1 Hello_NuMaker-M032BTAI

1.1 Prerequisites

Before proceeding with the commands, ensure you have the following installed:

- `make`
- `gcc-arm-none-eabi` or `docker`
- `Python 3.7+` and `pip` (for flashing and debugging)

1.2 Quick Commands

The following quick commands are available for convenience:

- `make upgrade`: Executes `make clean`, `make`, and `make flash` sequentially.

1.3 Building the Firmware

1.3.1 Using Makefile

To build the firmware using Makefile, run:

```
make clean && make
```

or build the firmware using Docker:

```
make update && make docker
```

1.4 Flashing the Firmware

We use pyOCD for cross-platform compatibility and to support the latest versions. OpenOCD is not used in this process.

1.4.1 Installing pyOCD

First, install `pyOCD` using `pip`:

```
python -m pip install -U pyocd
```

1.4.2 Installing the Required Pack

Next, install the pack for the target MCU:

```
pyocd pack install M032BTAIAAN
```

1.4.3 Flashing the MCU

Finally, flash the MCU with the following command:

```
make flash
```

1.5 Debugging the Firmware

To debug the firmware manually, use the following commands:

1.5.1 Starting the GDB Server

Start the GDB server with pyOCD:

```
pyocd gdbserver -t M032BTAIAAN --elf Source\build\TRSP_UART_Central.elf
```

1.5.2 Connecting GDB to the Target

In the GDB command line, connect to the target and load the firmware:

```
(gdb) target remote localhost:3333
(gdb) monitor reset halt
(gdb) load
```

1.6 Documentation

To build the documentation, run:

```
make docs
```

1.6.1 You need to install these software first

- On Windows:

```
choco install -y pandoc miktex
```

- On macOS:

```
brew install pandoc
brew install --cask mactex-no-gui
```

- On Linux:

```
sudo apt-get update && sudo apt-get install -y pandoc texlive-latex-
    base texlive-fonts-recommended texlive-fonts-extra texlive-latex-
    extra
```

- Then, install the required extensions:

```
make docs-install
```