

Day Two: Raspberry Pi

**GO
CODE
GIRL**

IMAGINE. DESIGN. CREATE.

Some Early Morning Inspiration

<https://www.youtube.com/watch?v=DYBPotROKC8>



What is the Raspberry Pi?

<https://www.youtube.com/watch?v=e0wkVVVLvR8>



What Cool Things Have Other People Made?

<https://www.youtube.com/watch?v=i1SyIXeFUB0>



Setting Up the Hardware and Turning it On

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1. Plug in the HDMI cable to the Pi and the monitor's input.
2. Change the monitor's input to HDMI.
3. Move the keyboard and mouse USB connections from the monitor to the Pi.
4. Make sure the SD card is firmly inserted in the Pi.
5. Finally, plug in the power cable.

Important: Do not just unplug the power – we'll tell you how to shut down properly later.



Username and Password

The default is to have the username `pi` and the
password `raspberrypi`

(To log on to the lab machines, use `mini` and
`minigocodegirl`)



The Command Line

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When your Pi starts...

...it boots into a command line interface. Type `startx` to bring up the graphical user interface.

```
Debian GNU/Linux wheezy/sid raspberrypi tty1

raspberrypi login: pi
Password:
Last login: Tue Aug 21 21:24:50 EDT 2012 on tty1
Linux raspberrypi 3.1.9+ #168 PREEMPT Sat Jul 14 18:56:31 BST 2012 armv6l

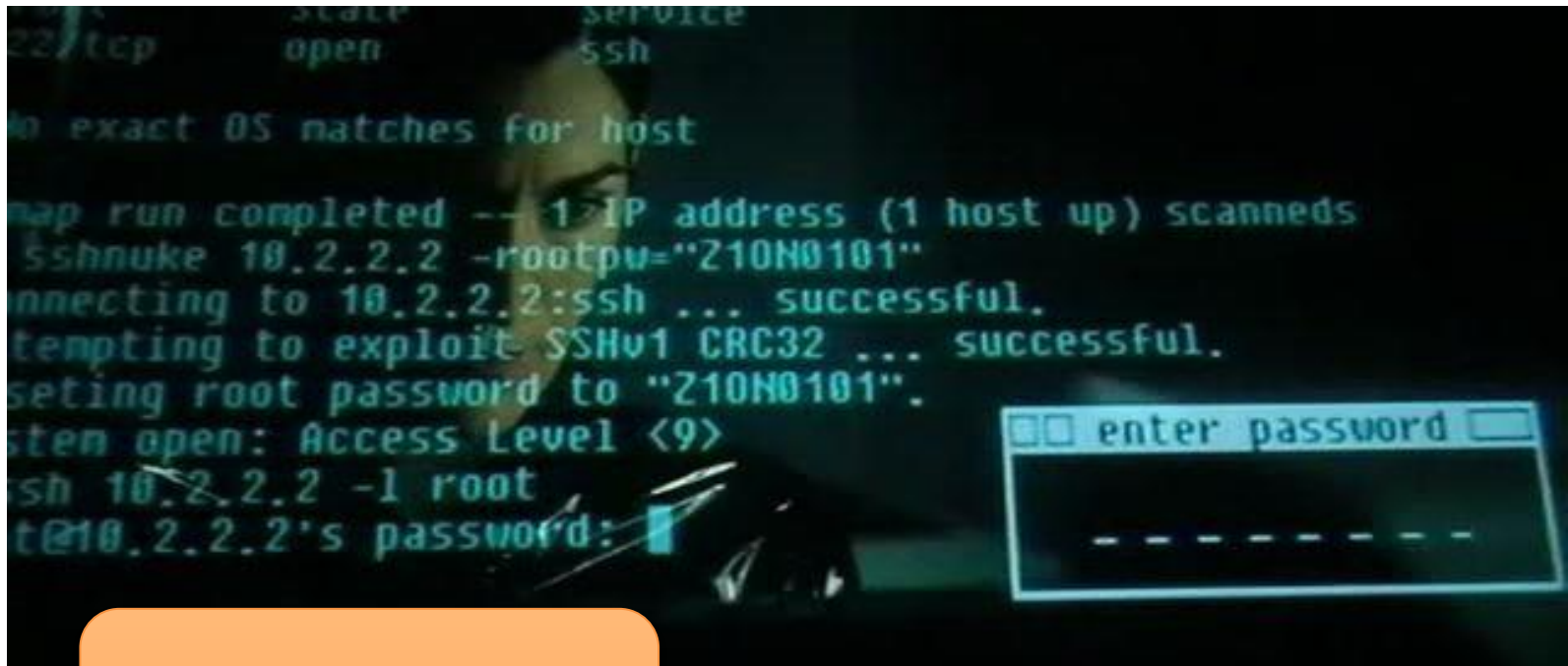
The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

Type 'startx' to launch a graphical session

pi@raspberrypi ~ $
```





Be like a movie-style hacker!

<http://scifiinterfaces.wordpress.com/errata/>



To start the terminal...

Open LXTerminal from the desktop.



```
pi@raspberrypi ~ $
```

username

hostname

current directory
(home)



Type a command and press enter

date



Navigate Through Your File System

```
pwd  
mkdir newFolder  
ls  
ls -l  
cd Desktop  
cd ..
```



Launching Programs

Try typing leafpad at the prompt:
leafpad



Learn More About an Application

Type `man` and the name of the program;
for example:
`man leafpad`



Shutting Down Your Pi Safely

```
sudo shutdown -h now
```



More Commands

Check out the link posted under Day 2 at
<http://www.gailcarmichael.com/gocodegirl>



Playing With Python

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Start a New Python Code File

Open IDLE 3, choose File > New Window,
and save your file as `inventory1.py`



Add the following to the file:

```
inventory = ["Torch", "Pencil",  
            "Rubber band", "Catapult",  
            "Rope"]  
  
print(inventory)
```



Add the following to the file:

```
inventory = ["Torch", "Pencil",  
            "Rubber band", "Catapult",  
            "Rope"]  
  
print(inventory)
```

Recall from last week that
this is a list of strings



Add the following to the file:

```
inventory = ["Torch", "Pencil",  
"Rubber band", "Catapult",  
"Rope"]
```

Our list is stored in a variable (box labelled inventory)

```
print(inventory)
```



Add the following to the file:

```
inventory = ["Torch", "Pencil",  
            "Rubber band", "Catapult",  
            "Rope"]
```

```
print(inventory)
```

This is a command we call to show the contents of our inventory at the prompt.



Add this to the top:

```
import random  
import time
```



Then this:

```
print("You have reached the opening of a cave")  
print("You decide to arm yourself with a ")  
  
time.sleep(2)
```



And then this (still above inventory):

```
quest_item = input("Think of an object\n")
```

```
print("You look in your backpack for ",  
      quest_item)
```

```
time.sleep(2)
```

```
print("You could not find ", quest_item)  
print("You select any item that comes to hand  
from the backpack instead")
```

```
time.sleep(3)
```



And then this (still above inventory):

```
quest_item = input("Think of an object\n")
```

```
print("You look in your backpack for ",  
      quest_item)
```

```
time.sleep(2)
```

```
print("You could not find ", quest_item)
```

```
print("You select any item that comes to hand  
from the backpack instead")
```

```
time.sleep(3)
```

Note: the text is wrapping, but don't press enter in the middle of the string



Now add this after the inventory code:

```
print(random.choice(inventory))
```



Python Text Adventure Game

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Doing Something With User Input

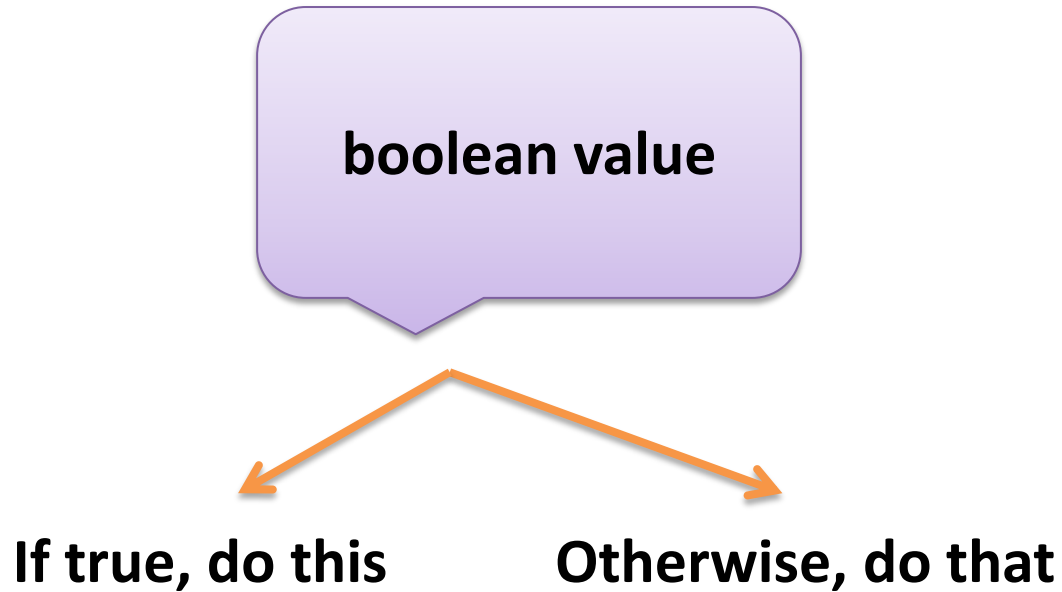
If we ask for user input like this:

```
direction1 = input("Do you want to go left or right?")
```

How do we actually do something with it?



Remember If/Else Statements?



Start a new file...

...and save it as `AdventureGame.py`



Type this:

```
import time
```

```
hp = 30
```

```
print("You are standing on a path at the edge  
of a jungle. There is a cave to your left and a  
beach to your right.")
```

```
time.sleep(1)
```

```
direction1 = input("Do you want to go left or  
right? ")
```



Now we use a condition to act on the choice:

```
if direction1 == "left":  
    print("You walk to the cave and notice there  
is an opening")
```

```
elif direction1 == "right":  
    print("You walk to the beach but remember  
you do not have any swimwear")
```

```
else:  
    print("You think for a while.")
```



Now we use a condition to act on the choice:

```
if direction1 == "left":
```

```
    print("You walk to the cave and notice there  
is an opening")
```

Remember, don't press
enter here

```
elif direction1 == "right":
```

```
    print("You walk to the beach but remember  
you do not have any swimwear")
```

```
else:
```

```
    print("You think for a while.")
```

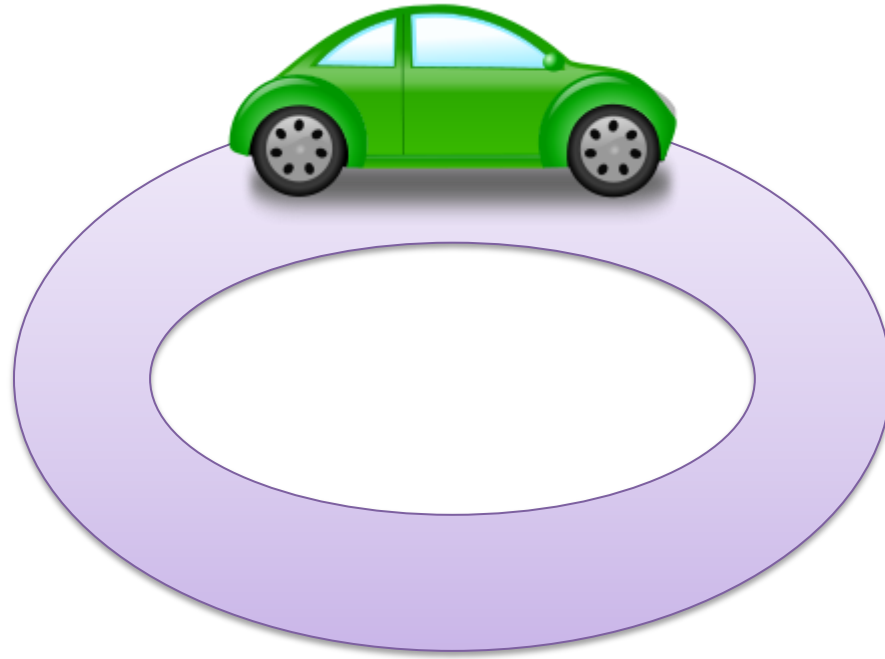


How can we keep asking for input until it's right?

Repetition! Remember loops?



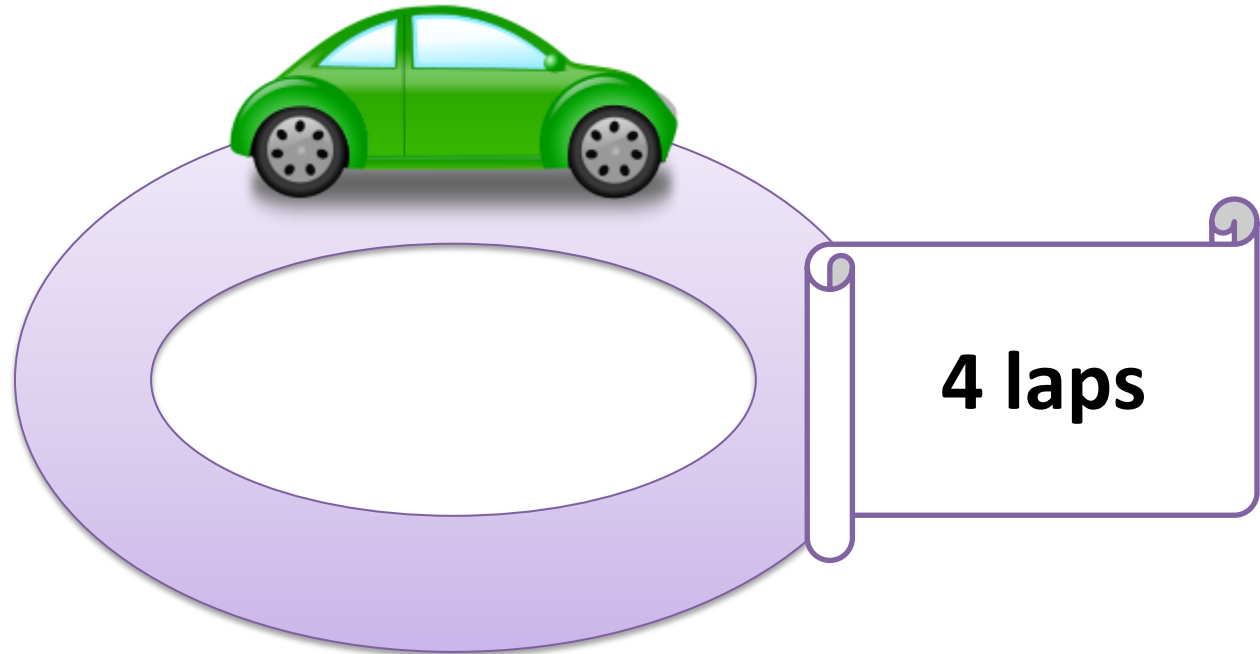
Loops



Drive the same track multiple times



for loop



Drive the same track exactly four times



for loop



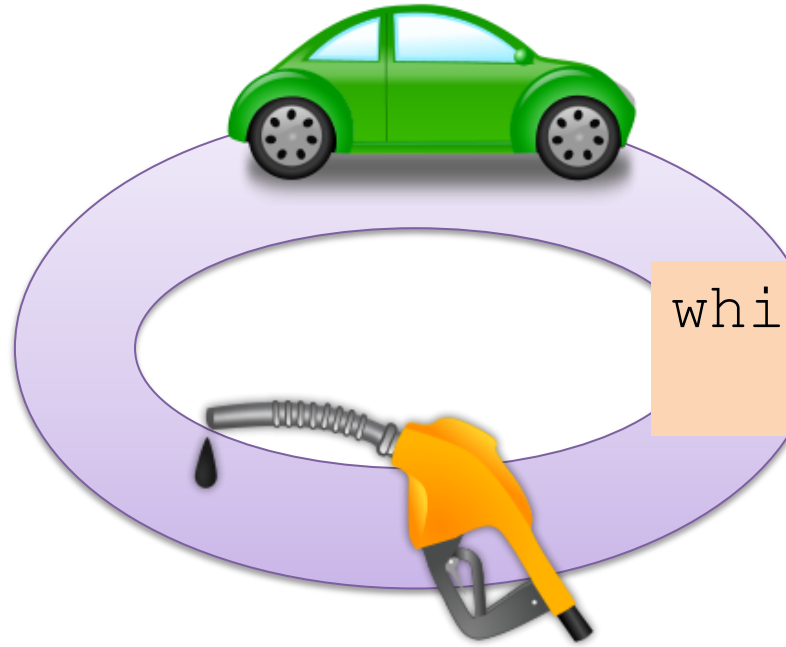
```
for lapNum in [1, 2, 3, 4]:  
    # drive the lap
```

4 laps

Drive the same track exactly four times



while loop



```
while hasGas:  
    #driveTheLap
```

Drive full laps around the track while the car still has gas



Replace `direction1 = input(...)` with this:

```
while True:
    direction1 = input("Do you want to go left or right?")
    direction1 = direction1.lower()

    if direction1 == "left":
        print("you walk into the cave and notice there is an
opening")
        break

    elif direction1 == "right":
        print("you walk to the beach but remember you do not
have any swimwear")
        break

else:
    print("you think for a while")
```



Replace `direction1 = input(...)` with this:

```
while True:
```

```
    direction1 = input("Do you want to go left or right?")
```

```
    direction1 = direction1.lower()
```

Keep driving laps forever, since `True` is always ... well, true!

```
    if direction1 == "left":
```

```
        print("you walk into the cave and notice there is an opening")
```

```
        break
```

```
    elif direction1 == "right":
```

```
        print("you walk to the beach but remember you do not have any swimwear")
```

```
        break
```

```
else:
```

```
    print("you think for a while")
```



Replace `direction1 = input(...)` with this:

```
while True:
    direction1 = input("Do you want to go left or right? ")
    direction1 = direction1.lower()

    if direction1 == "left":
        print("you walk into the cave opening")
        break

    elif direction1 == "right":
        print("you walk to the beach but remember you do not have any swimwear")
        break

else:
    print("you think for a while")
```

This turns whatever the user typed into lowercase letters for consistency



Replace `direction1 = input(...)` with this:

```
while True:
    direction1 = input("Do you want to go left or right?")
    direction1 = direction1.lower()

    if direction1 == "left":
        print("You have to go left and notice there is an
opening")
        break

    elif direction1 == "right":
        print("you walk to the beach but remember you do not
have any swimwear")
        break

else:
    print("you think for a while")
```

Break is used to cancel the loop – like turning off your car in the middle of the lap



Replace `direction1 = input(...)` with this:

```
while True:
    direction1 = input("Do you want to go left or right?")
    direction1 = direction1.lower()

    if direction1 == "left":
        print("you walk into the cave and notice there is an
opening")
        break

    elif direction1 == "right":
        print("you walk to the beach but remember you do not
have any swimwear")
        break

else:
    print("you think for a while")
```

An elif is like else + if



Now try changing HP

First adjust the HP variable depending on whether the player goes left or right.

You can add to it like this:

```
hp = hp + 10
```

or subtract from it like this:

```
hp = hp - 10
```



Now try changing HP

Then, after the entire if statement, check the current HP. You can add this code:

```
print("You now have ", hp, " health points.")  
if hp <= 0:  
    print("you are dead")
```



Add to your game! Be creative!

Learn more with the link provided on the Go
Code Girl webpage:

<http://www.gailcarmichael.com/gocodegirl>

