Zephyr OS Setup and Execution on QEMU

This document provides a complete step-by-step guide to installing Zephyr OS, setting up the environment, building a sample application, and executing it on QEMU.

# 1. Install Required Dependencies

* sudo apt update
* sudo apt install --no-install-recommends git cmake ninja-build gperf ccache dfu-util device-tree-compiler wget python3-dev python3-pip python3-setuptools python3-tk python3-wheel xz-utils file make gcc gcc-multilib g++-multilib libsdl2-dev

# 2. Get Zephyr Source Code

* pip install --user west
* west init ~/zephyrproject
* cd ~/zephyrproject
* west update
* west zephyr-export
* pip install --user -r zephyr/scripts/requirements.txt

# 3. Install Zephyr SDK

* cd ~/zephyrproject
* wget https://github.com/zephyrproject-rtos/sdk-ng/releases/download/v0.16.5/zephyr-sdk-0.16.5\_linux-x86\_64.tar.xz
* tar xvf zephyr-sdk-0.16.5\_linux-x86\_64.tar.xz
* cd zephyr-sdk-0.16.5
* ./setup.sh

# 4. Build a Sample Application

* cd ~/zephyrproject/zephyr
* west build -p always -b qemu\_x86 samples/hello\_world

# 5. Run the Application in QEMU

* west build -t run

# 6. Expected Output

* If everything is set up correctly, you will see the message:
* "Hello World! qemu\_x86"