

Esercitazione

04

Setup Ambiente RISC-V

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Strumenti Consigliati

- › Il vostro **editor testuale** preferito
 - › Vim, Gedit, Kate, ...
 - › Consigliato VS Code: <https://code.visualstudio.com/>
- › Un **gestore di terminali**, (dal momento che ce ne serviranno un tot aperti).
 - › Es Terminator: `$ sudo apt-get install terminator`



Setup ambiente RISC-V (1)

- › Diversi strumenti Necessari:
 - › simulatore dell'architettura RISC-V
 - › compilatore gcc,
 - › assembler,
 - › Debugger;
 - › ...
- › riscv-tools
- › riscv-qemu





Setup ambiente RISC-V (3)

- › Installiamo alcuni **pacchetti necessari**:

```
$ sudo apt-get install autoconf automake  
autotools-dev curl libmpc-dev libmpfr-dev libgmp-  
dev libusb-1.0-0-dev gawk build-essential bison  
flex texinfo gperf libtool patchutils bc zlib1g-dev  
device-tree-compiler pkg-config libexpat-dev  
libglib2.0-dev
```



Setup ambiente RISC-V (4)

- › Cloniamo il repository di riscv-tools:
 - › *\$ sudo apt-get install git*
 - › *\$ git clone --recursive
<https://github.com/riscv/riscv-tools>*



Setup ambiente RISC-V (5)

- › Impostiamo il percorso di dove vogliamo compilare i sorgenti:
 - › `$ cd riscv-tools`
 - › `$ mkdir build`
 - › `$ export RISCV=/home/gian/Programmi/riscv-tools/build`
- › Compiliamo con lo script fornito:
 - › `$./build.sh`



Setup ambiente RISC-V (6)

- › Aggiungiamo la cartella con i binari compilati al PATH:
 - › `$ echo 'export PATH="$PATH:/home/gian/Programmi/riscv-tools/build/bin"' >> ~/.bashrc`
 - › `$ source ~/.bashrc`
- › scriviamo riscv sullo stesso terminale e premiamo più volte tab:

```
gian@sirio:~$ riscv64-unknown-elf-
riscv64-unknown-elf-addr2line   riscv64-unknown-elf-gcc       riscv64-unknown-elf-gdb       riscv64-unknown-elf-readelf
riscv64-unknown-elf-ar         riscv64-unknown-elf-gcc-7.2.0 riscv64-unknown-elf-gprof     riscv64-unknown-elf-run
riscv64-unknown-elf-as        riscv64-unknown-elf-gcc-ar    riscv64-unknown-elf-ld       riscv64-unknown-elf-size
riscv64-unknown-elf-c++       riscv64-unknown-elf-gcc-nm    riscv64-unknown-elf-ld.bfd   riscv64-unknown-elf-strings
riscv64-unknown-elf-c++filt   riscv64-unknown-elf-gcc-ranlib riscv64-unknown-elf-nm       riscv64-unknown-elf-strip
riscv64-unknown-elf-cpp       riscv64-unknown-elf-gcov      riscv64-unknown-elf-objcopy  riscv64-unknown-elf-objdump
riscv64-unknown-elf-elfedit   riscv64-unknown-elf-gcov-dump riscv64-unknown-elf-objdump
riscv64-unknown-elf-g++       riscv64-unknown-elf-gcov-tool riscv64-unknown-elf-ranlib
```



Setup ambiente RISC-V (7)

- > `$ sudo apt-get install python libglib2.0-dev libpixmap-1-dev`
- > `$ git clone --recursive https://github.com/riscv/riscv-qemu`
- > `$ cd riscv-qemu`
- > `$./configure --target-list=riscv64-softmmu,riscv32-softmmu,riscv64-linux-user,riscv32-linux-user`
- > `$ make -j4`
- > `$ sudo make install`