Chapel Debugger Progress Update

Western Washington University

OUR TEAM


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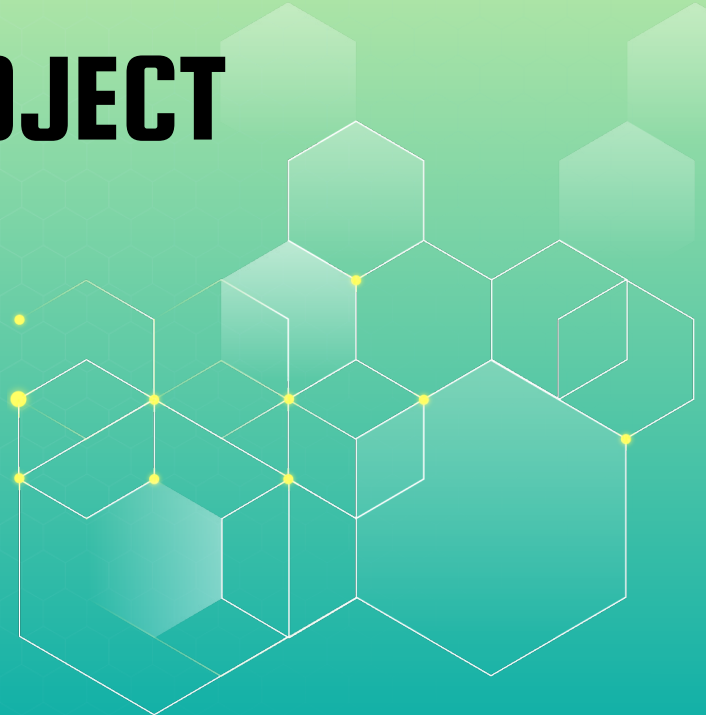
OUR PROJECT

Since Chapel 1.25 seniors at Western Washington University have been working to develop an integrated Chapel debugger to assist Chapel developers in debugging their code.

Our goal is to provide an intuitive, simplistic debugging solution for Chapel developers.



HISTORY OF CHPLDBG

With the complex abstraction and unique characteristics of the Chapel programming language, at the inception point of this project, there was not much debugging support available.

GUI

Original design utilized a multi-window GUI

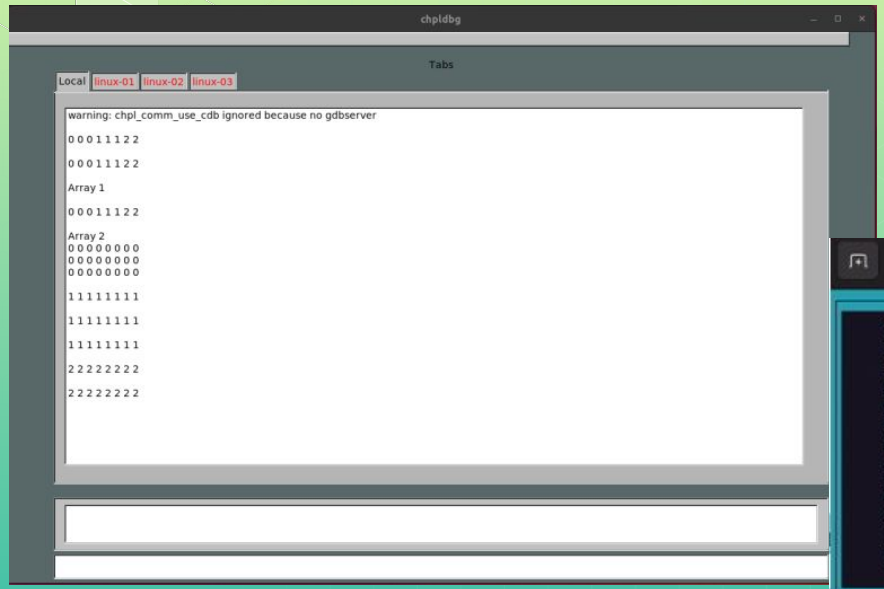
GDB

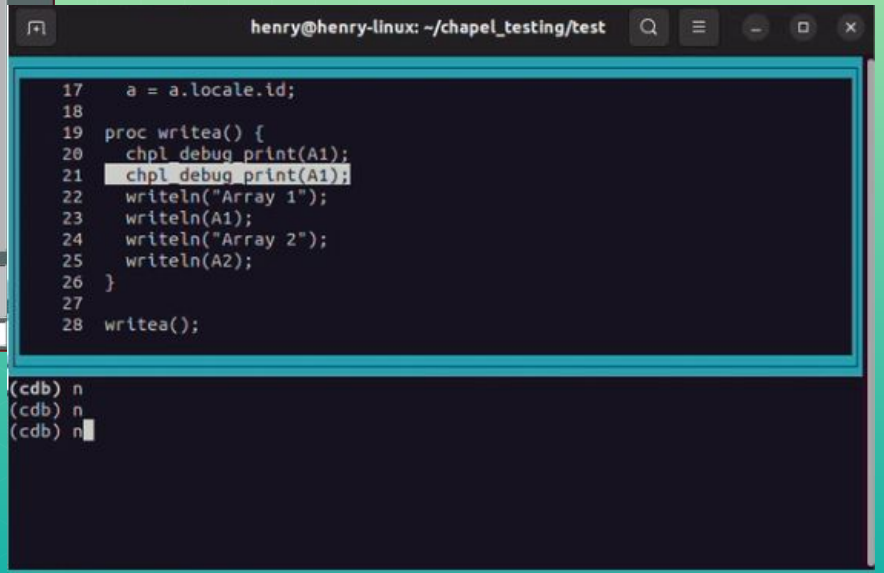
Initially, debugging consisted of opening multiple SSH terminals and running gdb on individual locales

CLI/TUI

Shifted away from the GUI in favor of a more unified CLI.

GUI vs TUI


chpldbg
Tabs
Local
linux-01
linux-02
linux-03
warning: chpl_comm_use_cdb ignored because no gdbserver
0 0 0 1 1 1 2 2
0 0 0 1 1 1 2 2
Array 1
0 0 0 1 1 1 2 2
Array 2
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
0 0 0 0 0 0 0 0 0
1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1
1 1 1 1 1 1 1 1
2 2 2 2 2 2 2 2
2 2 2 2 2 2 2 2


henry@henry-linux: ~/chapel_testing/test
17 a = a.locale.id;
18
19 proc writea() {
20 chpl_debug_print(A1);
21 chpl_debug_print(A1);
22 writeln("Array 1");
23 writeln(A1);
24 writeln("Array 2");
25 writeln(A2);
26 }
27
28 writea();
(cdb) n
(cdb) n
(cdb) n

WHY WE ARE HERE

AWARENESS

We would like to bring awareness to the work we have expanded upon and gain momentum for chpldbg going forward.

INSIGHT

This is the best place to get insight and feedback into what actual Chapel developers would want out of s debugger.

DEMO . . .

FEATURE BREAKDOWN

Breakpoints

Pause execution at specific lines or functions

Debug-Flag

Specific flag that sets all needed flags for debugging

Step

Allows users to step through the code one line at a time

Next

Similar to Step but steps over function calls

TUI

Textual user interface that provides visualization of source code

Printing

Allows users to inspect the value of variables throughout execution

THANK YOU

Questions?