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

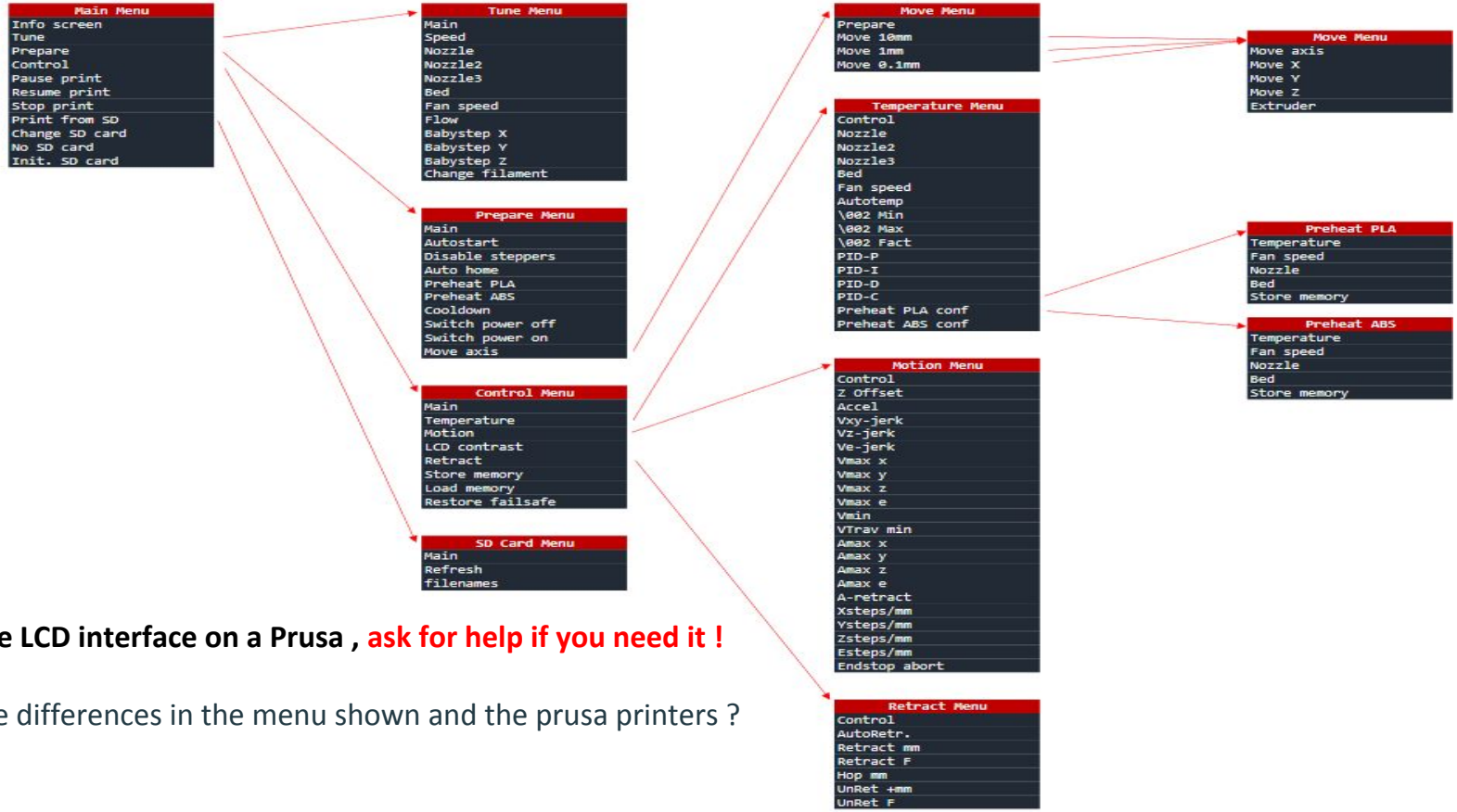
Printer Firmware

Types

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

Marlin UI

Marlin LCD Menu Tree

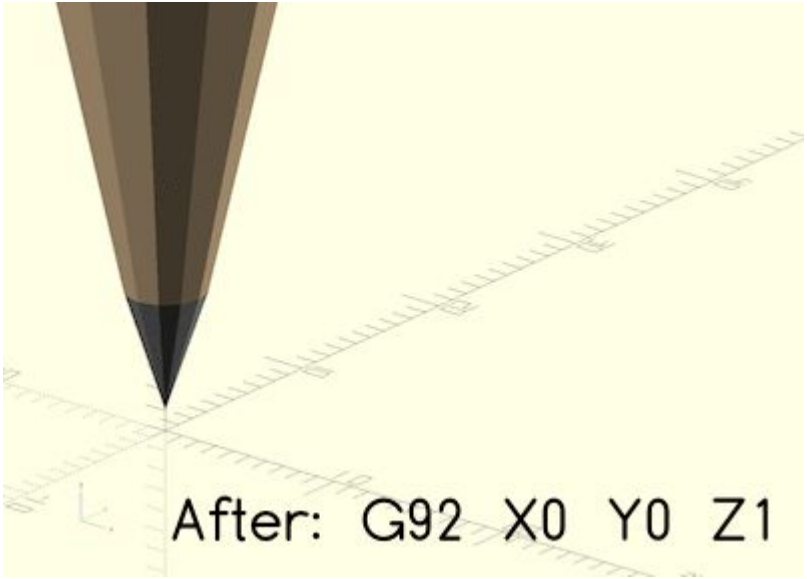


Go through the LCD interface on a Prusa , ask for help if you need it !

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

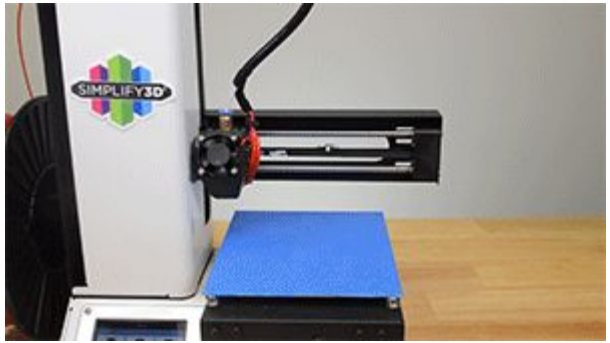
G- code in Marlin

- 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

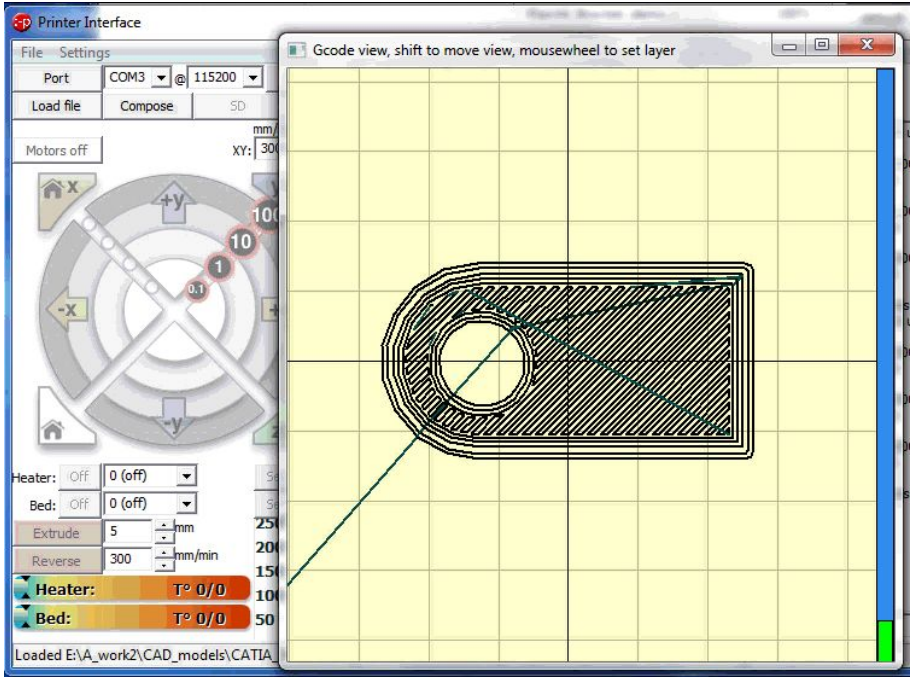


https://www.simplify3d.com/support/articles/3d-printing-gcode-tutorial/

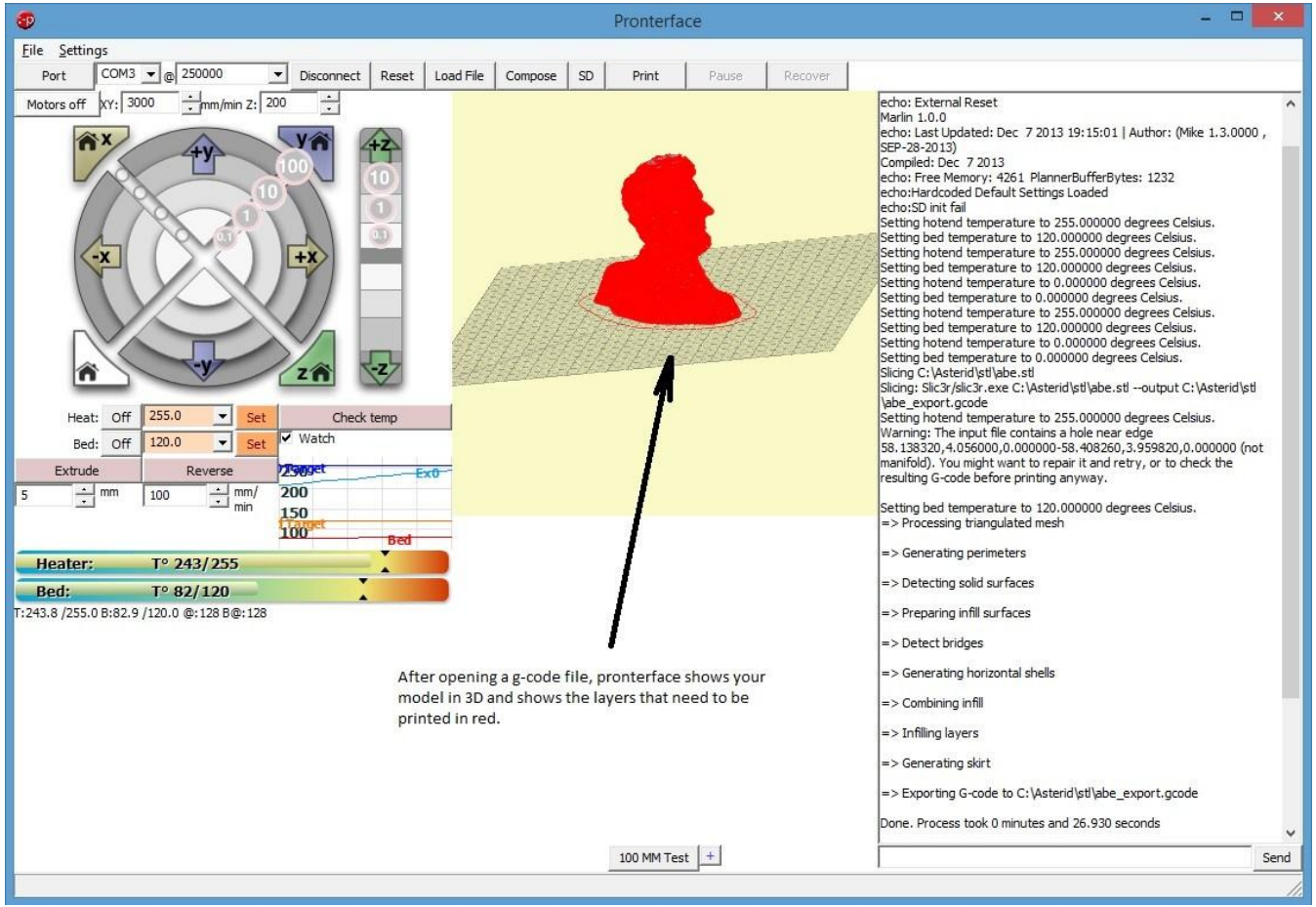
Pronterface

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


Pronterface
File Settings
Port COM3 @ 250000 Disconnect Reset Load File Compose SD Print Pause Recover
Motors off XY: 3000 mm/min Z: 200
Heat: Off 255.0 Set Check temp
Bed: Off 120.0 Set Watch
Extrude Reverse
5 mm 100 mm/min
Heater: T° 243/255
Bed: T° 82/120
T:243.8 /255.0 B:82.9 /120.0 @:128 B@:128
After opening a g-code file, pronterface shows your model in 3D and shows the layers that need to be printed in red.
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\stl\abe.stl
Slicing: Slic3r/slic3r.exe C:\Asterid\stl\abe.stl --output C:\Asterid\stl\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\stl\abe_export.gcode
Done. Process took 0 minutes and 26.930 seconds
100 MM Test
Send

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