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#!/bin/bash

#File: testscript
#Author: Andy Sayler
#Modifier: Chris Sterling
#Project: CSCI 3753 Programming Assignment 3
#Create Date: 2012/03/09
#Modify Date: 2012/03/29
#Description:
#   Bash script that is a wrapper for all the


#Before doing anything else, check to make sure that we are running this script as root
if [ "$(whoami)" != "root" ]; then
    echo "This script must be run with super user privledges."
    echo "Usage: sudo ./testscript"
    exit 1
fi


ITERATIONS=100000000
BYTESTOCOPY=102400
BLOCKSIZE=1024
MAKE="make -s"

NUM_PROCESSES=(100) #LOW MEDIUM HIGH
SCHEDULER_TYPE=("SCHED_OTHER" "SCHED_FIFO" "SCHED_RR")
NUMBER_OF_REPEATS=3 # How many times do you want to take benchmarks?

RESULT_FILE="/home/user/Dropbox/Operating Systems/PA3/results.csv"

INPUTFILESIZEMEGABYTES=1
KILO=1024
MEGA=`echo "$KILO * $KILO" | bc`
INPUTFILESIZEBYTES=`echo "$MEGA * $INPUTFILESIZEMEGABYTES" | bc`
INPUTBLOCKSIZEBYTES=$KILO
INPUTBLOCKS=`echo "$INPUTFILESIZEBYTES / $INPUTBLOCKSIZEBYTES" | bc`


echo Building code...
$MAKE clean
$MAKE

x=1
while [ $x -le ${NUM_PROCESSES[2]} ]
do
  echo "Creating rwinput-$x"
  dd if=/dev/urandom of=./rwinput-$x bs=$INPUTBLOCKSIZEBYTES count=$INPUTBLOCKS > /dev/null 2>&1
  x=$(( $x + 1 ))
done



#Echo out the header file for the CSV - overwrite any existing benchmarks
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echo "\"Process Type\",\"Scheduler Type\",Iterations,\"Num Simultaneous
Processes\",Wall,User,System,CPU,I-Switched,V-switched" > "$RESULT_FILE"

echo Starting test runs...


for num_processes in "${NUM_PROCESSES[@]}"
do
    for scheduler_type in "${SCHEDULER_TYPE[@]}"
    do
        for (( i=1; i<=$NUMBER_OF_REPEATS; i++ )) #gather multiple data points about each type
        do
            echo "Calculating over $ITERATIONS iterations using $scheduler_type with
            $num_processes simultaneous process..."

            TIMEFORMAT="CPU BOUND,$scheduler_type,$ITERATIONS,$num_processes,%e,%U,%S,%P,%c,%w"
            /usr/bin/time -f "$TIMEFORMAT" -o "$RESULT_FILE" -a ./pi-sched $ITERATIONS
            $scheduler_type $num_processes

            TIMEFORMAT="\"I/O BOUND\",$scheduler_type,1,$num_processes,%e,%U,%S,%P,%c,%w"
            /usr/bin/time -f "$TIMEFORMAT" -o "$RESULT_FILE" -a ./rw $BYTESTOCOPY $BLOCKSIZE
            rwinput rwoutput $scheduler_type $num_processes

            TIMEFORMAT="MIXED,$scheduler_type,1,$num_processes,%e,%U,%S,%P,%c,%w"
            /usr/bin/time -f "$TIMEFORMAT" -o "$RESULT_FILE" -a ./mixed $ITERATIONS
            $scheduler_type $num_processes
        done
    done
done
```