

Switching Extruders

Feature Name: Switching Extruders

Feature Name in Annotation: Extruder_Switching

Source of Information

Domain knowledge, Code comment, Source Code, ifdefs

Strategy Used:

After we started study the domain knowledge of the 3D printer, we found the extruder is a fundamental part of it. Then we started from the largest and most central logic file MarlinMain.cpp, and browsing through the code comment and source code to find anything that relates to extruder, and we found there are keywords "SWITCHING_EXTRUDER" which contain "extruder" were wrapped by "ifdef".

Time took to Identify and Locate the feature: 2 hours

Time took to Understand the Implementation: 3 hours

Feature Description:

This feature supports a new type of functionality of having multiple extruders. The number of extruders are the same with the number of hotends. In case of switching from one extruder to another, the motor will drive the gears to switch from one hotend to another. See video and picture below.

Demo: <https://www.youtube.com/watch?v=9aekOiyL1qY>

Time spent: This feature is one of 18 features that were located by manually going through all code files of Marlin using our source code method. It took one person 25 hours to identify all 18 features.

Feature Characteristics:

Feature Name	LoFC	NoFL	TD	SD	Completely Wrapped by ifdef
Switching Extruders	341	4	24	0	Yes

Ratios of sources (%)

RL	PR	CM	Ifdef	DK	CC	SC	GD
0	0	0	40	10	5	45	0

RL: Release Log; **PR:** Pull Request; **CM:** Commit, **Ifdef:** Ifdef Expression; **DK:** Domain Knowledge; **CC:** Code Comment; **SC:** Source Code; **GD:** G-Code Documentation.