

Mini_MIPS

Usage

The project is made to be compiled with GNU make, as follows:

```
make
```

This will generate the executable in the ./bin folder. You can also remove the object files and the executable with

```
make clean
```

You can use Mini_MIPS as an Instruction Simulator but it can also encode asm into hex files or decode hex to asm. The following commands are the most useful but you can see all the uses of Mini_MIPS with the --help command

```
./bin/Mini_MIPS [options] <input folders>
```

with for example:

```
./bin/Mini_MIPS --run      test_file.hex      #launches the simulation of the .hex
./bin/Mini_MIPS --encode  test_file.asm       #launches asm file encoding
./bin/Mini_MIPS --decode  test_file.hex       #launches asm file decoding
./bin/Mini_MIPS --step    test_file.hex       #triggers step mode      ***
./bin/Mini_MIPS --load    test_file.data      #loads data in memory  ***
```

Commands marked with *** are not fully functional

The file ./tests/encode_test_results/test_syracuse_result.hex is the go-to test file

You can use the following command to test the vm:

```
./bin/Mini_MIPS -r ./tests/encode_test_results/test_syracuse_result.hex
```

Note that the step mode is enabled by default and should be changed manually by modifying the step value to 0 in src/main.c as the command does not currently work.

Functionalities

Assembler

- ASM file conversion with solid blank trimming
- 18 ISS instructions understood
- Label detection and encoding

Virtual Machine

- Pile creation with hexadecimal instructions
- ISS instructions execution
- Solid command line handling
- Step by step execution with terminal-based GUI (Should be triggered manually by giving step in src/main.c the value 1)

GUI

- Step mode with colors for the last used registry (for binary commands)
- Last processed instruction

Cache

- Basic implementation of an 8-lines cache based on a 36-bytes memory
- Writethrough
- Encoding and decoding of addresses and cache lines

To-do

- CACHE: Functional cache
- VM: More complete performance tests
- VM: Negative numbers handling
- GUI: Instructions and data should be visible as well