Purpose

Demonstrate the ability to create a multi-file project that is hosted in a GIT repository. Demonstrate the ability to perform Binary File I/O. Demonstrate the ability to visualize binary data using a CDK matrix.

Assignment

Overview

You will be using binary file I/O techniques to open a supplied binary file. The file consists of a header record that is immediately followed by a set of data records. You are to read and display the header record. Using information in the header record, you will read the data records from the file. For each data record, you are to display the results in a CDK window. After display, you are to wait until the user types a character on the keyboard. When they do, you will exit the program.

Binary File I/O

You will be using binary file I/O techniques to open a supplied binary file. The file consists of a header record that is immediately followed by a set of data records. You are to read and display the header record. Using information in the header record, you will then read the data records from the file. You will display up to 4 of the remaining records.

The header record in the file is described by this class:

```
class BinaryFileHeader
{
 public:

  uint32_t magicNumber;          /* Should be 0xFEEDFACE */
  uint32_t versionNumber;
  uint64_t numRecords;
};
```

Each data record in the file is described by this class (not this is a fixed length string):

```
/*
 * Records in the file have a fixed length buffer
 * that will hold a C-Style string. This is the
 * size of the fixed length buffer.
 */
const int maxRecordStringLength = 25;

class BinaryFileRecord
{
 public:

  uint8_t strLength;
  char   stringBuffer[maxRecordStringLength];
};
```

The records were written to the file as a byte stream of the entire class instance. You can read them the same way.

Visualization

You will be using old-school UNIX tools to provide visualization of the file contents. Specifically, you will be using the CDK third party terminal windowing library based on ncurses. Your graphical display will show the contents of the binary file.

You will create a 3 wide by 5 high display matrix using CDK. The first row of the table will display the three fields found in the file header (the magic number, the version, and the number of records). The rest of the rows will display the two fields of the first 4 records in the file (or the total number of records if less than 4). These two fields contain the string length and the string.

CDK Library

The CDK library is available in source form on the Internet. It is distributed in autoconf format so that you can download, build, and install it.

http://invisible-island.net/datafiles/release/cdk.tar.gz

Example Display