CS 5334   Spring 2016   Name _____
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In-class Activity
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Using Helgrind to Detect Race Conditions

See the Helgrind User Manual at http://valgrind.org/docs/manual/hg-manual.html for information about Helgrind and for instructions on how to use it.

1. What types of synchronization errors does Helgrind try to detect?

We will focus on using Helgrind to find data races.

2. Compile the simple-race.c code with

   cc –g –o simple-race simple-race.c –lpthread

 Run the code with helgrind by typing

   valgrind –-tool=helgrind ./simple-race

Observe the output. How does it help you find the data race? What option can you pass to Helgrind to get it to report the variable name?

Fix the data race and recompile the code and run it again with Helgrind. Does Helgrind still report a data race?

3. What does it mean to say that two accesses from different threads are ordered by the happens-before relation? How does Helgrind use the happens-before relation to detect race conditions?

4. Compile the bug6.c example and run it with Helgrind. What do your observe? Find and fix the race condition and then re-compile and run again with Helgrind.