



Printer Control & Software

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Pre-workshop

- Visit :
 - Marlin and G-code
 - <http://marlinfw.org/>
 - <http://marlinfw.org/meta/gcode/>
 - Write down Gcode **movement** for a square
- Download and install :
 - PronterFace
 - <https://www.pronterface.com/>
- What's a



Agenda

- Printer Firmware
- Marlin
- Marlin UI
- Understanding G-code & Pronterface
- Advanced
 - Marlin configuration
 - EEPROM
 - Flashing firmware

Printer Firmware

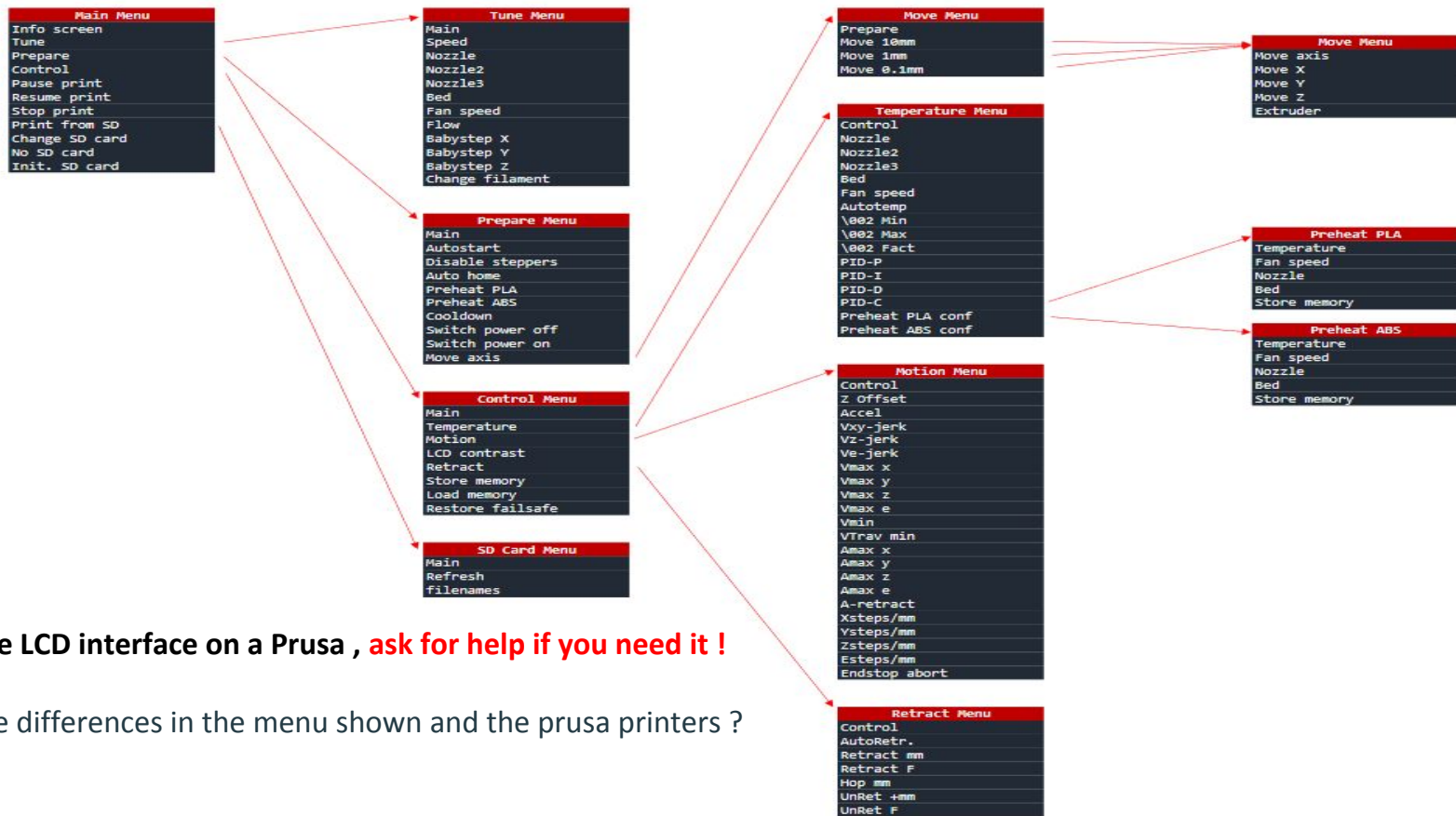
Types

- Open source
 - Repetier
 - Marlin - Prusa uses a modified version
 - Klipper
- Proprietary
 - Dont Care :)



Marlin UI

Marlin LCD Menu Tree

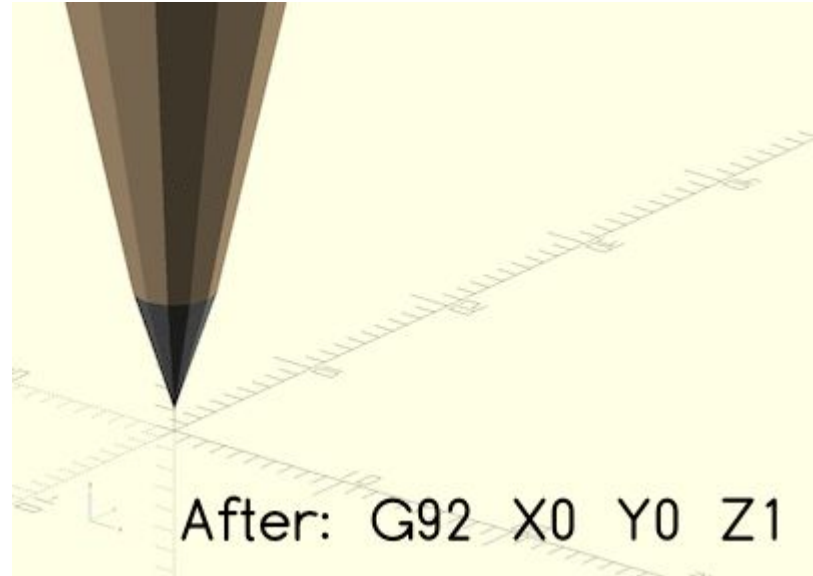


Go through the LCD interface on a Prusa , ask for help if you need it !

What are some differences in the menu shown and the prusa printers ?

G- code in Marlin

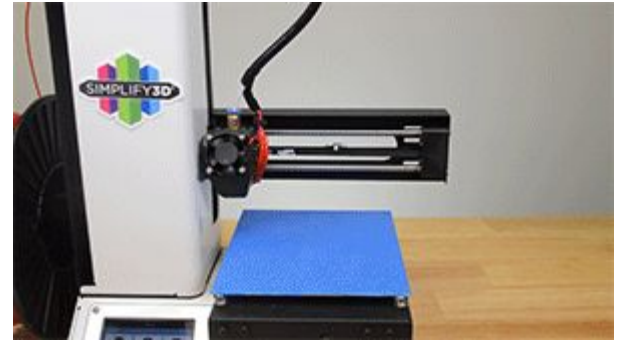
- Over a 100 unique G code commands
- Good idea to learn a few for :
 - troubleshooting
 - testing



Top commands

- G28 – Perform Homing Routine
- G90 and G91 – Set Positioning Mode
- G1 – Linear Movement
- G92 – Set Current Position
- M104 and M109 – Extruder Heating Commands
- M140 and M190 – Bed Heating Commands
- M106 – Set Fan Speed

<https://www.simplify3d.com/support/articles/3d-printing-gcode-tutorial/>

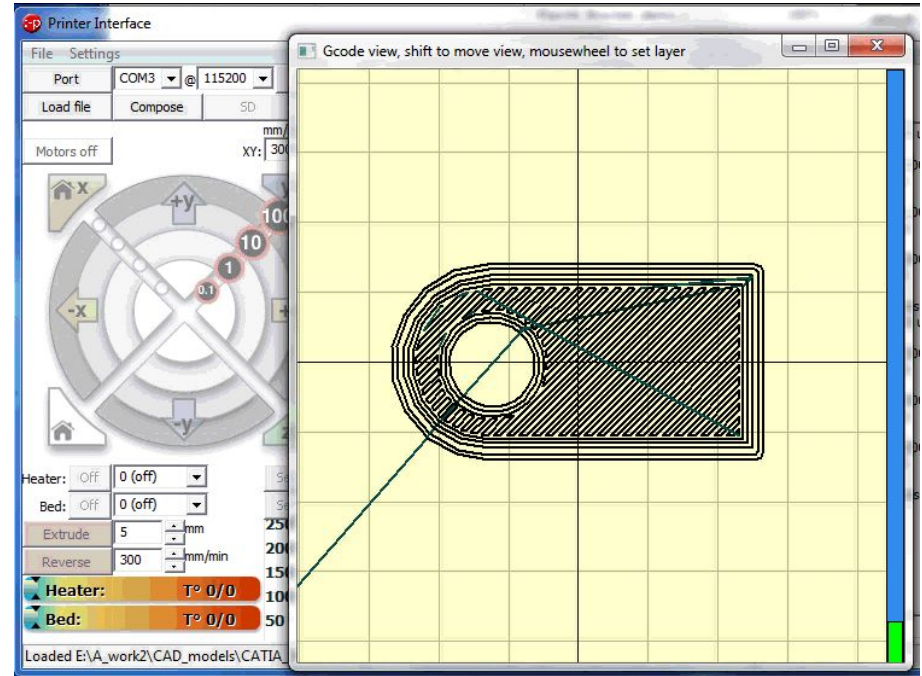




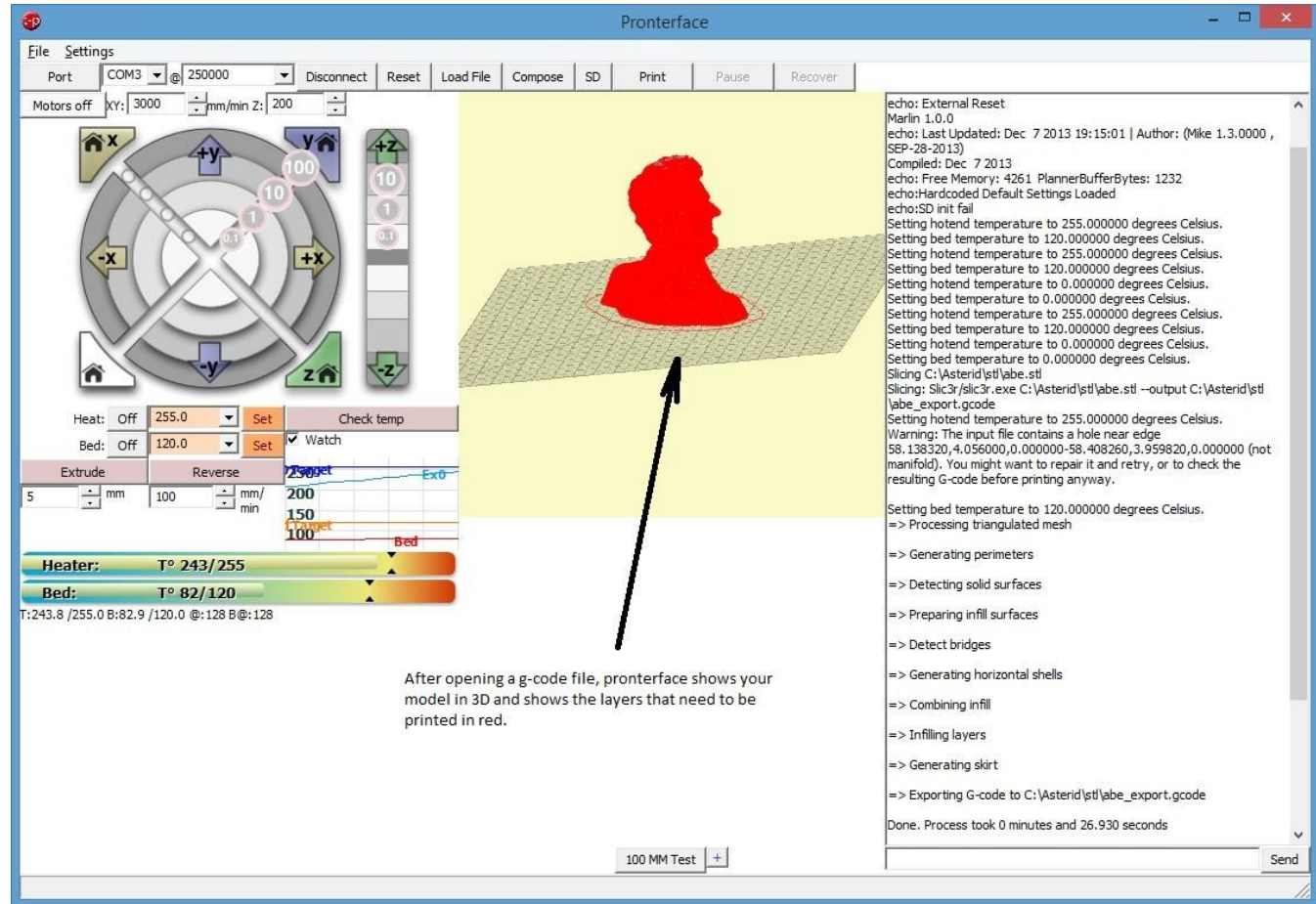
Pronterface

Printrun

- 3D printing host software suite
- Can communicate with a printer and handle the printing process
- Have control over most of the printers actions and remotely monitor it



Printrun UI



The screenshot displays the Printrun software interface, which is used for controlling 3D printers. The interface is divided into several sections:

- Top Bar:** Contains the title "Pronterface" and standard window controls (minimize, maximize, close).
- File Settings:** A dropdown menu for "Port" (set to COM3) and a dropdown for baud rate (set to 250000). Buttons for "Disconnect", "Reset", "Load File", "Compose", "SD", "Print", "Pause", and "Recover" are present.
- Motors off:** A section with "XY: 3000" and "mm/min Z: 200" settings.
- Control Pad:** A circular pad with directional arrows for X, Y, and Z axes, along with a home button.
- Temperature Controls:** Includes "Heat: Off" and "Bed: Off" buttons, each with a "Set" button and a "Watch" checkbox. Below these are "Extrude" and "Reverse" buttons with numerical inputs.
- 3D Viewport:** A central area showing a 3D model of a bust. A black arrow points to the model. The model is rendered in red, indicating it is the part to be printed.
- Status Bar:** Displays "T:243.8 /255.0 B:82.9 /120.0 @:128 B@:128".
- Log Console:** A text area on the right showing the printer's output. It includes messages such as "echo: External Reset", "Marlin 1.0.0", "echo: Last Updated: Dec 7 2013 19:15:01 | Author: (Mike 1.3.0000 , SEP-28-2013)", "Compiled: Dec 7 2013", "echo: Free Memory: 4261 PlannerBufferBytes: 1232", "echo:Hardcoded Default Settings Loaded", "echo:SD init fail", "Setting hotend temperature to 255.000000 degrees Celsius.", "Setting bed temperature to 120.000000 degrees Celsius.", "Setting hotend temperature to 255.000000 degrees Celsius.", "Setting bed temperature to 120.000000 degrees Celsius.", "Setting hotend temperature to 0.000000 degrees Celsius.", "Setting bed temperature to 0.000000 degrees Celsius.", "Setting hotend temperature to 255.000000 degrees Celsius.", "Setting bed temperature to 120.000000 degrees Celsius.", "Setting hotend temperature to 0.000000 degrees Celsius.", "Setting bed temperature to 0.000000 degrees Celsius.", "Slicing C:\Asterid\st\abe.stl", "Slicing: Slic3r\slic3r.exe C:\Asterid\st\abe.stl -output C:\Asterid\st\abe_export.gcode", "Setting hotend temperature to 255.000000 degrees Celsius.", "Warning: The input file contains a hole near edge 58.138320,4.056000,0.000000-58.408260,3.959820,0.000000 (not manifold). You might want to repair it and retry, or to check the resulting G-code before printing anyway.", "Setting bed temperature to 120.000000 degrees Celsius.", "=> Processing triangulated mesh", "=> Generating perimeters", "=> Detecting solid surfaces", "=> Preparing infill surfaces", "=> Detect bridges", "=> Generating horizontal shells", "=> Combining infill", "=> Infilling layers", "=> Generating skirt", "=> Exporting G-code to C:\Asterid\st\abe_export.gcode", "Done. Process took 0 minutes and 26.930 seconds".

After opening a g-code file, pronterface shows your model in 3D and shows the layers that need to be printed in red.



Advanced Features & Further Reading

Further Reading

- Marlin configuration - Marlin 2.0 and 1.1.X -
<http://marlinfw.org/docs/configuration/configuration.html>
- EEPROM - Electrically Erasable Programmable Read-Only Memory
<http://marlinfw.org/docs/features/eeprom.html>
Can you find EEPROM commands in the prusa menus?
- Flashing firmware - Varies depend on the board - Usually requires Arduino IDE or a similar compiler
<http://marlinfw.org/docs/basics/install.html>