How to Fix Bent CPU Pins

One of the scariest parts of building your own...

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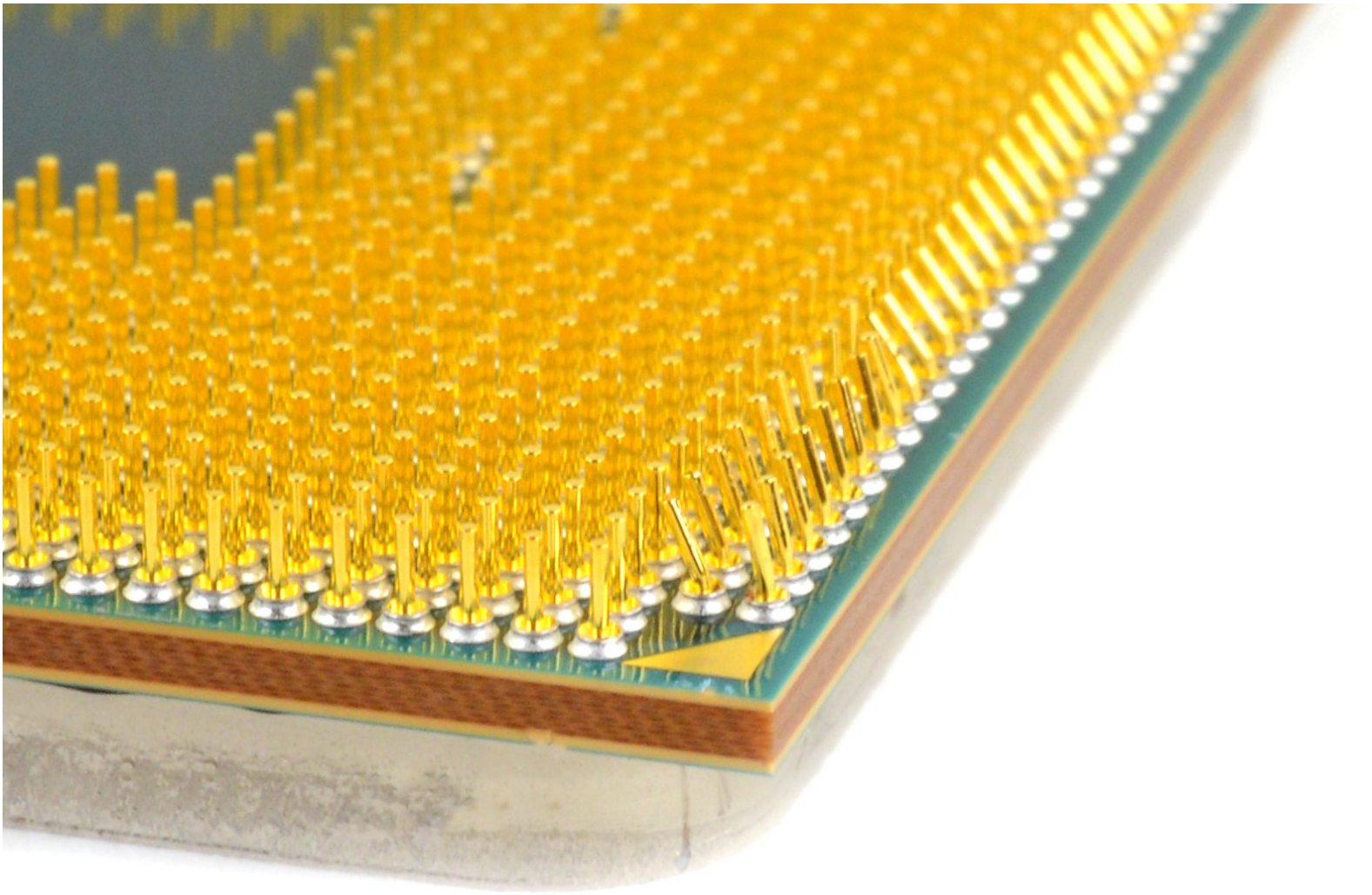


INTRODUCTION

One of the scariest parts of building your own computer can be handling your expensive new processor, especially the large plane of delicate pins on its underside. If you accidentally bent some pins, fear not! In most cases, these pins can be bent back, and nobody has to know of your mishap.

Use this guide to straighten bent pins on your computer's processor (CPU).

Note: The level of severity of bent pins varies case to case, but the general process outlined in this guide is intended to be a catch-all. Some instances of bent pins are unfixable, so use your best judgement and proceed with caution. If your processor arrives already damaged, pursue an RMA before attempting to bend the pins back, which could void your warranty.

Caution: CPU pins are extremely fragile, and although malleable, can only be bent a finite number of times before they easily break.

If a pin breaks off, consult a pinout diagram of your CPU to see if the pin happens to be a dummy pin or one that's otherwise not critical. If so, consider yourself lucky, and install your CPU as you normally would.

This guide uses an AMD Ryzen 7 2700X, but the process applies to all pin grid array (PGA) CPUs, including all AMD AM2, AM2+, AM3, AM3+, and AM4 socket CPUs. This guide doesn't apply to land grid array (LGA) CPUs, such as modern Intel CPUs and AMD AM5 CPUs, as the pins reside inside the motherboard socket instead of on the CPU itself.

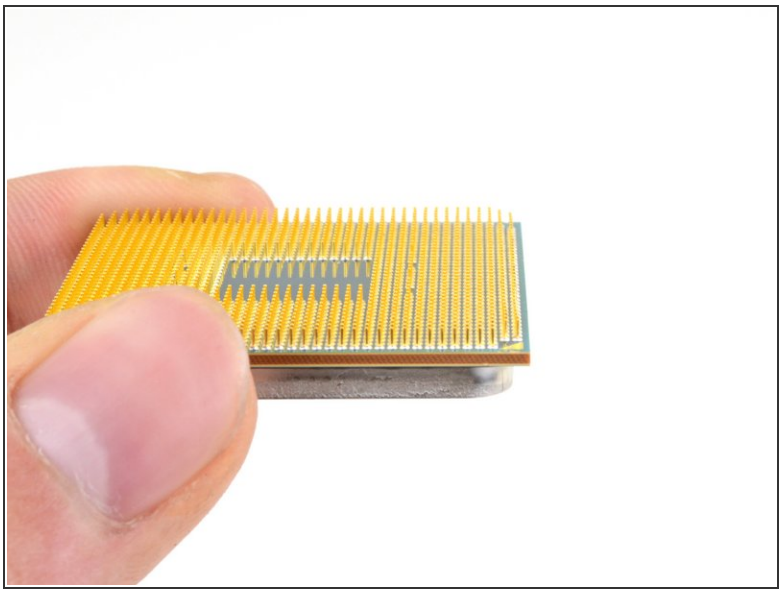
TOOLS:

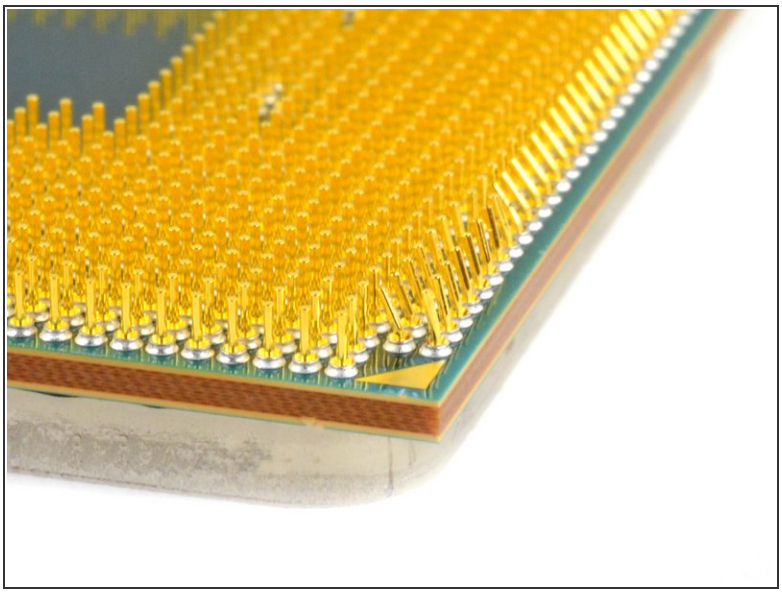
- Tweezers (1)

Optional

- Utility Razor Blades 5-Pack (1)

Step 1 — Assess the damage



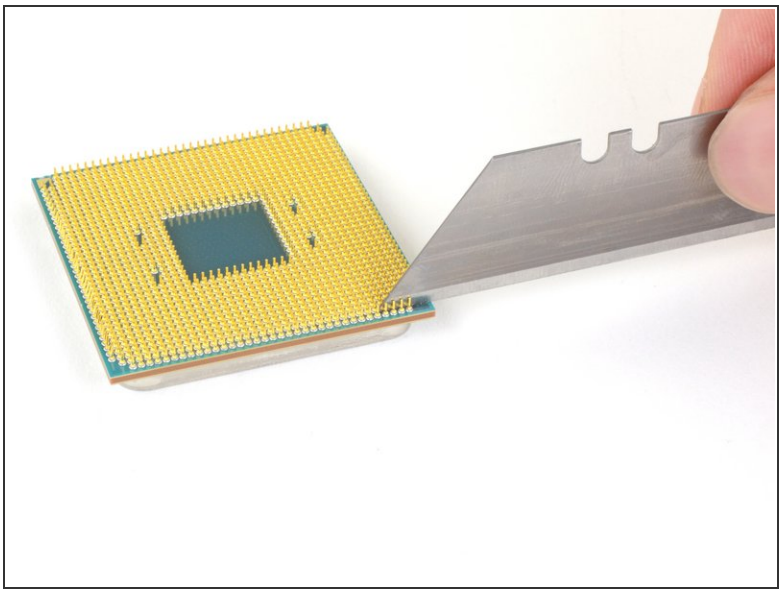


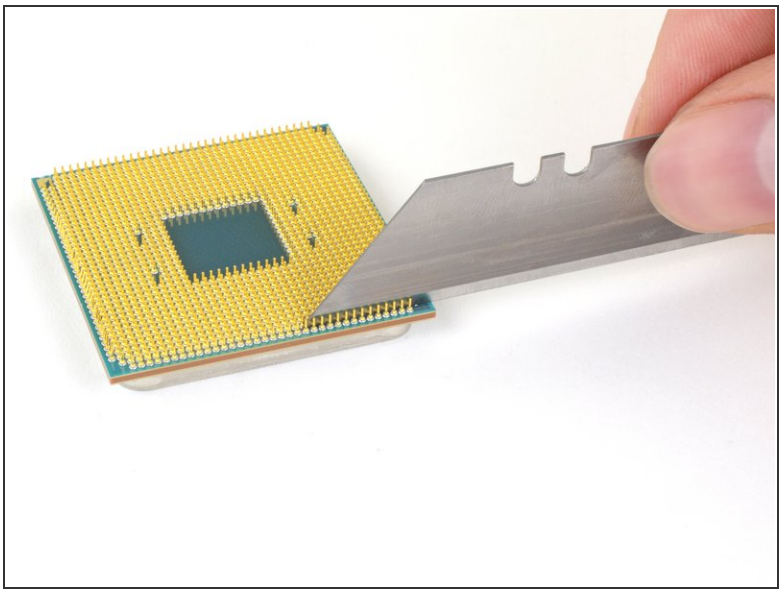
- Assess the damage and the amount of bent pins by gripping the CPU by the edges and peering down the straight rows of pins to check for abnormalities.

  ⚠ Hold the CPU gently and be careful not to bend more pins accidentally with your fingers.

- Check each row—from both directions—so you have a good idea of which areas you need to work on. For example, look down the pins north to south as well as east to west.

Step 2 — Insert the blade between two rows



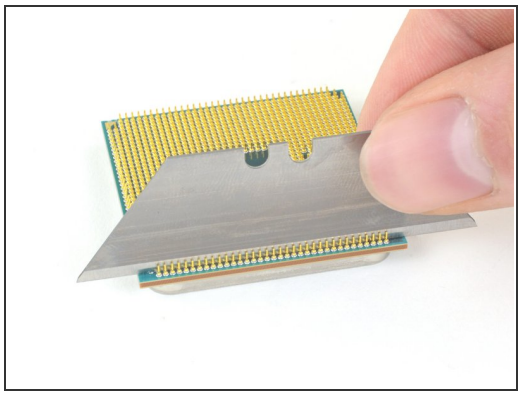
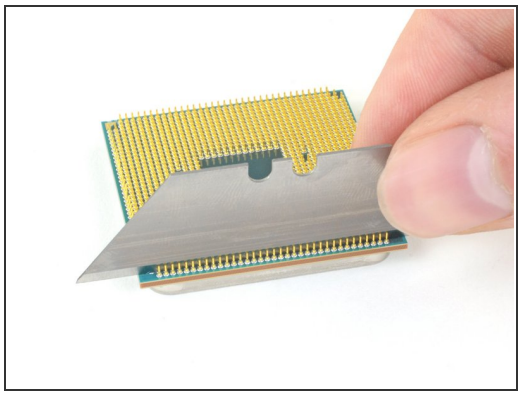
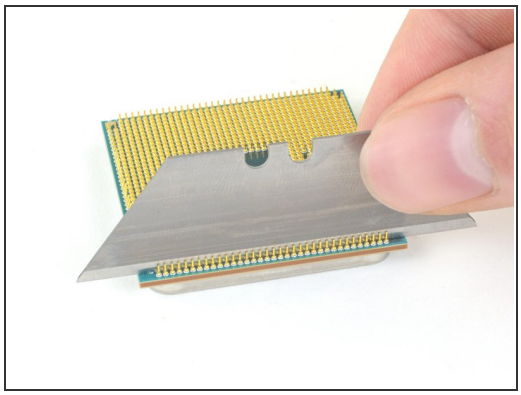


A conventional trapezoidal utility razor blade (like one you would find in a box cutter) fits perfectly between the rows of pins. The thickness of the blade matches the necessary gap between the rows.

Don't push *down* into the substrate with the blade, as this could mar the surface.

- Gently slide the utility blade between two rows of pins.
  - If bent pins block the blade's path, gently bend them upright using the sharp corner of the blade, going one at a time.

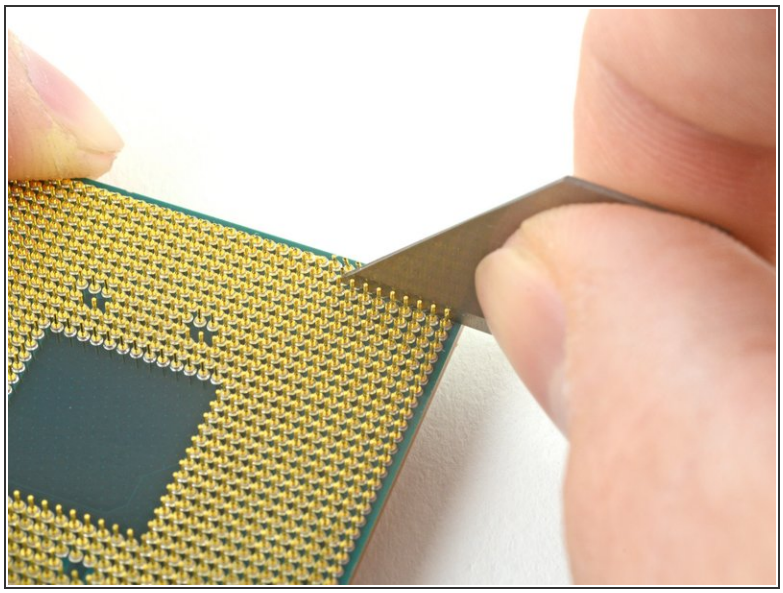
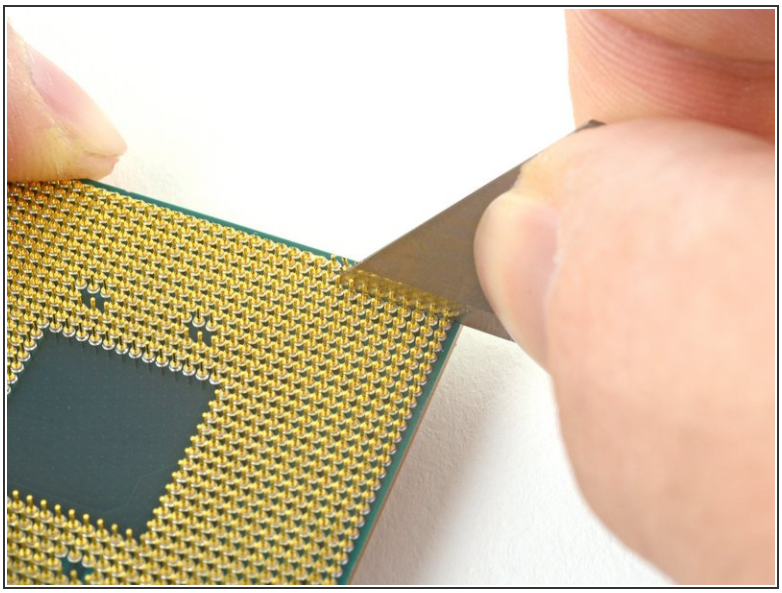
Step 3 — Begin to straighten the pins

- Once the blade can make it down a full row, tilt the blade side to side to straighten the pins on each flanking row.

ⓘ This motion doesn't require too much force, and should only be used to bend each pin row slightly.

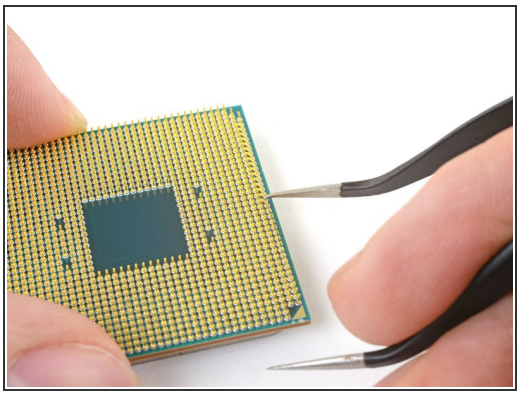
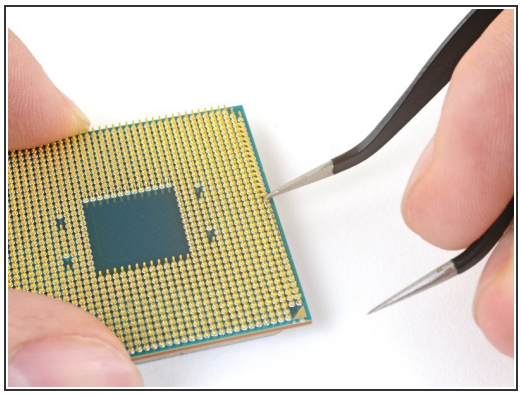
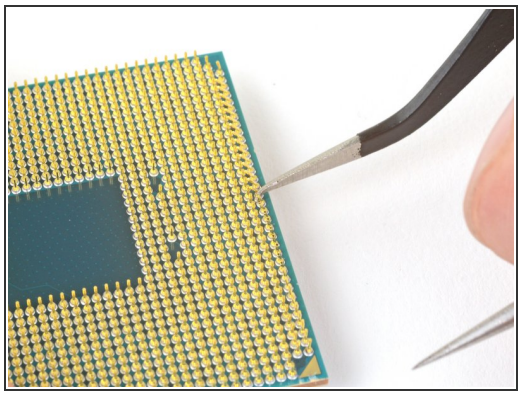
Step 4 — Straighten pins in the opposite direction

ⓘ Once pins in a row are straight in one direction, they won't necessarily be straight in the other direction.

- Rotate the CPU 90˚ and slide the blade down a row in the opposite direction.
  - As you push the blade along the row, rock it back and forth, straightening pins along the way.

Step 5 — Work on hard pins

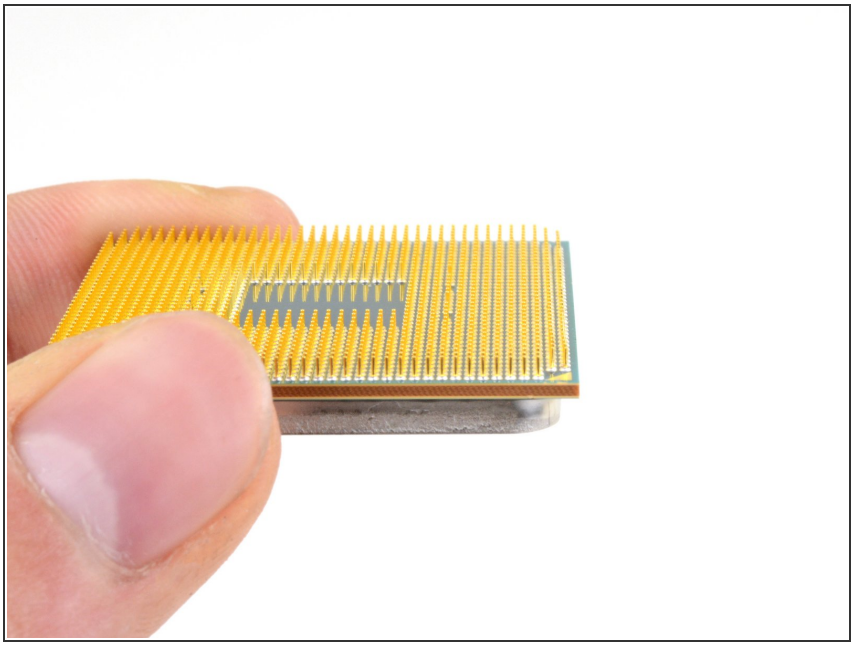
If any pins are severely bent, you may need to use a pair of sharp angled tweezers to coax them up to an angle where they can be accessed by the utility blade as you work your way down the row.

- If you're really in a pinch, you can modify a pair of tweezers to have a slightly curled tip.

If you don't have any tweezers handy, you can empty the lead out of a 0.5 mm mechanical pencil and slip the empty tip over a pin, using the pencil body to bend the pin back up into place.

- Be careful using too much force—the long pencil body will give you more leverage than you realize.

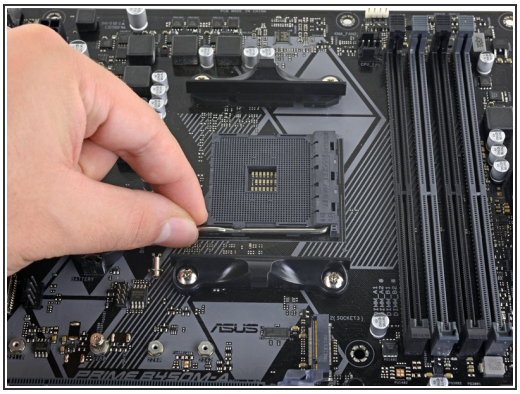
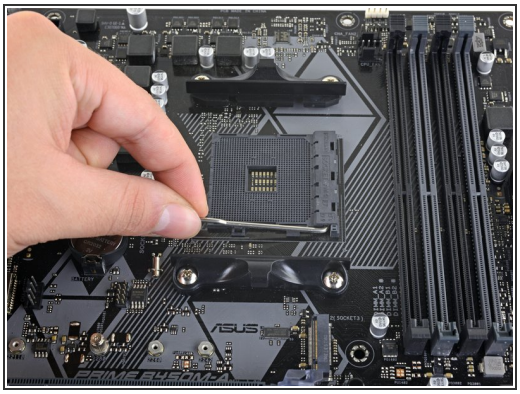
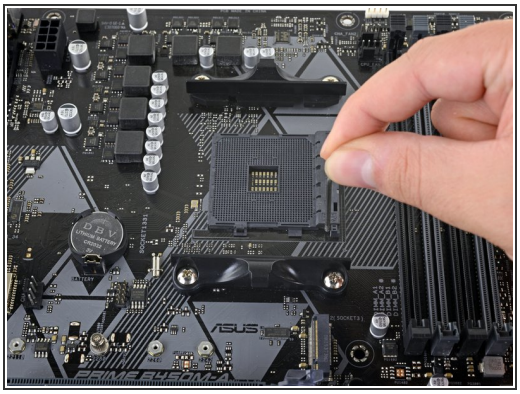
Step 6 — Repeat until the pins are mostly straight



- Repeat the last four steps until all rows are as straight as possible.

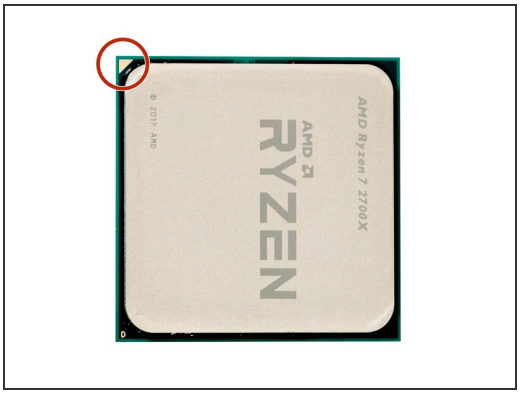
Caution: CPU pins are extremely fragile, and although malleable, can only be bent a finite number of times before they easily break.

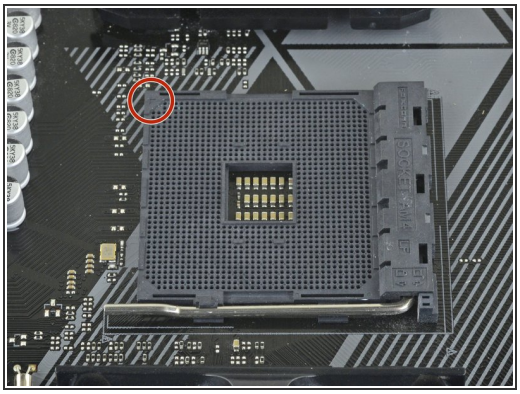
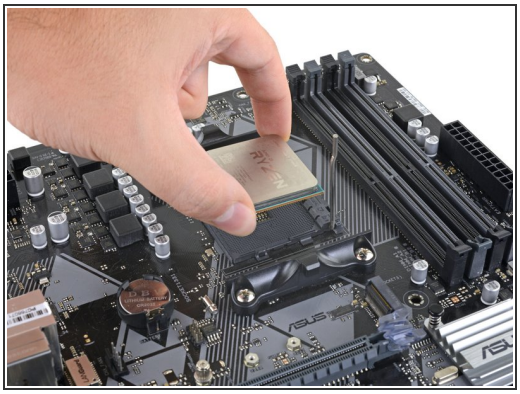
Step 7 — Lift the socket locking arm

- On your motherboard, lift the socket locking arm out around the locking clip and up to its vertical position.

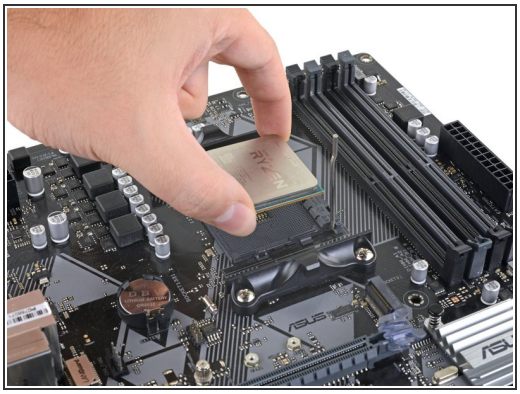
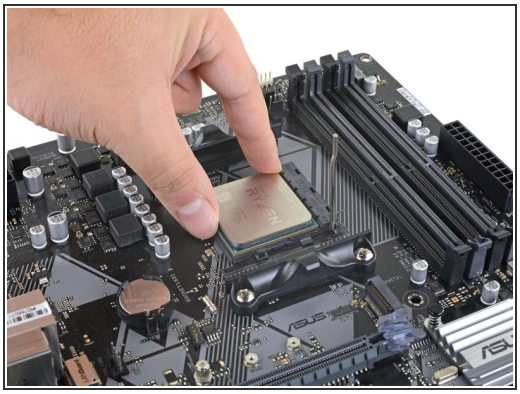
Step 8 — Match the small triangles



- Match the corner of the CPU with a gold triangle to the corner of the motherboard socket that also has a triangle.
- Grip the CPU by its edges and align it over the socket.

Step 9 — Lower the CPU into the socket


- Lower the CPU into the socket, ensuring that all pins fall into their matching holes.

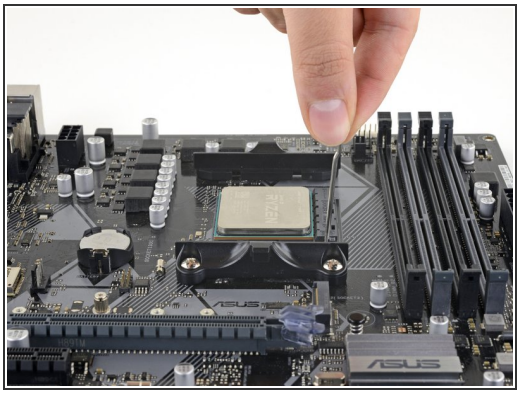
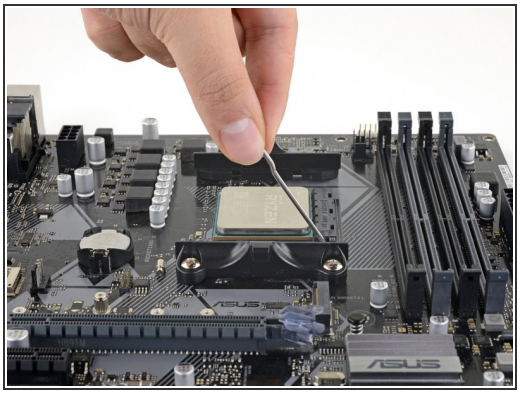
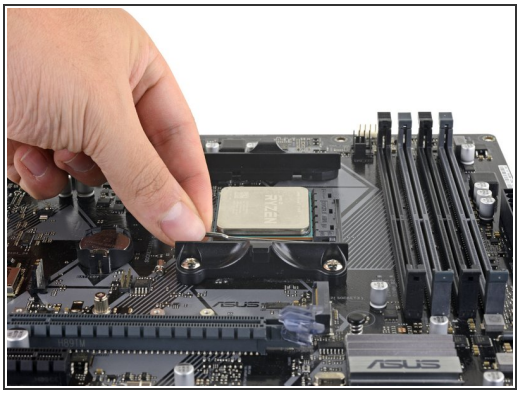
  The pins do not have to be perfectly straight for this to happen, but they have to be close.

  The CPU should fall into the socket without *any* pressure. **Do not push the CPU into the socket.**

- If the pins don't find their holes immediately, or if only one side goes in, remove the CPU and check its pins again.

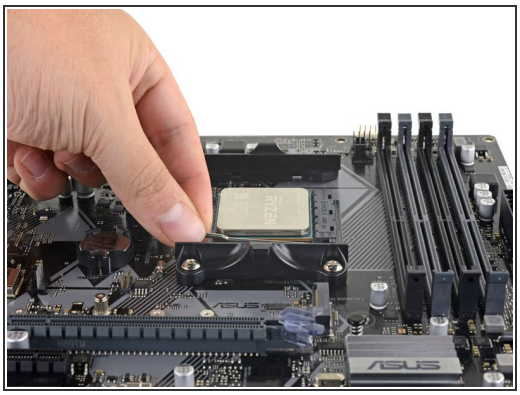
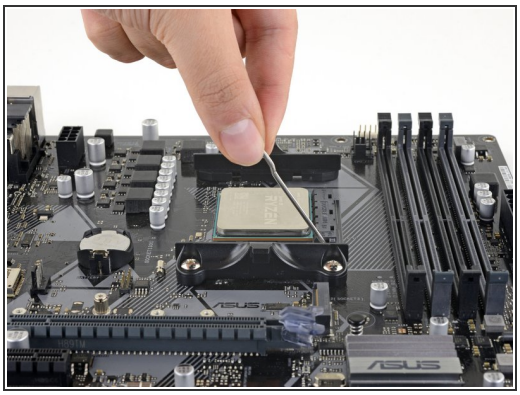
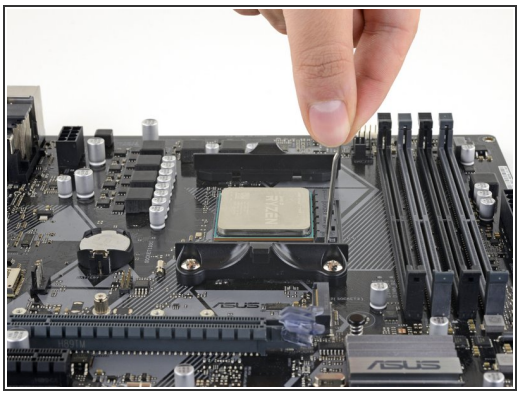
When installed correctly, the CPU will sit flush with the edges of the socket. There shouldn't be any gaps.

Step 10 — Close the locking tab

- Once the pins on your CPU are straight enough to allow it to be installed into the socket, close the locking arm by pulling it down, around the locking tab.

Step 11 — Open and close the locking tab

- Without touching the CPU, repeat the locking/unlocking process on the socket four to five more times.

  When the socket is locked into place, it "grips" the pins, further aligning and straightening them.

- That's it! Close the socket's locking arm and proceed with your PC build.