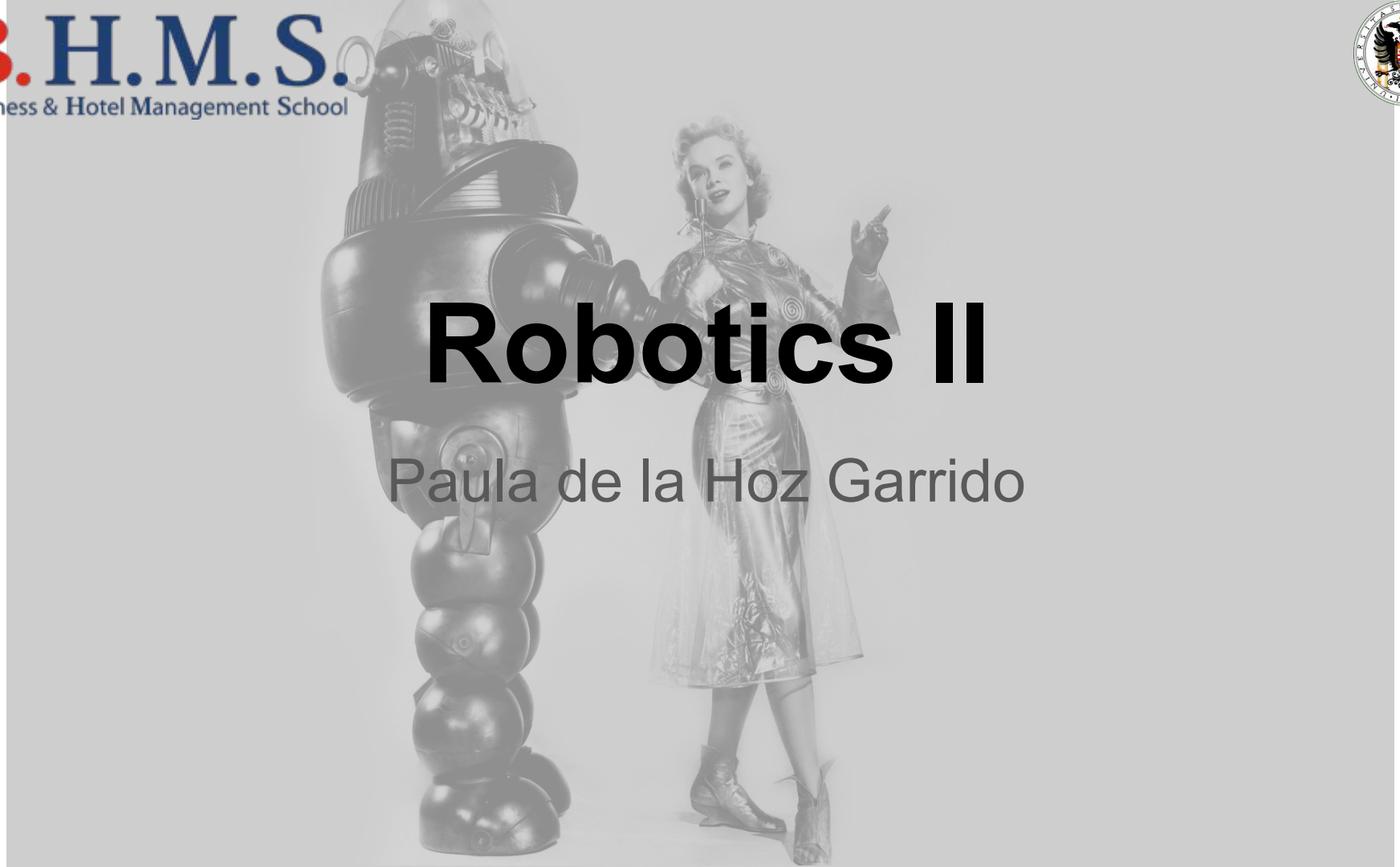
B.H.M.S.
Business & Hotel Management School



Robotics II

Paula de la Hoz Garrido

Content

- Personal **Introduction**
- Subject **Introduction**
- Initial **Test**
- **Scratch** programming
- Basic **Arduino** (Scratch 4 Arduino)
- **Brainstorming**, group project and workshop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SCRATCH PROGRAMMING

Massachusetts Institute of Technology

https://scratch.mit.edu/

Scratch Programming

First of all, **What's programming**?

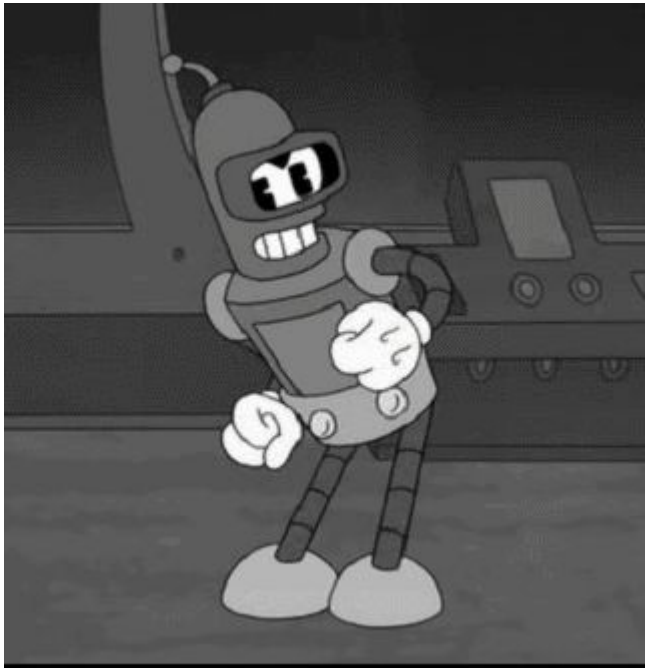
Machines are *dumb*! They cannot think by themselves. They need you to tell them.

Scratch Programming

We need to have a clear idea of our goal, then design a path to reach it. It's not just a matter of computers, it's a *lifehack.*

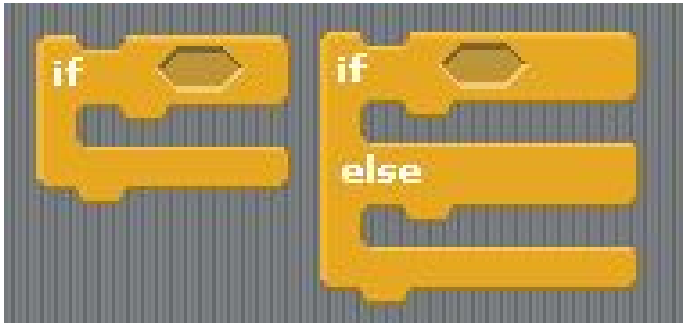
Design a path for a robot if…

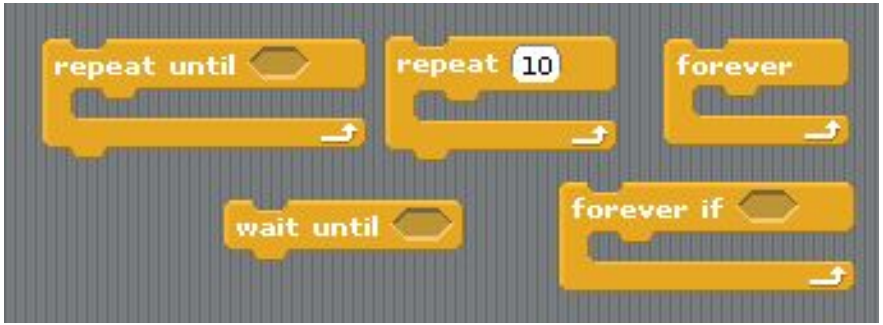
a) Robot has **these orders**: WALK, STOP, WORK, TURN RIGHT/LEFT
b) You want the Robot to do a **repetitive action**



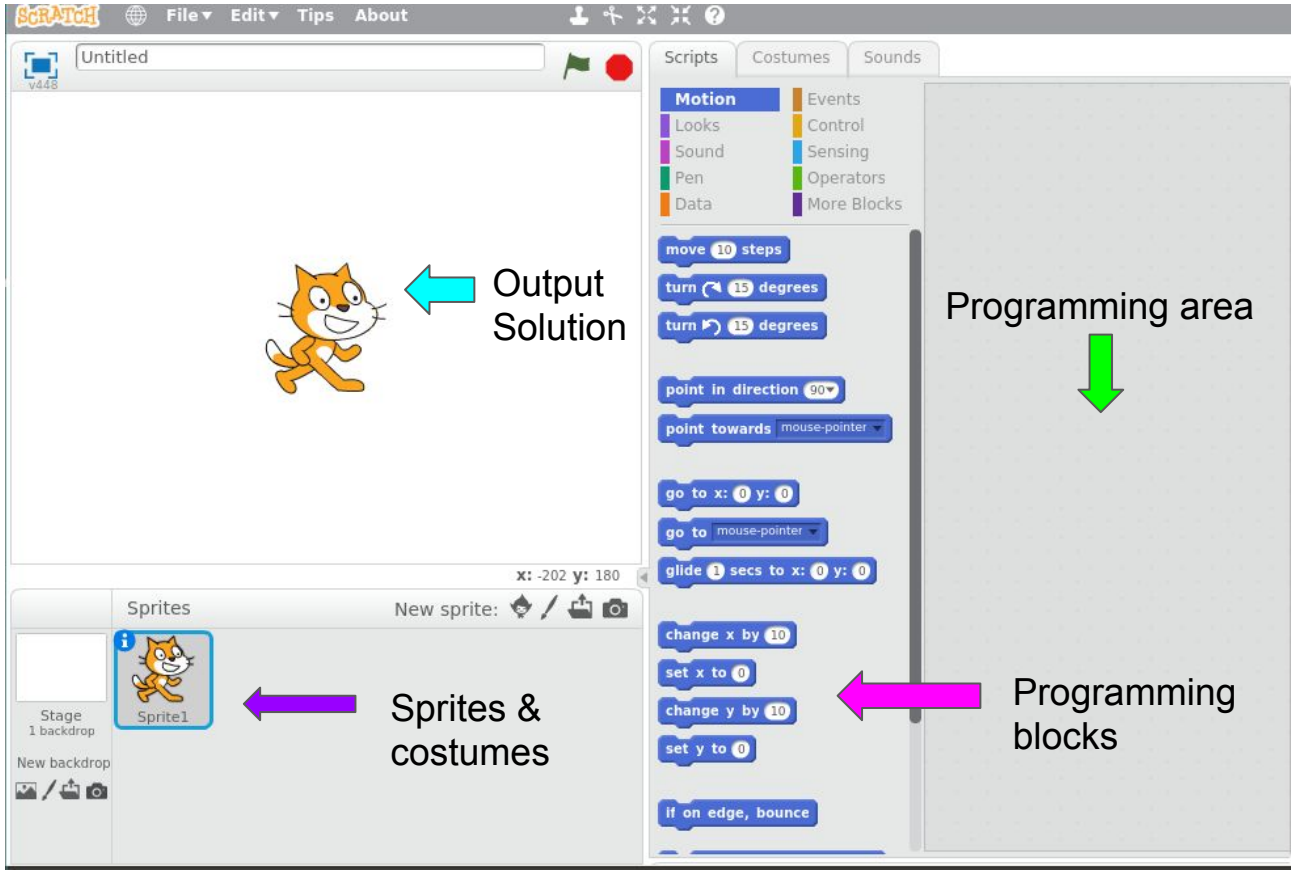
Scratch Programming

With Scratch, and other programming languages we tell the computer what to do and how. The difficulty here, it's not actually learning the programming language but **how we design the program**.





Scratch Programming



Tips:

- Use 

- For conditionals and loops go to Control
- For comparing values go to Operators
- For costumes and words go to Looks
- For keyboard sensing go to Sense
- Use “Forever...”
- Discover the rest trying easy programs!

Scratch Programming

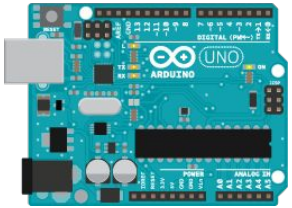
Let's **do some examples**!

a) Use **if** conditional to make a character say different things
b) Use **operators** in any of conditional
c) Use one or more **variables** that you made on your own
d) Try your own things!

ARDUINO

Open Hardware

https://www.arduino.cc/



Arduino

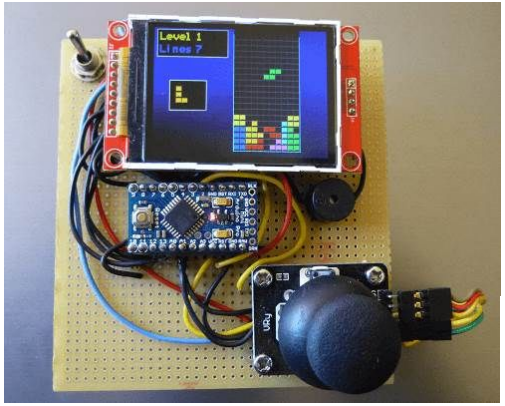
¿What is arduino?

Open Hardware company, Boards with printed circuits and a microcontroller, it also has it own IDE, that works with **C**.

Arduino

What can we possibly make with Arduino? Let's share some ideas.

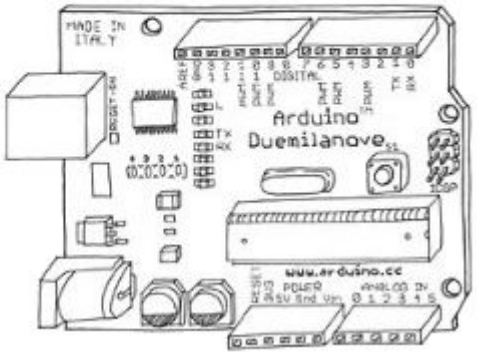
- Robots
- Interactive art
- Greenhouse controller
- Home devices
- etc



Arduino

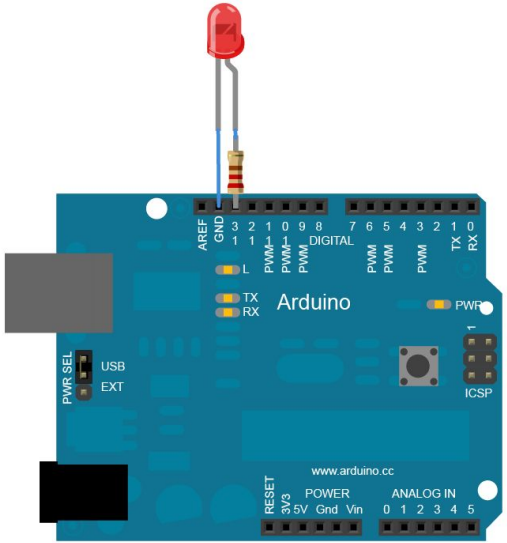
Let's program Arduino with **Scratch4Arduino**: http://s4a.cat/

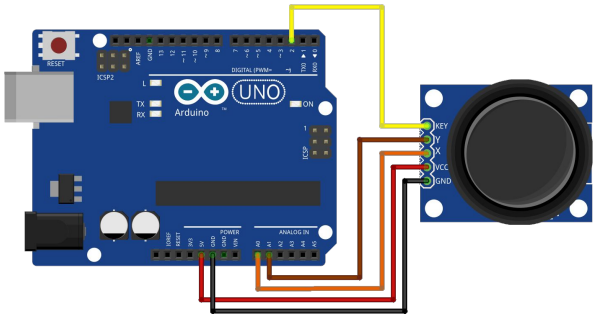
- Same as normal Scratch, but has arduino variables
- In "**Motion**" we will find a lot of options related to the **Arduino Uno board**

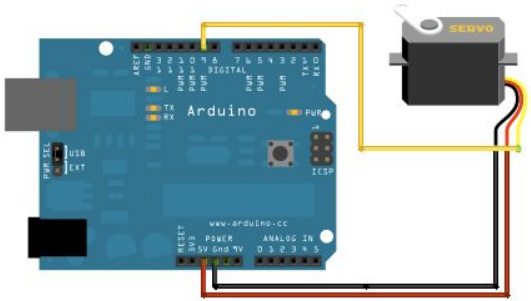


COLLABORATIVE WORKSHOP

Let’s create!







fritzing

Brainstorming

We will make groups and think of ideas with the components given. Follow the sheet!

additional content added in the class:
C, C++, Programming, projects (water sensor, servo motor, rainbow led)