**Steps to generate a dataset for feature extraction:**

1. Run the ‘Feature\_extraction\_dataset.py’ code to generate a dataset for an efficient feature extraction. The ‘Feature\_extraction\_dataset.py’ code performs the following operations:
   1. It reads the ‘ETFD\_data\_raw.txt’ file from ‘Step4\_Raw dataset (Metadata)’ folder
   2. For each transaction, the code extracts the features required for temporal and nodal features extraction. In particular, it extracts the following features: timestamp, from, to, value, and class labels.
   3. It saves the resulting dataset with extracted features as ‘feature\_extraction\_dataset.txt’

**Steps to extract temporal features:**

1. Run the ‘Temporal\_features\_extractor.py’ code to extract temporal features for ETFD dataset. The ‘Temporal\_features\_extractor.py’ code performs the following operations:
   1. It reads the ‘feature\_extraction\_dataset.txt’ file
   2. For each transaction, it extracts the temporal features based on timestamp
   3. The dataset temporal features is saved as ‘ETFD\_temporal\_features.txt’ file

**Steps to extract nodal features per address:**

1. Run the ‘nodal\_features\_extractor.py’ code to extract nodal features per address for ETFD dataset. The ‘nodal\_features\_extractor.py’ code performs the following operations:
   1. It reads the ‘feature\_extraction\_dataset.txt’ file
   2. For each transaction, it extracts the nodal features for the ‘from’ address
   3. The dataset with nodal features per address is saved as ‘ETFD\_nodal\_features\_per\_address.txt’ file

**Steps to extract nodal features:**

1. Run the ‘nodal\_features\_mapping.py’ code to map the nodal features per address with the transaction data. The ‘nodal\_features\_mapping.py’ code performs the following operations:
   1. It reads the ‘feature\_extraction\_dataset.txt’ and the ‘ETFD\_nodal\_features\_per\_address.txt’ files
   2. For each address in the ‘ETFD\_nodal\_features\_per\_address.txt’ file, it finds the corresponding transaction in ‘feature\_extraction\_dataset.txt’ file such that the ‘from’ address in the latter file is same as the address from the former file
   3. It appends the nodal features to the transaction data for that address
   4. The transaction data with nodal features is saved as ‘ETFD\_nodal\_features’ file

**Steps to generate ETFD dataset with extracted temporal and nodal features:**

1. Run the ETFD\_extracted\_features.py’ code to generate ETFD dataset with extracted temporal and nodal features. The ETFD\_extracted\_features.py’ code performs the following operations:
   1. It reads the ‘ETFD\_data\_raw.txt’ file from the ‘Step4\_Raw dataset (Metadata)’ folder. In addition, it reads the ‘ETFD\_temporal\_features.txt’ and ‘ETFD\_nodal\_features.txt’ files
   2. For each transaction data, it combines the original features, temporal features, and nodal features
   3. The final ETFD dataset with extracted features is saved as ‘ETFD\_extracted\_features.txt’ file