Graduate Candidates	Roman Pasqual Emanuel Lacher, Andreas Deicha
Examiner	Prof. Stefan Richter
Co-Examiner	Dr. Ettore Ferranti, ABB Schweiz AG, Baden, AG
Subject Area	Software

Hex Browser

Datablock Name Section Name
Type: reference
Offset: 0x00001168

Length: 4

Content:

Reference Identifier: __interp Reference Offset: __0x0000105D

Encodings: Encoded Data:

Reference peeking and jumping feature

Datablock Name

Type: stream

Offset: 0x000003AF

Length: 8372

Content:

Reference Identifier:

Reference Offset:

Encodings: Flate Decoeded

Encoded Data: %4PS-AdobeFont-1.0: CMR12 003.002

%5*STITE: CMR12

%Version: 003.002

%5*SCreato: David M. Jones

%Copyright: Copyright (c) 1997, 2009 American Mathematical Society

%Copyright: Chttp://www.ams.org>), with Reserved Font Name CMR12.

% This Font Software is licensed under the SIL Open Font License, Version 1.1

% This license is in the accompanying file OPLott, and is also

% available with a FAO at: httn://crintc.sil.ora/OFI.

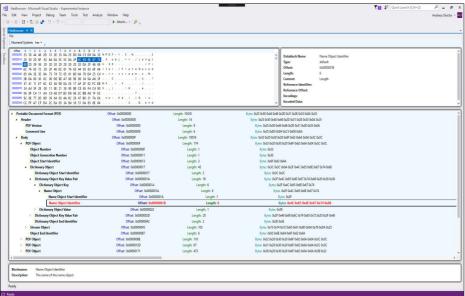
Introduction: Computers only understand binary information, which is hard to understand for humans. Even computer scientists have a hard time analysing binary data. Programs to view and edit binary data are called "Hex Editors". Currently existing editors have basic features like reading the file and writing into it, but lack semantic analysis. For certain file formats, there are binary interpreters but they are limited to their file format. The goal for this project is a hex editor, which is compatible to every file format.

Result: Because the tool understands the semantics of the given file format, it has unique and more advanced features than a regular editor. Two of these unique features are reference jumping and special encodings. Very often, there are references to other positions within the file, such as object references or string table references. Due to this reference jumping, the tool is called Hex Browser. This browser can detect such references and provide a function to peek or even directly jump to the reference.

Many file formats also compress data with special encodings to save memory or to increase security. This encoded data is completely unreadable. The Hex Browser can decode such data and present them, which makes the understanding of the content possible.

To display the semantic information and to accomplish the features above, the tool needs to understand the file format. In order to handle the very different file formats, an API (application programming interface) is made to extend the Hex Browser with any file format. As proof of concept, ELF (Executable and Linkable Format for Unix) and PDF (Portable Document Format) are implemented.

Decoding feature



Visual Studio 2017 Plug-in: Hex Browser

