Raspberry PI

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Introduction

- We will see Raspberry PI 3 Model B
  - Broadcom BCM2837
  - 4x Cortex-A53 1.2 GHz
  - ARM (Advanced Risc Machine) v8-A (64/32 bit)
- We will also see QEMU:
  - Install QEMU:
    - https://www.qemu.org/download/
  - Install ARM and Debian:
    - https://people.debian.org/~aurel32/qemu/
    - https://people.debian.org/~aurel32/qemu/armhf/
    - Do apt-get install gcc gdb

Info

- Raspberry PI Assembly Language, Raspbian Beginners, Bruce Smith

  - download ASM examples from the book web site

- Tutorial on ARM 32 bit and 64 bit:

  - https://thinkingeek.com/2013/01/09/arm-assembler-raspberry-pi-chapter-1/

  - https://thinkingeek.com/2016/10/08/exploring-aarch64-assembler-chapter1/

- Ladispe

  - http://www.ladispe.polito.it/flatpages/location

  - See README in Materiale/Lab_Raspberry

A simple source file (p.31 B.Smith – Program 3a) – 32 bit

```
.global  _start
_start:
        MOV R0, #65
        MOV R7, #1
        SWI 0
```

```
$as –o test.o test.s
$ld –o test test.o
$./test
$echo $?
```

- with echo $? you can see the value in R0
- #1 is an immediate, put in R7 for the system call SWI 0
- see gdb usage (directory materiale)