Introduction to Soldering Workshop – DIY Ornament

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Cal Poly Pomona

Agenda

- **Materials**
- **How to Solder**
- **Practice on Perf Boards**
- **DIY Ornament**
  - For those who feel comfortable/confident

Materials

We will be using:

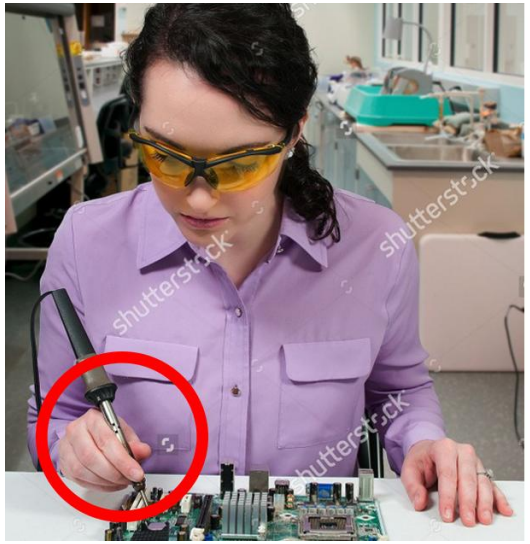
- Soldering Iron
- Solder Wire
- Flux
- Soldering Iron Stands
- Wet/Brass Sponges
- Carbon Filter Fans
- Helping Hands
- Flush Cutters

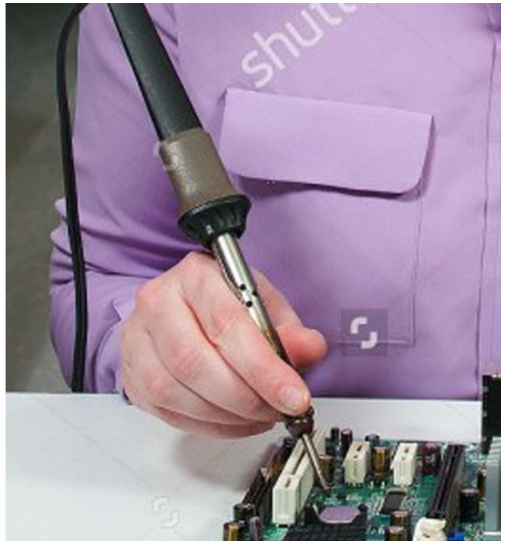
To note:

- De-soldering wick
- De-soldering pump/vacuum
- Alcohol Dispenser
- Solder Paste
- Reflow Oven
- Rework Station

Soldering Iron + Stand

- The tool we will be using to melt solder
- DO NOT TOUCH THE METAL
- Irons can typically range between 200° C to 450° C
- Always place soldering irons on a stand for safety, not on the table





Solder Wire

- The metal we will be melting with the iron to make connections
- Comes leaded or lead-free
- Leaded: Easier to melt but contains lead (Melts at 183^{o} C)
- Lead-free: Higher melting temperature (Melts at ~221^{o} C)

Flux

- Applied to the joint you will be soldering
- Helps solder flow by removing oxides from the liquid solder
- Makes soldering a much easier process
- Can come in paste or liquid form

Sponges/Brass Sponges

- Used to clean the tips of the soldering iron
  - Removes oxidation and excess solder

Wet Sponge

- Removes more oxidation but thermally shocks tip, wearing it down

Brass Sponge

- Less thermal shock and removes solder just as well

Carbon Filter Fans

- Protects you from toxic fumes
- While soldering, fumes are produced from the flux vaporizing when heated
- Fan will pull in the fumes and carbon filter will absorb the toxic chemicals

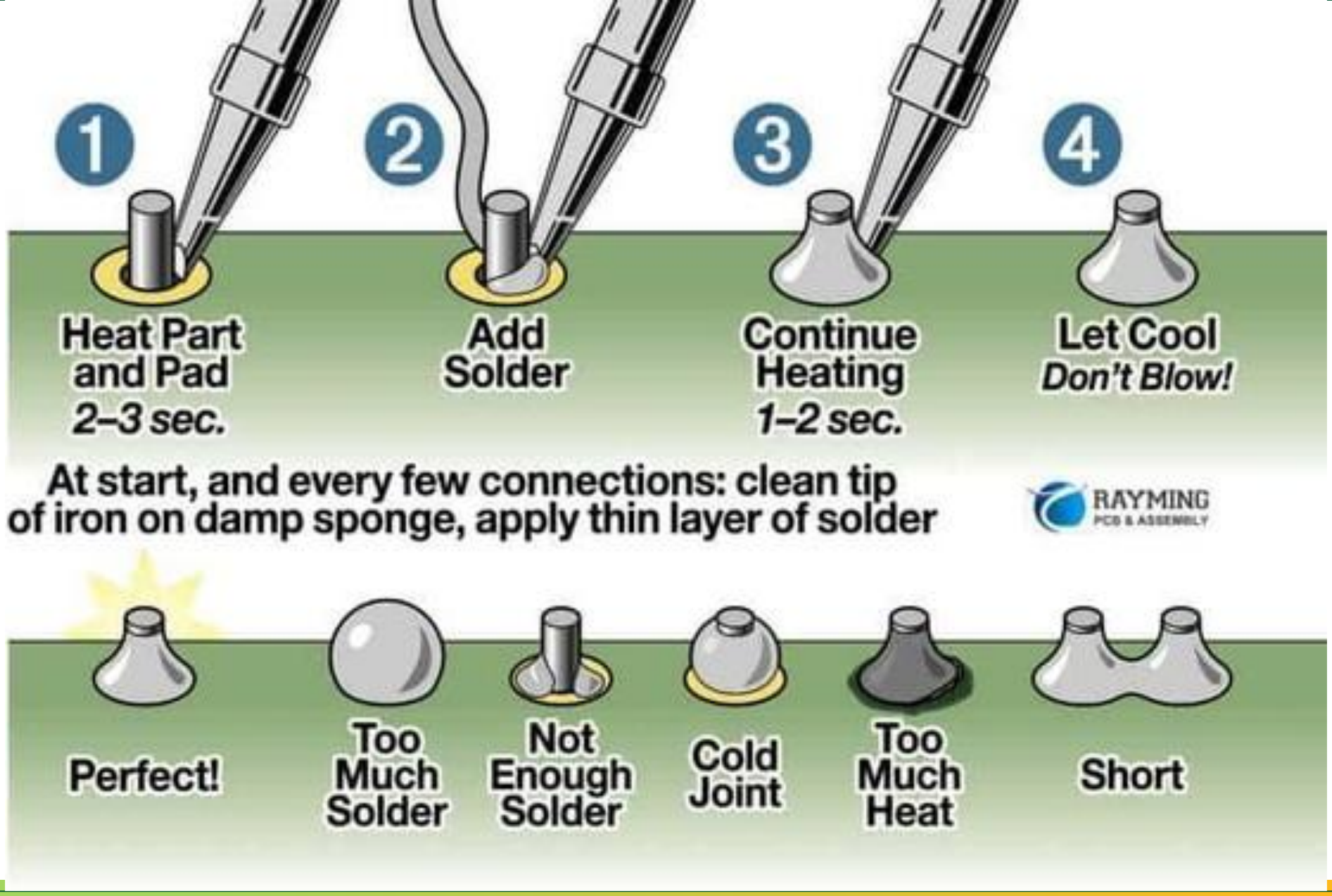
Helping Hands

- Hold your board in the air while you solder
- Helps get better angles while soldering
- Protects your table from heat damage

How to Solder

Safety Precautions

- Roll up sleeves, tie back long hair, remove loose jewelry
- No food or drink
- Never touch the metal of the soldering iron or stand (450° C)
- Return irons to its stand, not on the table
- Wash hands with soap and water afterwards


1
2
3
4
Heat Part and Pad
2–3 sec.
Add Solder
Continue Heating
1–2 sec.
Let Cool
Don't Blow!
At start, and every few connections: clean tip of iron on damp sponge, apply thin layer of solder
RAYMING
PCB & ASSEMBLY
Perfect!
Too Much Solder
Not Enough Solder
Cold Joint
Too Much Heat
Short

Questions?