

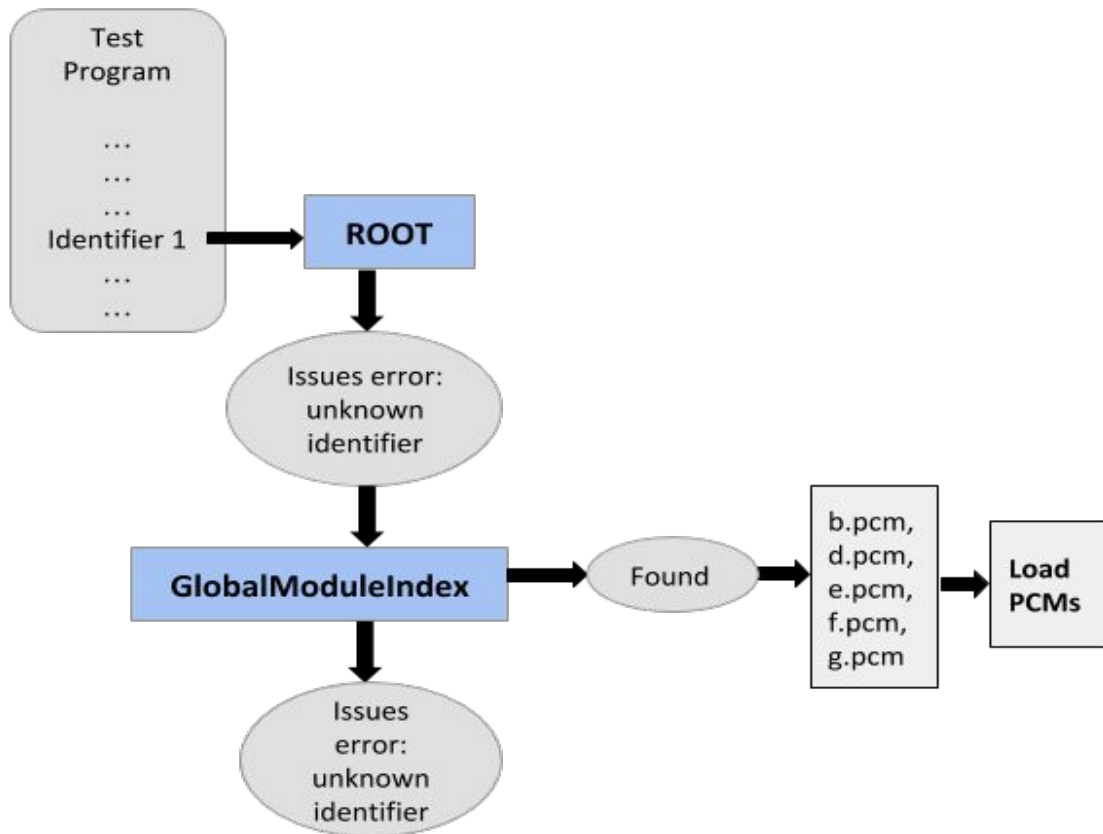
GlobalModuleIndex in ROOT and Cling

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GlobalModuleIndex Design

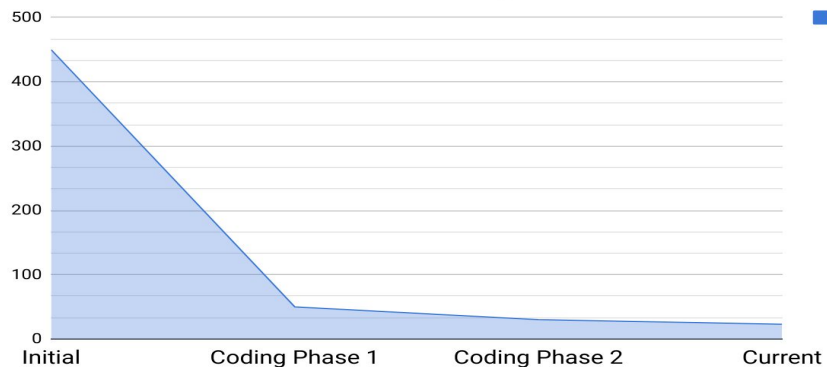


Implementation

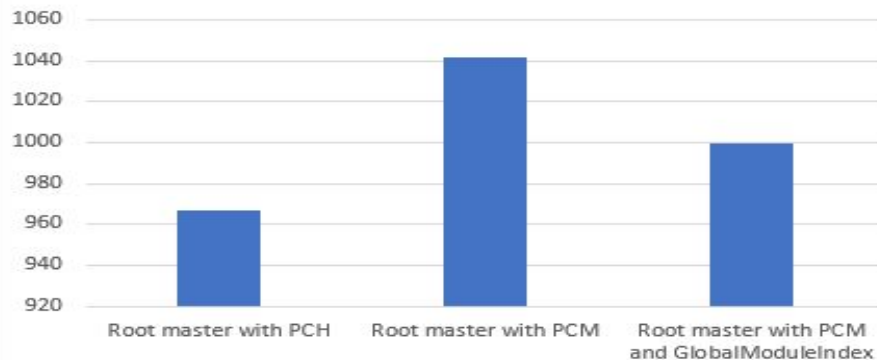
- Found and compared the (number of) modules loaded
- Found the identifiers which cause the PCMs to be loaded
- Found the methods which cause the above PCMs to be loaded
- Identified a few ROOT identifiers (not in stl and libc) which require these modules to be loaded
- Initially, over 450 tests were failing, which was reduced to 50 tests by cleaning the code.
- Another temporary solution to fix the failing tests was introducing FIXMEMModules
- Developed a script to find the modules/libraries loaded by each test/tutorial run by ctest
- Developed a script to extract time and memory measurements for each test/tutorial run by ctest

Performance Results

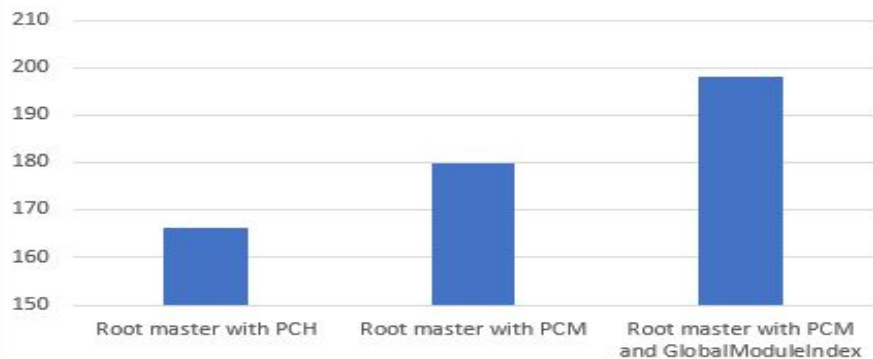
Number of Failing Tests



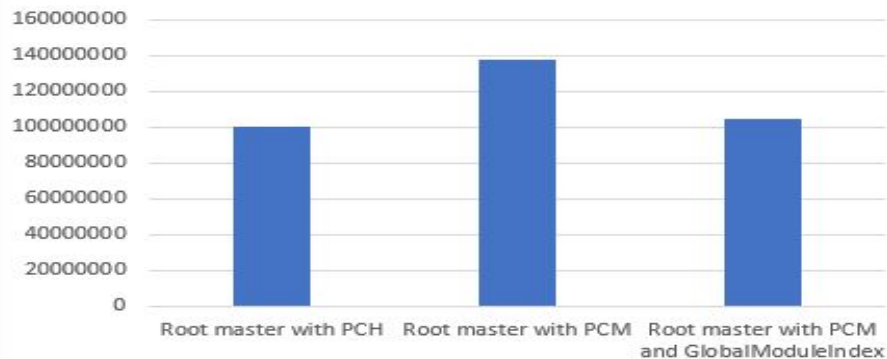
CPU User Time (s)



CPU System Time (s)



Max RSS (kbytes)



More Details

- PR with GlobalModuleIndex implementation:

<https://github.com/root-project/root/pull/4016>

- My contributions: <https://tinyurl.com/y4pzgsy9>

- Final performance results:

- <https://tinyurl.com/Performance-Measurements-1>

- <https://tinyurl.com/Performance-Measurements-2>

- Final submission:

<https://docs.google.com/document/d/1ryqNseURDZiL71anRMV0JL4DU7o9SrXG4nXZ4kj510Y/edit?usp=sharing>

Thank you!