Scheduler Test Plan

170D WOBC: Module L Practical Exam I (A)

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1 Purpose

Unit testing is essential to ensure your functions work as intended with valid/invalid input. The ability to build a meaningful and verbose unit test plan / program will verify your program is functioning properly.

2 Automated Tests

2.1 test_valid_idle

FUNCTION TESTED: int idle(scheduler * scheduler)
TEST PURPOSE: verify the idle function returns 0 when the job_count is 0.
TEST CONDUCTED: created mock scheduler struct and set the job_count to 0. Called the idle function and tested to see that the return value was zero.

2.2 test_invalid_idle

FUNCTION TESTED: int idle(scheduler * scheduler)
TEST PURPOSE: verify idle function returns 1 when job count is not 0
TEST CONDUCTED: created mock scheduler and set job_count to 4. Test verifies function returns a 1.

2.3 test_valid_queue_create

FUNCTION TESTED: queue_t * queue_create(int size)
TEST PURPOSE: verifies that valid input return a queue struct.
TEST CONDUCTED: created mock queue struct with adequate input and verified queue did not equal NULL.

2.4 test_invalid_queue_create

FUNCTION TESTED: queue_t * queue_create(int size)
TEST PURPOSE: verifies that invalid input returns a NULL queue struct.
TEST CONDUCTED: created mock queue struct with inadequate input and verified queue equalled NULL.

2.5 test_valid_scheduler_create

FUNCTION TESTED: scheduler * create(int job_capacity)
TEST PURPOSE: verifies scheduler was created with valid input
TEST CONDUCTED: created mock scheduler with job capacity of 5. Checked to ensure scheduler was created and not NULL.

2.6 test_invalid_scheduler_create

FUNCTION TESTED: scheduler * create(int job_capacity)
TEST PURPOSE: verifies scheduler was not created on invalid input
TEST CONDUCTED: created mock scheduler with job capacity of 0, returning a NULL scheduler.

2.7 test_valid_queue_enqueue

FUNCTION TESTED: test_valid_queue_enqueue
TEST PURPOSE: verifies function returns proper value on valid input
TEST CONDUCTED: created mock queue, called enqueue function with valid integer, ensured queue did not equal NULL afterwards.

2.8 test_invalid_queue_enqueue

FUNCTION TESTED: queue_t * queue (queue_t * queue, int value)
TEST PURPOSE: verifies function returns NULL with invalid input
TEST CONDUCTED: called enqueue function with -1 input, checked that enqueue function returned NULL

2.9 test_valid_queue_dequeue

FUNCTION TESTED: queue_t * queue (queue_t * queue, int value)
TEST PURPOSE: verifies dequeue function does not return NULL on valid input
TEST CONDUCTED: created mock queue, enqueued numbers, verified dequeue did not return NULL with valid input.

2.10 test_valid_current_job

FUNCTION TESTED: int current_job(scheduler * scheduler)
TEST PURPOSE: verifies current job function returned finished job count from sched-

uler.
TEST CONDUCTED: created mock scheduler and set finished count to 4. Test verified that the function returned 4.

2.11 test_valid_awt

FUNCTION TESTED: double average_wait_time(scheduler * scheduler)
TEST PURPOSE: verifies average wait time function calculates and returns proper values
TEST CONDUCTED: created mock scheduler, set sum times to 20 and finish count to 4. Test verified that function returned 5.0.

3 Manual Test

scheduler_test.h This file tests the functionality of the entire scheduler_driver.c program. This file verifies that the correct values are returned from the functions created by the student and displays the progress to the terminal.