Assignment 3

Overview and Q & A

Specifications

- Memory size = 1024 MB
- Process size range from 1 to 512 (integer)
- List of processes: pid starts at 1 and increases

  1 200

  2 500

  3 350
- When a process in memory has to be swapped out, select the “oldest”
- Process that has been swapped out goes to the end of the process queue
- If a process has been swapped out 3 times we consider that it is done and does not go into the process queue
- Program ends when there are no more processes to service

Specifications

- Command line has the format:

  $ ./hole pfile <first|best|worst|next>

- Data structures – anything that works
- Remember to include all code, including .h files, when constructing your tarfile for submission
- Remember to include a README file and, of course, a Makefile

Output

After each load, print out:

pid loaded, #processes = 5, #holes = 3, %memusage = 41, cumulative %mem = 40

- load = every time you fit a process into memory
- %memusage = the percent of memory that is currently occupied by processes
- cumulative %mem = the average of all %memusages up until and including the current process load

After completion, print out:

Total loads = 9, average #processes = 4.4, average #holes = 6.3, cumulative %mem = 62

integer

integer

float

float

Example 1

- Process file:

  1 200

  2 400

  3 350

- Output:

pid loaded, #processes = 1, holes = 1, %memusage = 19, cumulative %mem = 19

pid loaded, #processes = 2, holes = 1, %memusage = 58, cumulative %mem = 38

pid loaded, #processes = 3, holes = 1, %memusage = 92, cumulative %mem = 56

Total loads = 3, average processes = 2.0, average #holes = 1.0, cumulative %mem = 56

Process file:
1 200
2 500
3 350

Example 2

Algorithm: first

pid loaded, #processes = 1, holes = 1, %memusage = 19, cumulative %mem = 19
pid loaded, #processes = 2, holes = 1, %memusage = 68, cumulative %mem = 43
pid loaded, #processes = 1, holes = 1, %memusage = 34, cumulative %mem = 40
pid loaded, #processes = 2, holes = 1, %memusage = 53, cumulative %mem = 43
pid loaded, #processes = 1, holes = 1, %memusage = 48, cumulative %mem = 44
pid loaded, #processes = 2, holes = 1, %memusage = 83, cumulative %mem = 50
pid loaded, #processes = 2, holes = 2, %memusage = 53, cumulative %mem = 51
pid loaded, #processes = 2, holes = 1, %memusage = 68, cumulative %mem = 53
pid loaded, #processes = -1, holes = 1, %memusage = 34, cumulative %mem = 51
Total loads = 9, average processes = 1.3, average #holes = 1.1, cumulative %mem = 51