FreeRTOS
Ubuntu GNU/Linux
Quick Start

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Introduction

- Using FreeRTOS on Ubuntu GNU/Linux Distribution
    - Cloning the FreeRTOS GitHub Repo
    - Ensuring build tools installed
    - Building Blinky Demo
    - Running Blinky Demo

Ubuntu GNU/Linux Distribution

- The following steps show you how to install FreeRTOS on Ubuntu 2022.04
- Previous versions of Ubuntu should also work
  - 2020.04
  - 2018.04

Step 1. Confirm your version of Ubuntu

```
$ cat /etc/os-release
PRETTY_NAME="Ubuntu 22.04 LTS"
NAME="Ubuntu"
VERSION_ID="22.04"
VERSION="22.04 (Jammy Jellyfish)"
VERSION_CODENAME=jammy
ID=ubuntu
ID_LIKE=debian
HOME_URL="https://www.ubuntu.com/"
SUPPORT_URL="https://help.ubuntu.com/"
BUG_REPORT_URL="https://bugs.launchpad.net/ubuntu/"
PRIVACY_POLICY_URL="https://www.ubuntu.com/legal/terms-and-policies/privacy-policy"
UBUNTU_CODENAME=jammy
```

Step 2. Confirm you have the required **git** package installed

```
$ sudo apt install git
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
git is already the newest version (1:2.34.1-1ubuntu1.4).
The following packages were automatically installed and are no longer required:
 . . .
0 upgraded, 0 newly installed, 0 to remove and 253 not upgraded.
```

Step 3. Clone the FreeRTOS Repository

```
$ git clone https://github.com/FreeRTOS/FreeRTOS.git --recurse-submodules
Cloning into 'FreeRTOS'...
remote: Enumerating objects: 175604, done.
remote: Counting objects: 100% (582/582), done.
remote: Compressing objects: 100% (272/272), done.
Receiving objects:   4% (7459/175604), 11.79 MiB | 1.47 MiB/s
. . .
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/device-defender’...
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/device-shadow'...
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/fleet-provisioning'...
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/jobs'...
. . .
Cloning into '/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/ota'...
. . .
Cloning into '/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/AWS/sigv4
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/Application-Protocols/coreHTTP'...
. . .
Cloning into ‘/home/demo/Documents/FreeRTOS/FreeRTOS-Plus/Source/Application-Protocols/coreMQTT'...
. . .’
. . . many more . . .
. . .
```

Step 4. After Clone you have a FreeRTOS directory, so change into it

```
$ cd FreeRTOS

$ pwd
/home/demo/Documents/FreeRTOS

$ ls
FreeRTOS        FreeRTOS+TCP.url           History.txt  LICENSE.md    Quick_Start_Guide.url  tools
FreeRTOS-Plus   GitHub-FreeRTOS-Home.url   lexicon.txt  manifest.yml  README.md
Upgrading-to-FreeRTOS.url
```

Step 5. Change into FreeRTOS (not FreeRTOS-Plus)

```
$ cd FreeRTOS

$ pwd
/home/demo/Documents/FreeRTOS/FreeRTOS

$ ls
Demo  License  links_to_doc_pages_for_the_demo_projects.url  README.md  Source  Test
```

Step 6. Change into Demo

```
$ cd Demo

$ pwd
/home/demo/Documents/FreeRTOS/FreeRTOS/Demo

$ ls | head
ARM7_AT91FR40008_GCC
ARM7_AT91SAM7S64_IAR
ARM7_AT91SAM7X256_Eclipse
ARM7_LPC2106_GCC
ARM7_LPC2129_IAR
ARM7_LPC2129_Keil_RVDS
```

Architecture_Model_Compiler

Step 7. Change into Posix_GCC

```
$ cd Posix_GCC

$ pwd
/home/demo/Documents/FreeRTOS/FreeRTOS/Demo/Posix_GCC

$ ls
code_coverage_additions.c  FreeRTOSConfig.h                  main.c       Readme.md
trcSnapshotConfig.h
console.c                  FreeRTOS-simulator-for-Linux.url  main_full.c  run-time-stats-utils.c
console.h                  main_blinky.c                     Makefile     trcConfig.h
```

Step 8. Confirm build_essential package installed

```
$ sudo apt install build-essential
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
build-essential is already the newest version (12.9ubuntu3).
```

Step 9. Confirm gcc and make versions

```
$ gcc --version
gcc (Ubuntu 11.2.0-19ubuntu1) 11.2.0
. . .
$ make --version
GNU Make 4.3
. . .
```

Step 10. Make the project

```
$ make
mkdir -p build
. . .
```

Step 11. Results of make placed into **build** directory

```
$ ls build/
code_coverage_additions.d  console.d  home           main_blinky.o  main_full.d  main.o      run-time-stats-
utils.d
code_coverage_additions.o  console.o  main_blinky.d  main.d         main_full.o  posix_demo  run-time-stats-
utils.o

$ file build/posix_demo
build/posix_demo: ELF 64-bit LSB pie executable, x86-64, version 1 (SYSV), dynamically linked, interpreter /
lib64/ld-linux-x86-64.so.2, BuildID[sha1]=9186e60a54bab7197cfa1878ed44541e9df23c63, for GNU/Linux 3.2.0, with
debug_info, not stripped
```

Step 12. Run the code!

```
$ ./build/posix_demo

Trace started.
The trace will be dumped to disk if a call to configASSERT() fails.
Starting echo blinky demo
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from software timer
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
Message received from task
```

Press Ctrl+c to exit demo

Summary

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