**Raspberry Pi Workshop 11/25/15**

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Raspberry Pi vs. Arduino

Microprocessor Microcontroller

B Uno (R3)

B+ Mega 2560

Pi 2 Leonardo

Delumio

Useful items to have for the Pi include:

USB card reader that reads micro SD cards

HDMI to VGA adapter -<http://www.amazon.com/HDE-Converter-Adapter-Laptops-Players/dp/B00C0Y6BQG>

For analog, Zune or old iPod cable

Win32DiskImager Software -<http://sourceforge.net/projects/win32diskimager/>

Raspbian operating system

- Wheezy

- Jessie (Latest)

Using the Raspberry Pi

Quick start guide can be found here:

<https://www.raspberrypi.org/help/quick-start-guide/>

*Note*: The number of raspberry logos that appear on boot show how many cores your Pi has.

User login:

Username: pi

Password: raspberry

The default applications installed are:

Programming

Mathematica

Python 2

Python 3

Scratch

Sonic Pi

Wolfram

Internet

Pi Store

Raspberry Pi Resources

Web Browser

Games

Minecraft Pi

Python Games

Accessories

Archiver

Calculator

File Manager

Image Viewer

PDF Viewer

Task Manager

Terminal

Text Editor

The Raspberry Pi software configuration tool command:

sudo raspi-config

If not using Noobs:

1. Expand filesystem

2. Internationalisation (Keyboard)

Generic 104 Key (PC)

Ø Other

Ø English (US)

Ø English (US)

Ø Default

Ø No compose key

Ø Use CLTR + ALT + Backspace? YES

3. Overclock (Optional)

OK > Pi2 > OK

4. Advanced Options (Audio)

A9 Audio > Choices Auto, force speakers, force HDMI

To start the graphical interface:

sudo startx

To edit the configuration settings file (Display resolution, etc)

sudo nano /boot/config.txt

Python 3 Programming

\**Note*: Indents/spacing/formatting are important in Python!

Use F5 to send program to Python interpreter

Python Program Examples

Program1.py (Example 1)

#This program says hello and asks for my name

print(‘Hello World’)

print(‘What is your name user?’)

myName = input()

print(‘It is good to meet you, ‘+myName)

Program2.py (Example 2)

#Python Guess the Number

import random

guessesTaken = 0

#Get the user’s name through keyboard input

print(‘Hello! What is your name?’)

userName = input()

#Tell the computer to pick a random number (1-20)

number = random.randint(1, 20)

print(‘Well, ‘ + userName + ‘ I am thinking of a number between 1-20, ‘)

#Loop until 6 guesses are used or the user correctly guesses the number

while guessesTaken < 6:

print(‘Take a guess:’)

guess = input()

guess = int(guess)

guessesTaken = guessesTaken + 1

#Check guesses and alert user if too low or high

If guess < number:

print(‘Your guess is too low.’)

if guess > number:

print(‘Your guess is too high.’)

if guess == number

break

#Alert the user if they have won or lost the game

If guess == number:

guessesTaken = str(guessesTaken)

print(‘Good job, ‘ + userName + ‘ you guessed the number in ‘ + guessesTaken + ‘ guesses!’)

if guess != number

number = str(number)

print(‘Nope. The number I was thinking of was ‘ + number)

**Resources:**

Ryan’s Personal Site:

<http://www.retrobuiltgames.com/>

Raspberry Pi Learning Resources:

<https://www.raspberrypi.org/resources/learn/>

Physical Computing with Raspberry Pi:

<https://www.cl.cam.ac.uk/projects/raspberrypi/tutorials/robot/getting_started/>

Raspberry Pi Wiki | Hub:

<http://elinux.org/RPi_Hub>

Gaven MacDonald Raspberry Pi Videos:

<https://www.youtube.com/user/updowndown/videos>

Python:

<https://www.python.org/downloads/>

Book - Invent Your Own Games with Python, 3rd Edition:<https://inventwithpython.com/inventwithpython_3rd.pdf>

Python Learning Resources:

<http://docs.python-guide.org/en/latest/intro/learning/>

Arduino:

<https://www.arduino.cc/>

Adafruit Industries:

<https://www.adafruit.com/>

SparkFun:

<https://www.sparkfun.com/>