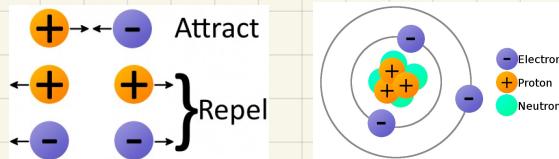


FAB LAB ELECTRONICS COURSE

inputs & outputs

LAPTOP → Arduino IDE

Charge - positive & negative



Voltage - difference in positive/negative charge on an object

↓
when something is not balanced, it will even out.

the amount of difference - if high, more force. = CURRENT

the force of the flow - related to Voltage

AC Alternating Current ~

DC Direct Current ==



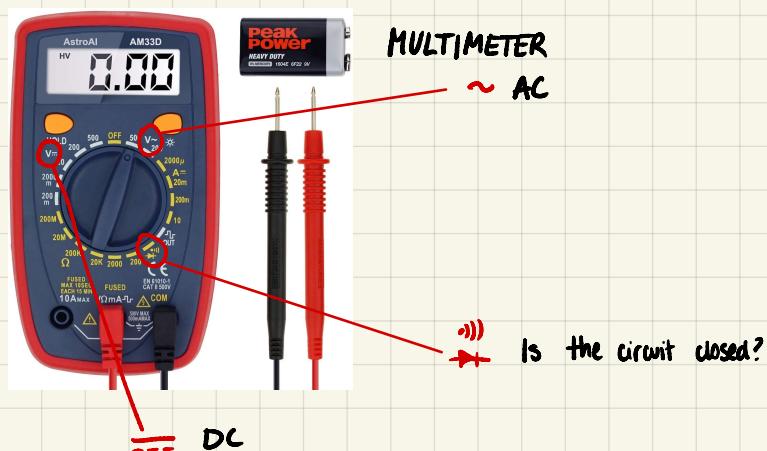
$$V = R \times I$$

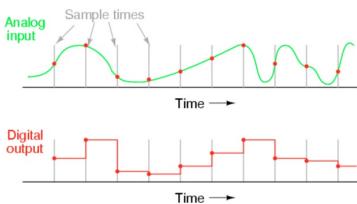
Amount of water = size of "tube" flow



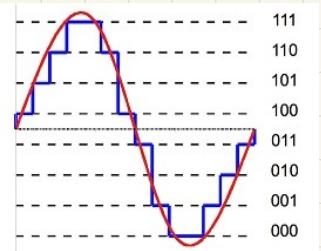
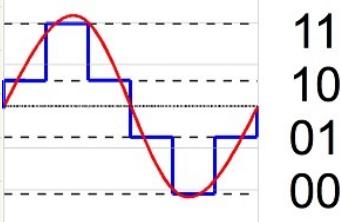
short circuit - energy depletes instantly
→ too much current, not enough resistance

SPARKFUN - for extra content



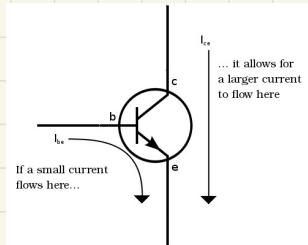


ADC (Analog to Digital Converter) 10 bits

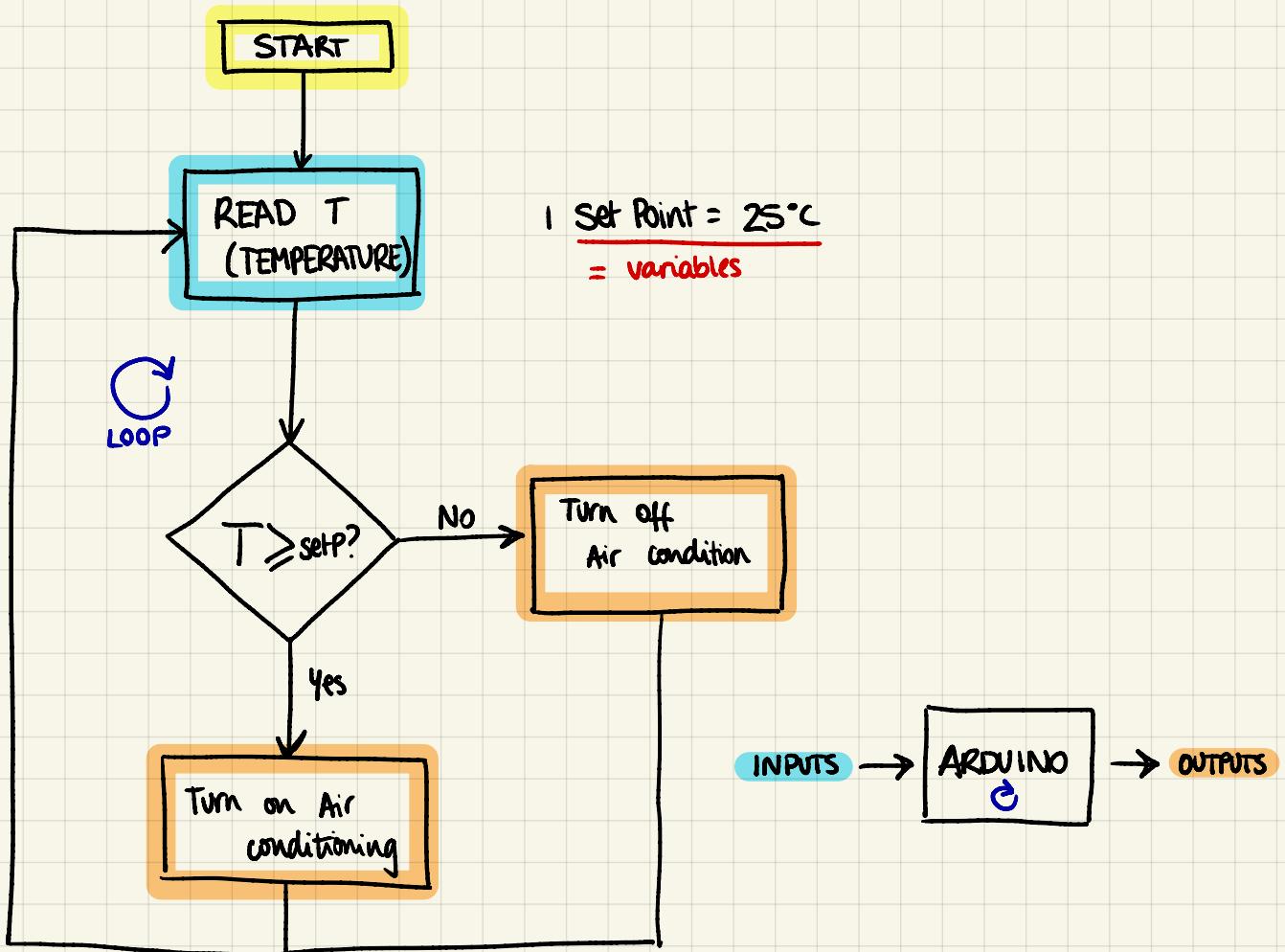


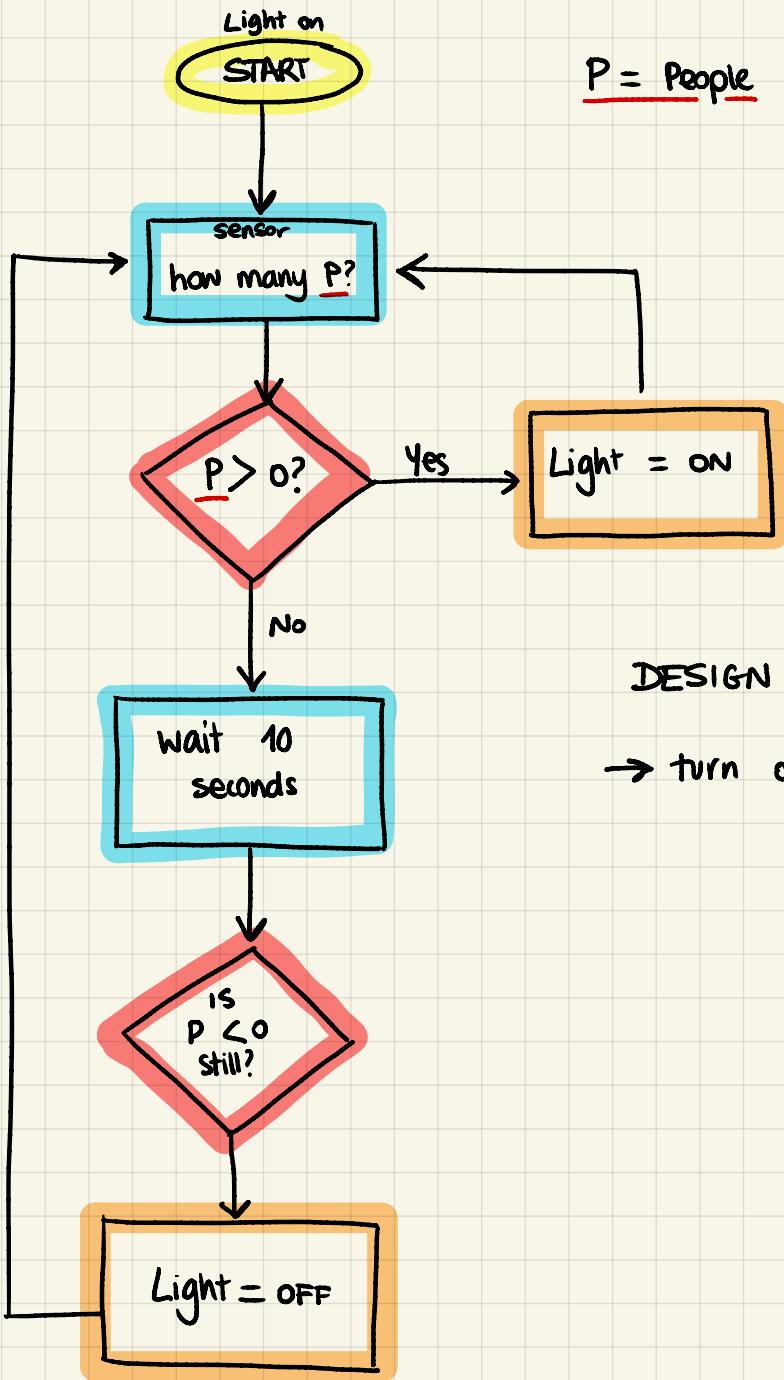
Sample size is bigger = more detail

Transistor



Algorithm - series of tasks to be completed in a certain amount of time.
 ↳ give structure + represent in flowchart





DESIGN A SIMPLE ALGORITHM

→ turn off light if there is nobody present

OBJECT - ORIENTED PROGRAMMING

→ Not needing to understand how an object does it.

= create an instance

in parenthesis, define

Adafruit_NeoPixel pixels (NUMPIXELS, PIN, NEO_GRB + NEO_KHZ800)

In arduino, minimum 2 functions

void setup() START

↳ start : what is the beginning state? → executed 1 time

ex. pixels.begin

→ something that needs to be defined only at the beginning

void loop()



↓
null data type
= instructions
"just do it!"

↳ loop part: what are the set of actions? → repeats continuously as fast as possible forever.

for function (start point ; ending point ; what you want to be done)

↓
i = 0

↓
i < NUM_PIXELS

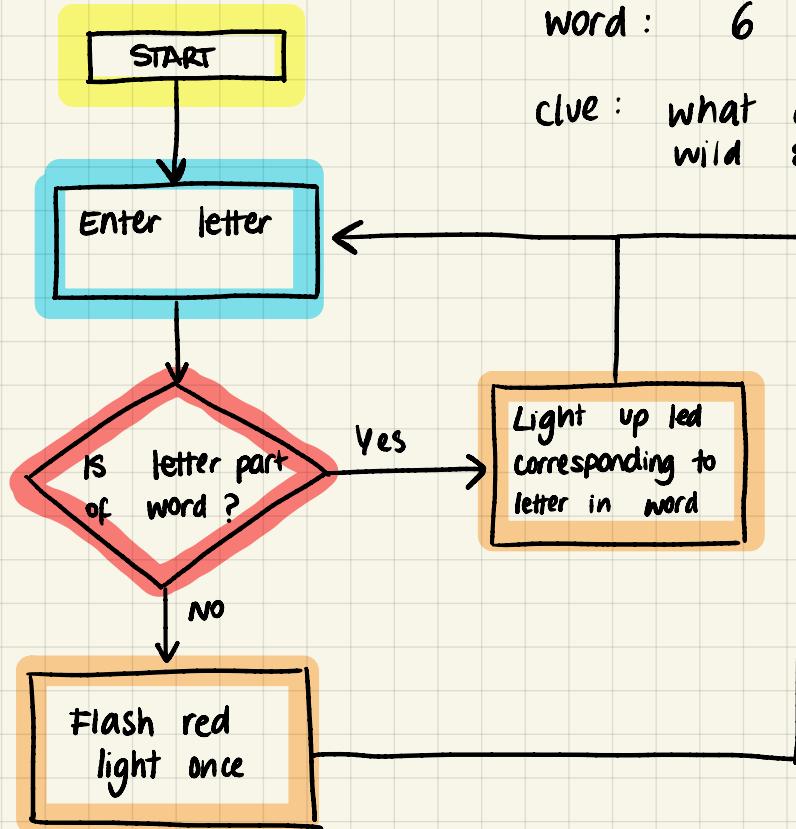
↓
i ++

pixels.show



↳ Show means "reveal" the function that you've defined.

PROJECT TIME



word : 6 letters MONKEY

clue : what can you find both in the wild & at the office

problem :

how do we create
a keyboard to insert letter?

0/1



M/B

0



O/A

0



S/N

1



K/E

0



S/E

1



I/Y

1



001011

Working on animation

0	1	2	3	4	5	6	7	8	9	10	11
0	0	1	0	1	1						

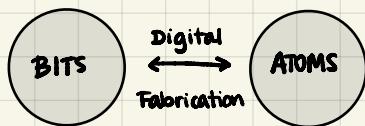
0	1	2	3	4	5	6	7	8	9	10	11
1	1	0	1	0	0						

FABLAB PRECOURSE

Make a bot / Naked Bot? Film

* * open source * *

learn how to use Rhino → download on pc + mac



SUBSTRACTIVE PROCESS

ADDITIVE PROCESS

Building a lamp

Rhino software

Useful tool → Make 2D

Normal click = entire object

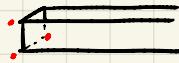
ctrl + shift + click = select 1 side of surface

Text object → solids + group output
makes thick and together (if not, letters are separate)

Dupeboarder : creates border out of any shape

Extrude : solid → extrude planar curve
or command line: extrude Crv

Orient3pt : select object to orient, select 3 points
and then select other object + the points on other object on which to attach



FUSION 360 → more for Engineering less for Architecture

SURFACE FIRST

2D sketch in single plane → convert to 3D object

If blue - can move around

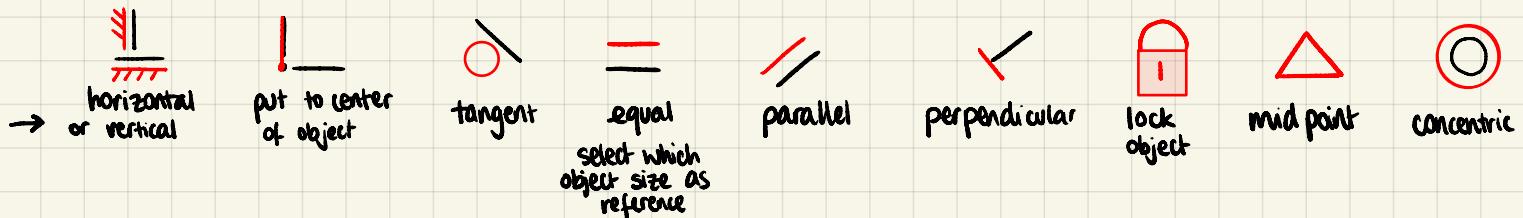
If black - constrained, not move

→ D: select Distance (in mm)
= constrain

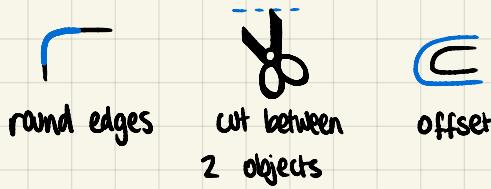
When filled in blue = closed surfaces

↳ can extrude later

Different types of constraints:



Modify panel:



SOLID FROM SURFACE

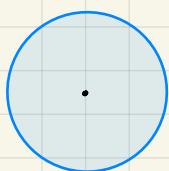
Extrude = E + Angle can be modified + control panel

|◀◀|▶▶| - can be changed, deleted, separated
Model history ↳ select icon, modify + Apply → will change rest of sequence

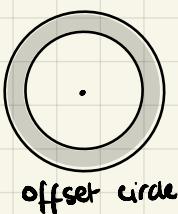
Making the lamp piece



SKETCH

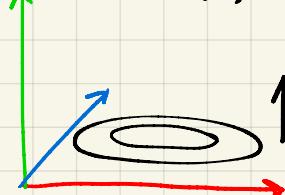


Constrain to 24mm

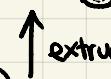


offset circle

SOLID (3D)



Build up - cut off inside



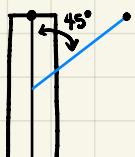
extrude then extrude (wt)

remove insides

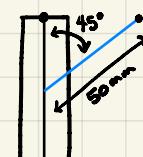
SKETCH



Draw center line
origin → top



create second line
using an angle



Define distance
or △ Midpoint
mid

Create plane: CONSTRUCT - create plane along a path - click



along a path - click

Make sketch on this new plane - look at

Repeat previous process to create new cylinder attached onto plane
Extrude type: → to object + operation join

CREATING PARAMETERS

MODIFY ▶ $f(x)$ change parameters
↳ user parameter + change Name / unit / Expression / Value
↓
→ we can insert these names in geometry values
can be value or mathematical information

MAKING A LAMP

