

# .NET CORE 2.0 ON RASPBERRY PI

PAUL LORETT AMAZONA  
DEVELOPER  
@WHATEVERGEEK



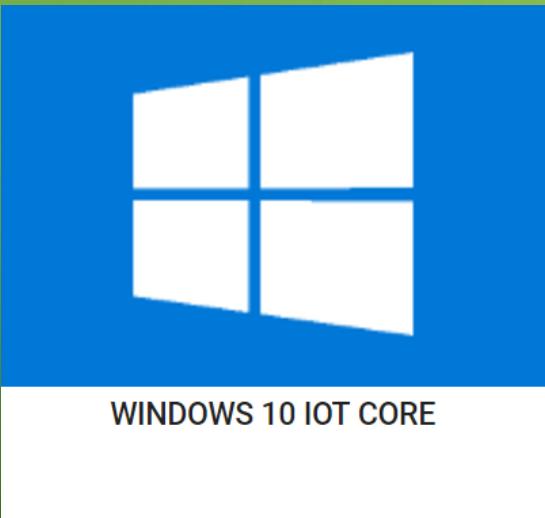
# RASPBERRY PI

- credit-card-sized computer
- plugs into your TV and a keyboard
- capable little computer which can be used in electronics projects (e.g. IoT)
- and for many of the things that your desktop PC does:
  - spreadsheets
  - word processing
  - browsing the internet
  - playing games
  - programming
  - etc

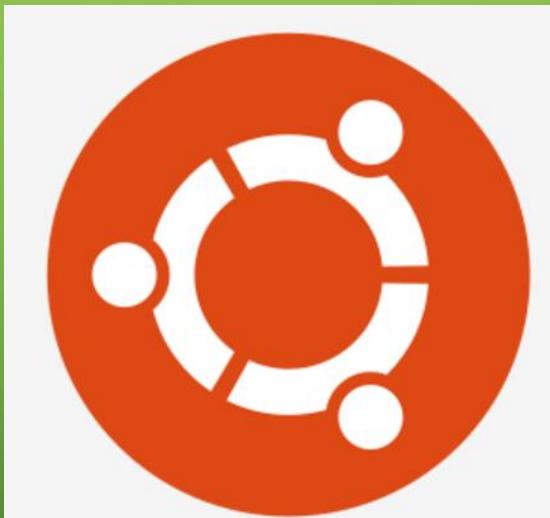


Reference: <https://www.raspberrypi.org/help/faqs/>

RASPBERRY PI OS



WIN IOT CORE



UBUNTU SERVER

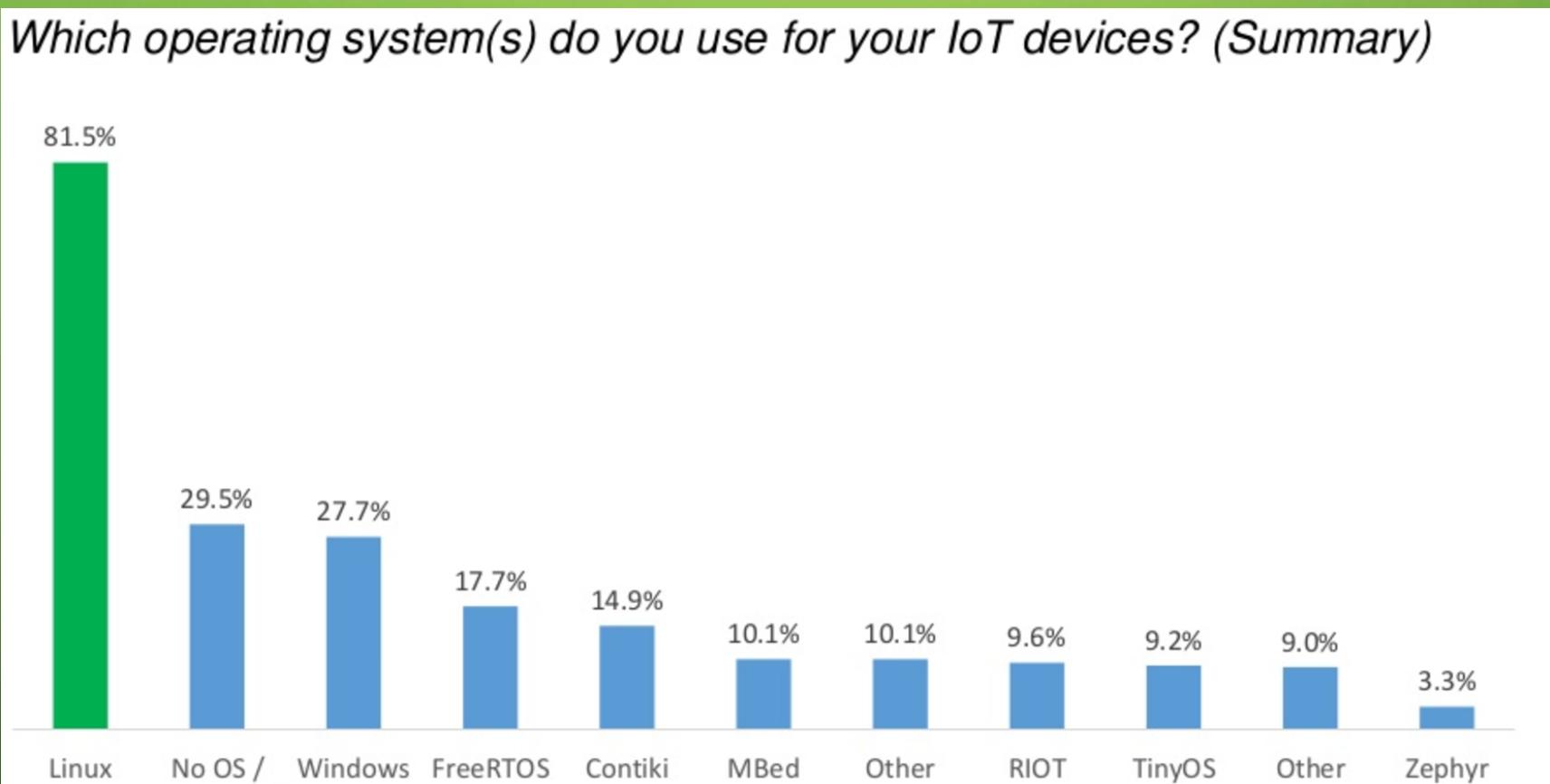


RASPBIAN

# IOT DEVELOPER SURVEY 2017

## OPERATING SYSTEMS

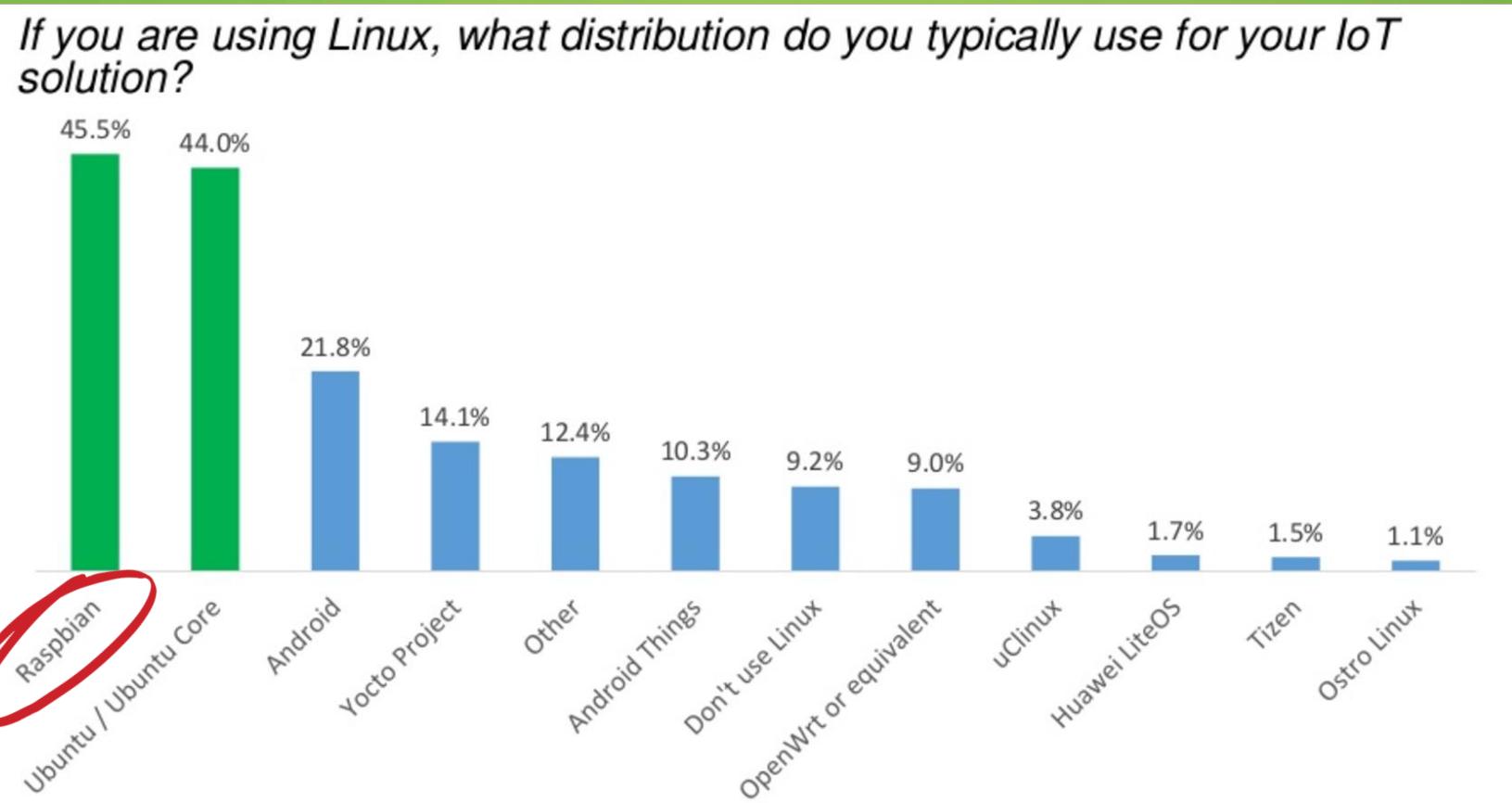
*Which operating system(s) do you use for your IoT devices? (Summary)*



Reference: <https://www.slideshare.net/IanSkerrett/iot-developer-survey-2017>

# IOT DEVELOPER SURVEY 2017

## LINUX DISTROS FOR IOT

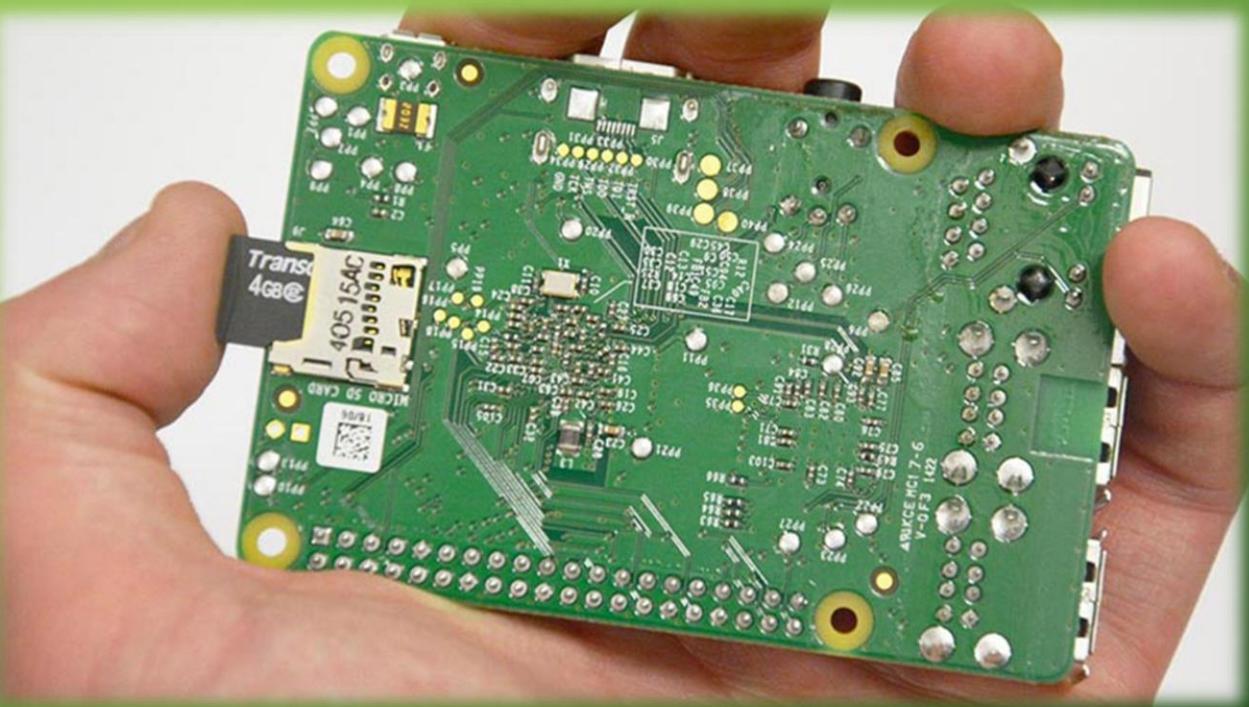


Reference: <https://www.slideshare.net/IanSkerrett/iot-developer-survey-2017>

# RASPBIAN INSTALLATION

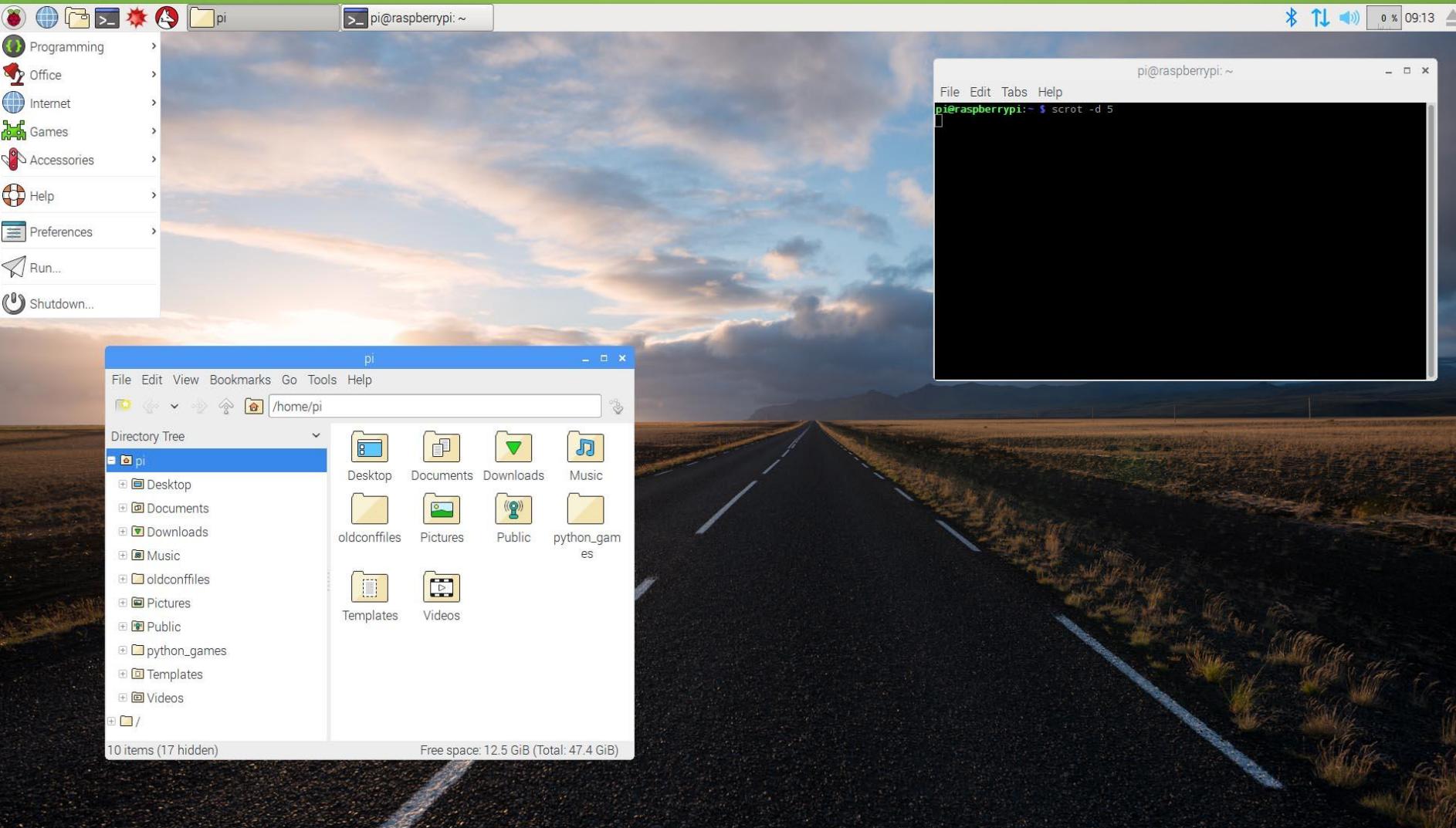


The official supported Raspberry Pi Operating System - based on Debian



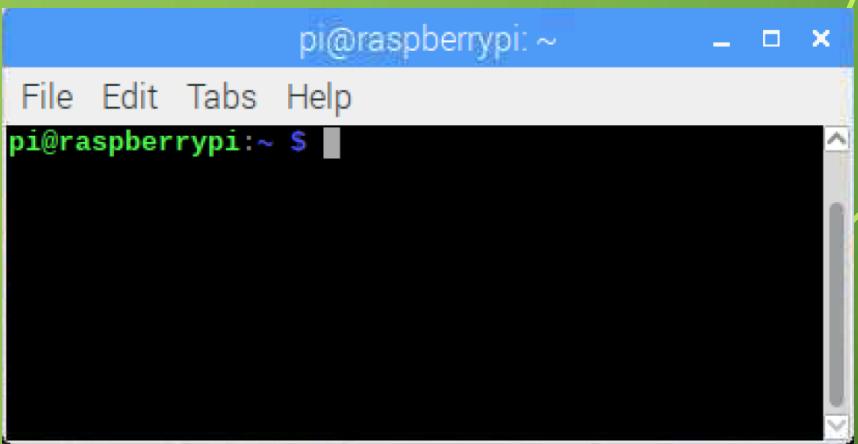
- Tiny URL: <https://tinyurl.com/raspbiansetup>
- Reference: <https://www.raspberrypi.org/documentation/installation/installing-images/>

# RASPBIAN DESKTOP





## .NET CORE SETUP (RUNTIME ONLY)



### 1. Install Prerequisite Packages

- *sudo apt-get install curl libunwind8 gettext*

### 2. Download the latest .NET Core Runtime for ARM32

- *curl -sSL -o dotnet.tar.gz*  
*<https://dotnetcli.blob.core.windows.net/dotnet/Runtime/release/2.0.0/dotnet-runtime-latest-linux-arm.tar.gz>*

### 3. Create destination folder and extract goodies

- *sudo mkdir -p /opt/dotnet && sudo tar zxf dotnet.tar.gz -C /opt/dotnet*

### 4. Create symbolic link

- *sudo ln -s /opt/dotnet/dotnet /usr/local/bin*

# DEMO 01

## RASPBIAN DESKTOP/.NET CORE SETUP TEST

The screenshot shows a Raspbian desktop environment with a standard window manager interface. The title bar includes icons for the Raspberry Pi, network, file, terminal, sun, desktop, user, and a blue square icon. The terminal window is active, displaying the command `dotnet --help` and its usage information.

```
pi@raspberrypi: ~
File Edit Tabs Help
pi@raspberrypi:~ $ dotnet --help

Usage: dotnet [host-options] [path-to-application]
]

path-to-application:
  The path to an application .dll file to execute
.
```

# CURRENT STATE

## .NET CORE ON RASPBERRY PI

- Arm32 build are available as community supported builds for .NET Core 2.0
- **No SDK** that runs on ARM32
- But, you can publish an application that will run on Raspbian
- This approach has been tested on Raspberry Pi 2 and 3
- What about Pi Zero?  
Pi Zero is **not supported** because the .NET Core JIT depends on armv7 instructions not available on Pi Zero.

## DEMO 02

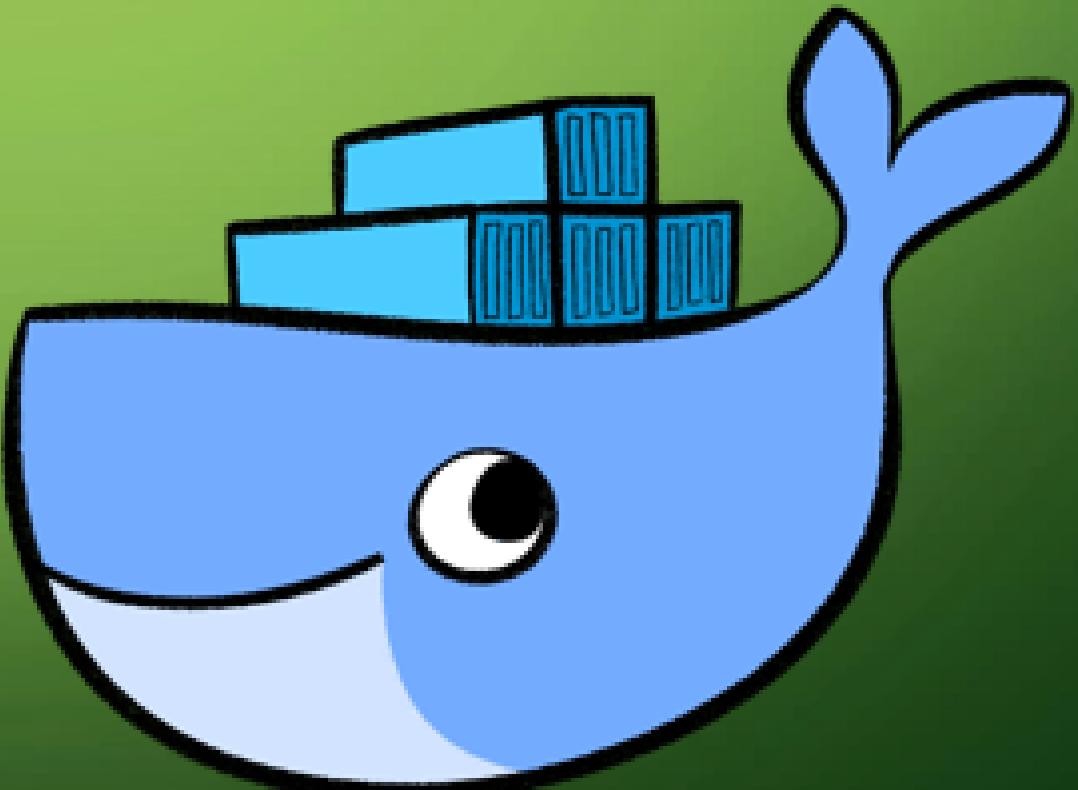
# PUBLISHING A .NET CORE 2.0 APP

### Prerequisite

.NET CORE 2.0 SDK Installation on your dev PC  
<https://www.microsoft.com/net/core>

# DEMO 03

## DEPLOYING A .NET CORE 2.0 APP VIA DOCKER



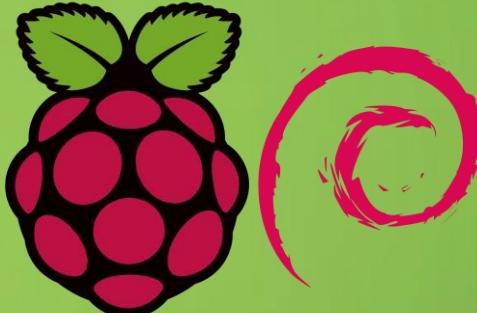
## DEMO 04

# PUBLISHING AN ASP.NET MVC APP

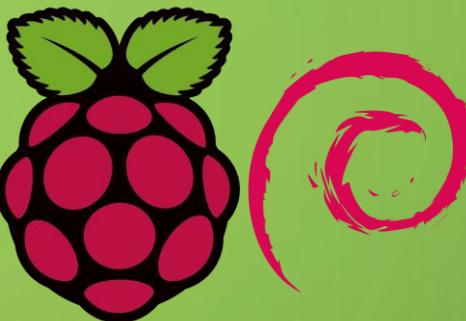
### Prerequisite

.NET CORE 2.0 SDK Installation on your dev PC  
<https://www.microsoft.com/net/core>

## SUMMARY



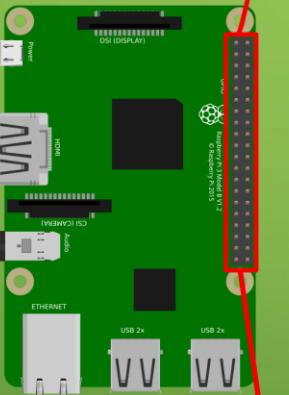
- No **SDK** that runs on ARM32 yet,  
but supports .NET CORE 2.0 Runtime  
so you can deploy .NET CORE 2.0 on RASPBIAN
- Approaches in deploying .NET Core 2.0 on Raspbian
  - .NET CORE 2.0 Runtime setup on Raspbian
  - **Docker** (no need to explicitly setup .NET Core Runtime on Raspbian)
- Further Info:
  - <https://tinyurl.com/dnc2raspbian>



# REFERENCES SECTION



# RASPBERRY PI 3 GPIO PIN CHART



3.3V PWR	1	2	5V PWR
GPIO2 (SDA1 , I2C)	3	4	5V PWR
GPIO3 (SCL1 , I2C)	5	6	GND
GPIO4 (GPIO_GCLK)	7	8	(UART_TXD0) GPIO14
GND	9	10	(UART_RXD0) GPIO15
GPIO17 (GPIO_GEN0)	11	12	(GPIO_GEN1) GPIO18
GPIO27 (GPIO_GEN2)	13	14	GND
GPIO22 (GPIO_GEN3)	15	16	(GPIO_GEN4) GPIO23
3.3V PWR	17	18	(GPIO_GEN5) GPIO24
GPIO10 (SPI0_MOSI)	19	20	GND
GPIO9 (SPI0_MISO)	21	22	(GPIO_GEN6) GPIO25
GPIO11 (SPI0_CLK)	23	24	(SPI_CE0_N) GPIO8
GND	25	26	(SPI_CE1_N) GPIO7
ID_SD (I2C EEPROM)	27	28	ID_SC (I2C EEPROM)
GPIO5	29	30	GND
GPIO6	31	32	GPIO12
GPIO13	33	34	GND
GPIO19	35	36	GPIO16
GPIO26	37	38	GPIO20
GND	39	40	GPIO21

Reference: <https://openclipart.org/detail/280972/raspberry-pi-3-gpio-pin-chart-with-pi>



@raspberry\_pi

