LunarRED Assembler

The LRA (Lunar RED-Assembler) is a cross-platform assembler for x86-64 devices. The LunarRED Assembler was designed by Kai D. Gonzalez in 2023 as a complement to the bytecode formats OpenLUD and NexFUSE. The LunarRED Assembler is compatible with **both** bytecode formats, producing supportive code and allowing the writer to understand their limits, as defined by different bytecode formats.

LunarRED works by producing the same bytecode as listed in the documentation for a multitude of supported bytecode formats, and limits the code-generation and will let the caller know when they may be overstepping. LunarRED is designed to be easy to use and portable, being around 2000 lines of code, LunarRED has a very minimal overhead, allowing it to be run on multiple different kinds of devices.

What is Bytecode? (Simple Rundown)

Intermediate Bytecode, as defined in CS Textbooks and such, is a level between machine code and the higher level code like the code you will see in Python & JavaScript files, a majority of programming languages compile into their own set of bytecode which is called *"instructions"*. These instructions allow the programming language interpreter to get out of the way of execution, creating two separate parts of a programming language that can easily be modified and expanded upon.

LunarRED is able to compile into two high-performance bytecode formats, OpenLUD & NexFUSE. Both of which LunarRED respects their features and byte shift, operating in a way that is performative and good for low compilation overhead.

LunarRED follows similar syntax to this example:

```
# Copyright 2019-2023 Kai D. Gonzalez

@M:
  echo 0x41
  null
  echo 0x0a
  null

  halt
```

Do note however, that LR is not meant to be a programming language itself, more like reference data for other compilers to use as a foundation for their own specific programming languages. LR was designed in 3 days and can still be improved.

LunarRED Support List

LunarRED contains support for formats OpenLUD, NexFUSE, and any standard bytecode format.