# Build\_i2b2\_rxnorm\_ndc\_metadata repository documentation.

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# Repository:

build\_i2b2\_rxnorm\_ndc\_metadata

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# Purpose:

Builds an i2b2 format metadata file with historically complete definitions

of RxNORM orderable drugs from the NLM, and the best available mappings

of those orderable drugs to their associated NDC packages. The NDC

mapping is also provided by the NDC with information received from the FDA.

Also includes a drug classification using VACLASS identifier which is supported

by the NLM, and tracks the no-longer-supported NDFRT drug classification from the VA.

Provides a lexical ordering of drugs, starting with their ingredients.

# Algorithm:

Uses information extracted from the REST API interfaces provided by the

NLM to determine historically complete RxNorm coding, and to create a

drug classification hierarchy and lexical listing of drugs based on

drug ingredient(s).

Input: REST API from the NLM

Output: i2b2 metadata file with historically complete RxNORM coding.

Additionally:

Log files showing execution progress and a cache file containing

NLM REST API responses are also produced. The log files may be

examined in error cases. They can be removed after a successful run.

The cache file can be re-used on a later execution, or can be removed.

# Software environment:

Requires python 3 interpreter and internet connection.

Has been tested on Windows using Anaconda Python version 3.6, but should

work with Python 3.5 or 3.7.

Has been tested on Linux (Ubuntu 16.04), using Python version 3.7.1.

# Requirements to execute the procedure:

1. A python 3 interpreter, version 3.5 or higher
2. The source code from this repository .
3. A directory/folder name to write log files.
4. A directory/folder to create a cache file of information gathered from the NLM's REST API.
5. A directory/folder to create the i2b2 metadata file.
6. The filename to call the metadata file.
7. The prefix to apply to all metadata paths (e.g. i2b2\_RXNORM\_NDC)

# Execution syntax:

The following command creates the metadata file i2b2\_rxnorm\_ndc.txt

in the folder C:/sno/data/i2b2\_metadata/20190114/, writes log files to the folder C:/sno/log/rxnorm\_i2b2\_metadata/20190114/, and creates or uses the metadata file C:/sno/data/rxcui\_cache/rxcui\_20190114.cache.

From a Linux bash shell:

python build\_rxnorm\_metadata.py \

--add\_provenance \

--prefix i2b2\_RXNORM\_NDC \

--cache /sno/data/rxcui\_cache/rxcui\_20190114.cache \

--log\_dir /sno/log/i2b2\_metadata/rxnorm/20190114/ \

--output\_dir /sno/data/i2b2\_metadata/rxnorm/20190114/ \

--output\_filename i2b2\_rxnorm\_ndc.txt

From a DOS shell on Windows:

python build\_rxnorm\_metadata.py ^

--add\_provenance ^

--prefix i2b2\_RXNORM\_NDC ^

--cache C:\sno\data\rxcui\_cache\rxcui\_20190114.cache ^

--log\_dir C:\sno\log\rxnorm\_i2b2\_metadata\20190114\ ^

--output\_dir C:\sno\data\i2b2\_metadata\20190114\ ^

--output\_filename i2b2\_rxnorm\_ndc.txt

From a "git bash" shell on Windows:

python build\_rxnorm\_metadata.py \

--add\_provenance \

--prefix i2b2\_RXNORM\_NDC \

--cache C:/sno/data/rxcui\_cache/rxcui\_20190114.cache \

--log\_dir C:/sno/log/rxnorm\_i2b2\_metadata/20190114/ \

--output\_dir C:/sno/data/i2b2\_metadata/20190114/ \

--output\_filename i2b2\_rxnorm\_ndc.txt

# Time requirements:

Typically completes in approximately 12 hours. The time taken depends strongly on the

latency of requests. There are hundreds of thousands of requests made to the

REST API to obtain the information needed to build the metadata.

# Resulting metadata file:

Contains metadata whose paths are prefixed by the --prefix value and the remaindeer

of the path is specific to the drug the path represents.

Sample metadata rows: (first few columns)

C\_FULLNAME|C\_HLEVEL|C\_NAME|C\_BASECODE|C\_VISUALATTRIBUTES|M\_APPLIED\_PATH|

"\i2b2\_RXNORM\_NDC\"|1|"Medications"|"RXNORM\_ROOT"|"CA"|"@"|

"\i2b2\_RXNORM\_NDC\RXNORM\_CUI\"|2|"VA Drug Classes"|"VACLASS:VA000"|"FA"|"@"|

"\i2b2\_RXNORM\_NDC\RXNORM\_CUI\AA000\"|3|"Introduction"|"VACLASS:AA000"|"LA"|"@"|

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"\i2b2\_RXNORM\_NDC\RXNORM\_CUI\AD000\AD300\614373\616159\"|6|"deferasirox 125 MG Tablet for Oral Suspension [Exjade]"|"RXNORM:616159"|"FA"|

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"\i2b2\_RXNORM\_NDC\RXNORM\_CUI\AD000\AD300\614373\597772\00078047015\"|7|"Exjade (deferasirox) 30 TABLET, FOR SUSPENSION in 1 BOTTLE (0078-0470-15)"|"NDC:00078047015"|"LA"|"@"|