Breadboard

A breadboard is a plastic board with a grid of holes used for temporary circuit prototyping without soldering.

Working Principle:
The holes are connected in rows and columns with internal metal clips. Horizontal rows are connected. Vertical power rails are used for VCC and GND. Components and jumper wires are inserted to build circuits.

Types:
- Full-size
- Half-size
- Mini
- Power rails detachable/attachable

Applications:
- Beginner learning tool
- Testing circuits before soldering
- Arduino and Raspberry Pi prototyping
- Sensor and actuator interfacing

Fig: Front Side

Advantages:
- No soldering required
- Reusable
- Great for quick circuit building
- Easy to modify and debug

Disadvantages:
- Poor contact reliability
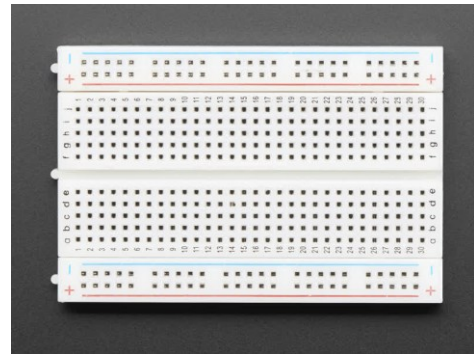- Not suitable for high-frequency or power circuits
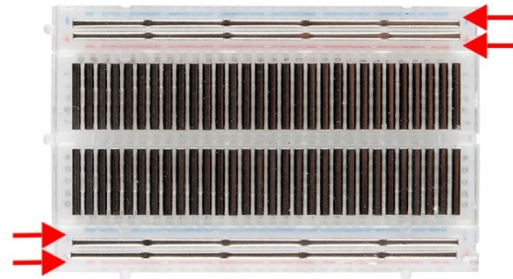- Wires can easily fall out

Fig: Back Side