/lib/pkgconfig'
/usr/bin/install -c -m 644 sqlite3.pc '/home/hetpathak/sqlite/lib/pkgconfig'
make[1]: Leaving directory '/home/hetpathak/sqlite-autoconf-3480000'
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ export PATH=$HOME/sqlite/bin:$PATH
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ export LD_LIBRARY_PATH=$HOME/sqlite/lib:$LD_LIBRARY_PATH
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ sqlite3 --version
3.48.0 2025-01-14 11:05:00 d2fe6b05f38d9d7cd78c5d252e99ac59f1aea071d669830c1ffe4e8966e84010 (64-bit)
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ export PKG_CONFIG_PATH=$HOME/sqlite/lib/pkgconfig:$PKG_CONFIG_PATH
(pip_env_3.10) hetpathak@hetpathak:~/sqlite-autoconf-3480000$ cd
(pip_env_3.10) hetpathak@hetpathak:~$ cd Python-3.10.13
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ ./configure --prefix=$HOME/python3.10 --with-openssl=$HOME/openssl --enable-optimizations --with-sqlite3=$HOME/sqlite
configure: WARNING: unrecognized options: --with-sqlite3
checking build system type... x86_64-pc-linux-gnu
checking host system type... x86_64-pc-linux-gnu
checking for python3.10... python3.10
checking for --enable-universalsdk... no
checking for --with-universal-archs... no

```

make and **make altinstall**: Rebuilds and reinstalls Python 3.10 with SQLite support.

```

configure: WARNING: unrecognized options: --with-sqlite3
creating Modules/Setup.local
creating Makefile
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ make clean
find . -depth -name '__pycache__' -exec rm -rf {} ';'
find . -name '*.py[co]' -exec rm -f {} ';'
find . -name '*.lo' -exec rm -f {} ';'
find . -name '*.so' -exec rm -f {} ';'
find . -name '*.so.[0-9]*.[0-9]*' -exec rm -f {} ';'
find . -name '*.lst' -exec rm -f {} ';'
find build -name 'fficonfig.h' -exec rm -f {} ';' || true
find build -name '*.py' -exec rm -f {} ';' || true
find build -name '*.py[co]' -exec rm -f {} ';' || true
rm -f pybuilddir.txt
rm -f Lib/lib2to3/*Grammar*.pickle
rm -f Programs/_testembed Programs/_freeze_importlib
find build -type f -a ! -name '*.gc??' -exec rm -f {} ';'
rm -f Include/pydtrace_probes.h
rm -f profile-gen-stamp
make[1]: Entering directory '/home/hetpathak/Python-3.10.13'
find . -name '*.gc??' -exec rm -f {} ';'
find . -name '*.profclang?' -exec rm -f {} ';'
find . -name '*.dyn' -exec rm -f {} ';'
rm -f /home/hetpathak/Python-3.10.13/coverage.info
rm -rf /home/hetpathak/Python-3.10.13/lcov-report
rm -f profile-run-stamp
make[1]: Leaving directory '/home/hetpathak/Python-3.10.13'
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ make|

```

```

    conn = self.create_connection(alias)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/utils.py", line 193, in create_connection
    backend = load_backend(db["ENGINE"])
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/utils.py", line 113, in load_backend
    return import_module("%s.base" % backend_name)
File "/home/hetpathak/python3.10/lib/python3.10/importlib/__init__.py", line 126, in import_module
    return _bootstrap._gcd_import(name[level:], package, level)
File "/home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/django/db/backends/sqlite3/base.py", line 9, in <module>
    from sqlite3 import dbapi2 as Database
File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/__init__.py", line 57, in <module>
    from sqlite3.dbapi2 import *
File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/dbapi2.py", line 27, in <module>
    from _sqlite3 import *
ModuleNotFoundError: No module named '_sqlite3'
Sentry is attempting to send 2 pending events
Waiting up to 2 seconds
Press Ctrl-C to quit
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ sqlite3 --version
3.48.0 2025-01-14 11:05:00 d2fe6b05f38d9d7cd78c5d252e99ac59f1aea071d669830c1ffe4e8966e84010 (64-bit)
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ |

```

```

49 ./configure --prefix=$HOME/sqlite
50 make
51 make install
52 export PATH=$HOME/sqlite/bin:$PATH
53 export LD_LIBRARY_PATH=$HOME/sqlite/lib:$LD_LIBRARY_PATH
54 sqlite3 --version
55 export PKG_CONFIG_PATH=$HOME/sqlite/lib/pkgconfig:$PKG_CONFIG_PATH
56 cd
57 cd Python-3.10.13
58 ./configure --prefix=$HOME/python3.10 --with-openssl=$HOME/openssl --enable-optimizations --with-sqlite3=$HOME/sqlite
59 make clean
60 make
61 sudo apt install build-essential
62 make install
63 label-studio
64 sqlite3 --version
65 history
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ |

```

```

checking alloca.h usability... 'C(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ deactivate
hetpathak@hetpathak:~/Python-3.10.13$ ./configure --prefix=$HOME/python3.10 --with-openssl=$HOME/openssl --with-sqlite3=$HOME/sqlite --enable-optimizations
configure: WARNING: unrecognized options: --with-sqlite3
checking build system type... x86_64-pc-linux-gnu

```

```

make[1]: Leaving directory '/home/hetpathak/Python-3.10.13'
hetpathak@hetpathak:~/Python-3.10.13$ python3.10 -c "import sqlite3; print(sqlite3.sqlite_version)"
Traceback (most recent call last):
  File "<string>", line 1, in <module>
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/__init__.py", line 57, in <module>
        from sqlite3.dbapi2 import *
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/dbapi2.py", line 27, in <module>
        from _sqlite3 import *
ModuleNotFoundError: No module named '_sqlite3'
hetpathak@hetpathak:~/Python-3.10.13$ cd
hetpathak@hetpathak:~$ python3.10 -c "import sqlite3; print(sqlite3.sqlite_version)"
Traceback (most recent call last):
  File "<string>", line 1, in <module>
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/__init__.py", line 57, in <module>
        from sqlite3.dbapi2 import *
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/dbapi2.py", line 27, in <module>
        from _sqlite3 import *
ModuleNotFoundError: No module named '_sqlite3'
hetpathak@hetpathak:~$ ls
CS203_Lab_01 Python-3.10.13 app.py folder openssl pip_env_3.10 python3.10 sqlite sqlite-autoconf-3480000
hetpathak@hetpathak:~$ |

```

```

hetpathak@hetpathak:~$ export LD_FLAGS="-L$HOME/sqlite/lib"
export CPP_FLAGS="-I$HOME/sqlite/include"
export PKG_CONFIG_PATH="$HOME/sqlite/lib/pkgconfig"
export LD_LIBRARY_PATH="$HOME/sqlite/lib:$LD_LIBRARY_PATH"
hetpathak@hetpathak:~$ sqlite3 --version
Command 'sqlite3' not found, but can be installed with:
sudo apt install sqlite3
hetpathak@hetpathak:~$ |

```

```

/home/hetpathak/sqlite/bin:/home/hetpathak/python3.10/bin:/home/hetpathak/openssl/bin:/usr/local/games:/snap/bin
hetpathak@hetpathak:~$ sqlite3 --version
3.48.0 2025-01-14 11:05:00 d2fe6b05f38d9d7cd78c5d252e99ac59f1aea071d669830c1ffe4e8966e84010 (64-bit)
hetpathak@hetpathak:~$ python3.10 -c "import sqlite3; print(sqlite3.sqlite_version)"
Traceback (most recent call last):
  File "<string>", line 1, in <module>
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/__init__.py", line 57, in <module>
        from sqlite3.dbapi2 import *
    File "/home/hetpathak/python3.10/lib/python3.10/sqlite3/dbapi2.py", line 27, in <module>
        from _sqlite3 import *
ModuleNotFoundError: No module named '_sqlite3'
hetpathak@hetpathak:~$ ls
CS203_Lab_01  Python-3.10.13  app.py  folder  openssl  pip_env_3.10  python3.10  sqlite  sqlite-autoconf-348
hetpathak@hetpathak:~$ source pip_env_3.10/bin/activate
(pip_env_3.10) hetpathak@hetpathak:~$ |

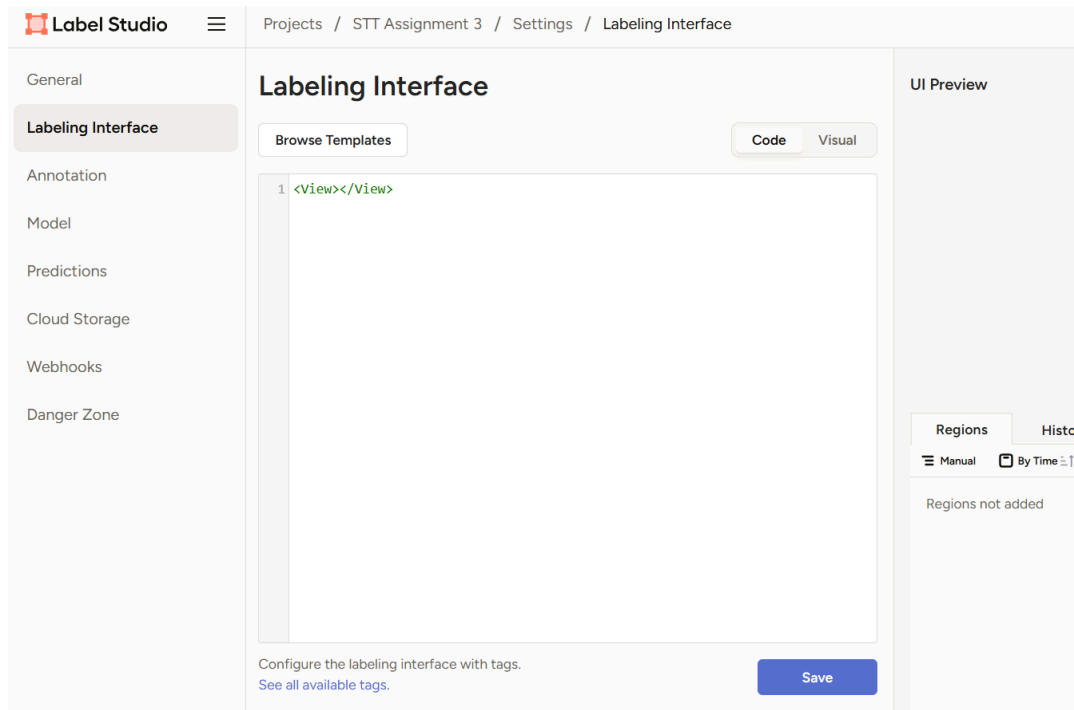
```

```

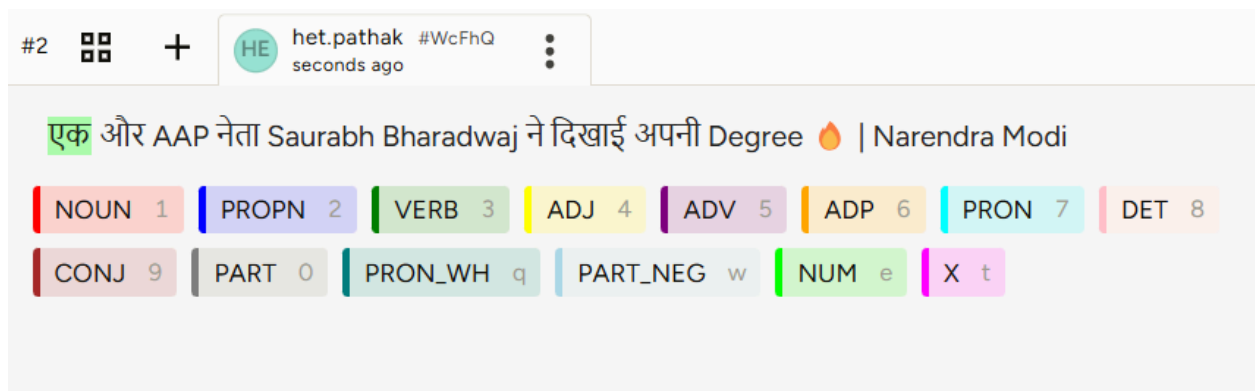
90 ls $HOME/sqlite/bin
91 export PATH=$HOME/sqlite/bin:$PATH
92 echo $PATH
93 sqlite3 --version
94 python3.10 -c "import sqlite3; print(sqlite3.sqlite_version)"
95 ls
96 source pip_env_3.10/bin/activate
97 pip install label-studio
98 label-studio
99 deactivate
100 vim ~/.bashrc
101 cat .bashrc
102 source .bashrc
103 source pip_env_3.10/bin/activate
104 pip install label-studio
105 label-studio
106 history
ip_env_3.10) hetpathak@hetpathak:~$ |

```

- Label Studio UI:



- Annotation Window for the NLP Dataset:



Test Python Installation:

- `~/python3.10/bin/python3.10 -c 'import ssl, sqlite3, bz2, lzma, ...':` Ensures all critical modules are successfully loaded.

```

./python -E -m ensurepip \
    $ensurepip --root=/ ; \
fi
Looking in links: /tmp/tmpkkkztf0z
Requirement already satisfied: setuptools in /home/hetpathak/python3.10/lib/python3.10/site-packages (65.5.0)
Requirement already satisfied: pip in /home/hetpathak/python3.10/lib/python3.10/site-packages (23.0.1)
hetpathak@hetpathak:~/Python-3.10.13$ ~/python3.10/bin/python3.10 -c "import ssl, sqlite3, bz2, lzma, zlib, readline, _ctypes, curses; print('All core modules loaded successfully!')"
-bash: !': event not found
hetpathak@hetpathak:~/Python-3.10.13$

```

```

./python -E -m ensurepip \
$ensurepip --root=/; \
fi
Looking in links: /tmp/tmp4kktzf0z
Requirement already satisfied: setuptools in /home/hetpathak/python3.10/lib/python3.10/site-packages (65.5.0)
Requirement already satisfied: pip in /home/hetpathak/python3.10/lib/python3.10/site-packages (23.0.1)
hetpathak@hetpathak:~/Python-3.10.13$ ./python3.10/bin/python3.10 -c "import ssl, sqlite3, bz2, lzma, zlib, readline, _ctypes, curses; print('All core modul
es loaded successfully!')"
-bash: '!': event not found
hetpathak@hetpathak:~/Python-3.10.13$ ./python3.10/bin/python3.10 -c 'import ssl, sqlite3, bz2, lzma, zlib, readline, _ctypes, curses; print("All core modul
es loaded successfully!")'
All core modules loaded successfully!

```

```
hetpathak@hetpathak:~/Python-3.10.13$ source ~/pip_env_3.10/bin/activate
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ pip install label-studio
Requirement already satisfied: label-studio in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (1.15.0)
Requirement already satisfied: python-json-logger>=2.0.4 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (2.0.4)
Requirement already satisfied: boto3<2.0.0, >=1.31.58 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (1.34.12)
Requirement already satisfied: boto<3.0.0, >=2.49.0 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (2.49.0)
Requirement already satisfied: colorama>=0.4.4 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (0.4.6)
Requirement already satisfied: pyyaml>=6.0.0 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (6.0.1)
Requirement already satisfied: django-environ>=0.10.0 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (0.10.0)
Requirement already satisfied: urllib3<2.0.0, >=1.26.18 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (1.26.18)
Requirement already satisfied: azure-storage-blob==12.6.0 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (12.6.0)
Requirement already satisfied: label-studio-sdk==1.0.8 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (1.0.8)
Requirement already satisfied: pydantic<=2.9.2 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (2.9.2)
Requirement already satisfied: django-extensions==3.2.3 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (3.2.3)
Requirement already satisfied: Django<4.3.0, >=4.2.13 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (from label-studio) (4.2.13)
```

```
Requirement already satisfied: dnspython>=2.0.0 in /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages (2.7.0)
```

```
[notice] A new release of pip is available: 23.0.1 -> 25.0
[notice] To update, run: pip install --upgrade pip
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ label-studio
=> Database and media directory: /home/hetpathak/.local/share/label-studio
=> Static URL is set to: /static/
=> Database and media directory: /home/hetpathak/.local/share/label-studio
=> Static URL is set to: /static/
Read environment variables from: /home/hetpathak/.local/share/label-studio/.env
get 'SECRET_KEY' casted as '<class 'str'>' with default ''
Starting new HTTPS connection (1): pypi.org:443
https://pypi.org:443 "GET /pypi/label-studio/json HTTP/1.1" 200 33651
Initializing database..
January 27, 2025 - 16:24:00
Django version 4.2.18, using settings 'label_studio.core.settings.label_studio'
Starting development server at http://0.0.0.0:8080/
Quit the server with CONTROL-C.
```

```

Grammar: Makefile      Objects Python    config.guess  configure.ac  opensst-1.1.1.tar.gz  python
Include: Makefile.pre  PC      README.rst  config.log    install-sh      profile-run-stamp    python-config
LICENSE: Makefile.pre.in  CBuild Tools  config.status  libpython3.10.a  pybuilddir.txt  python-config.py

(pip_env 3.10) hetpathak@hetpathak:~/Python-3.10.13$ git add user_history.txt
fatal: not a git repository (or any of the parent directories): .git
(pip_env 3.10) hetpathak@hetpathak:~/Python-3.10.13$

```


Save Command History:

- `history > user_history.txt`: Saves the user's command history to a text file for documentation.

```
January 27, 2025 - 16:24:00
Django version 4.2.18, using settings 'label_studio.core.settings.label_studio'
Starting development server at http://0.0.0.0:8080/
Quit the server with CONTROL-C.

^C(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ history > user_history.txt
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ ls
CODE_OF_CONDUCT.md  Lib          Misc         Parser       alocal.m4    config.sub    netlify.toml      pyconfig.h      python-gdb.py
Doc                 Mac          Modules      Programs     build         configure     openssl-1.1.1    pyconfig.h.in   setup.py
Grammar             Makefile     Objects      Python       config.guess  configure.ac  openssl-1.1.1.tar.gz  python          user_history.txt
Include             Makefile.pre PC            README.rst   config.log    install-sh    profile-run-stamp  python-config
LICENSE             Makefile.pre.in PCbuild      Tools        config.status libpython3.10.a  pybuilddir.txt    python-config.py

(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git add user_history.txt
fatal: not a git repository (or any of the parent directories): .git
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git init
hint: Using 'master' as the name for the initial branch. This default branch name
hint: is subject to change. To configure the initial branch name to use in all
hint: of your new repositories, which will suppress this warning, call:
hint:
hint:     git config --global init.defaultBranch <name>
hint:
hint: Names commonly chosen instead of 'master' are 'main', 'trunk' and
hint: 'development'. The just-created branch can be renamed via this command:
hint:
hint:     git branch -m <name>
Initialized empty Git repository in /home/hetpathak/Python-3.10.13/.git/
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git add user_history.txt
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git commit -m "Added user history for Label Studio setup"
[master (root-commit) d382173] Added user history for Label Studio setup
 1 file changed, 150 insertions(+)
 create mode 100644 user_history.txt
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git remote add origin https://github.com/xsinh19/CS203_Lab_01.git
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ git push -u origin main
```

```
(pip_env_3.10) hetpathak@hetpathak:~/Python-3.10.13$ cd
(pip_env_3.10) hetpathak@hetpathak:~$ python3.10 -V
Python 3.10.13
(pip_env_3.10) hetpathak@hetpathak:~$ pip -V
pip 23.0.1 from /home/hetpathak/pip_env_3.10/lib/python3.10/site-packages/pip (python 3.10)
(pip_env_3.10) hetpathak@hetpathak:~$ |
```