10.10.1 Chasing LEDs

The `led_check()` function of the test program turns on and off an individual LED sequentially. The lit LED appears to move (i.e., chase) along the strip. The chasing LEDs program enhances the function as follows:

1. The 16 discrete LEDs are used as output, one lit at a time.
2. The lit LED moves sequentially in either direction. It changes direction when reaching the rightmost or leftmost position.
3. The slide switch 0 (labeled `sw0` on the Nexys 4 DDR board) is used to "initialize" the process. When it is 1, the lit LED is moved to the rightmost position.
4. The next five slide switches (`sw1` to `sw5`) are used to control the chasing speed of the LED. The highest speed should be slow enough for visual inspection.
5. When the chasing speed changes, a one-line message is transmitted to the console via the UART core. The format of the message is "current speed: ddd", where ddd is the value of five speed setting switches.

Develop software and verify its operation.