MUNI
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Data compressor

C# class library and console application

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Projects

- DataCompressor
  - Class library
  - Can be used separately
- DataCompressor.Program
  - Console application
  - Uses DataCompressor library
- DataCompressor.Test
  - Xunit test project
  - Unit tests for DataCompressor classes

Library functionality – Typical use

- Creator
  - For compression
  - Files data are loaded asynchronously
  - Output file is saved asynchronously
  - Complex
- Reconstructor
  - For decompression
  - Not so complex
- Settings
  - Library can be easily customized from a single place
  - Note: Unit tests expect default settings

Library functionality - Modes

- Purpose
  - Optimalization / reduction of output file size
- File tree mode
  - Couple of files vs. complex file structure (parent indices must be stored)
- Repeat mode
  - Files with many sequences of same bytes (ideal scenario) vs. files with unique bytes (compression can even increase size)
- Short and Int mode
  - Short files vs. long files
  - Extra long sequences of same bytes vs. short sequences
  - Many entries vs. couple of entries

Library functionality - Parts

- ModesPart
  - Processes compression modes
- NodePart
  - Processes file system entry
- NodesPart
  - Processes multiple file system entries
- FilePart
  - Processes file data
  - Most complex part
- DataPart
  - Processes data of multiple files

Library functionality - Other

- Exceptions
  - UnableToConstructException (handle decompression of an invalid file)
- Helpers
  - ConstructEnumerator (easily work with bytes during decompression)
  - DynamicInteger (useful during compression)
  - NodeTree (build file system tree during decompression)

Program functionality

- Compress (recursively) directory
  - DataCompressor.exe **compress** dirName [outputFileName]
  - DataCompressor.exe **-c** dirName [outputFileName]
  - Exit **0** if successfully compressed
- Decompress (previously compressed) file
  - DataCompressor.exe **decompress** compressedName [outputDirName]
  - DataCompressor.exe **-d** dirName [outputDirName]
  - Exit **0** if successfully decompressed
- Display usage
  - DataCompressor.exe **help**
  - DataCompressor.exe **–h**
  - DataCompressor.exe **invalid arguments** (exit 1)

Illustration

- See **illustration.png** file in root directory