Operating Systems
Jacobs University Bremen
Brian Sherif Hanna Nasralla

Course: CO20-320202
Oct 25th 2018

Homework 3

a) Fairness in the CFS means that CPU power is shared equally between processes. Meaning 1 process gets 100% of the CPU while 2 process get 50% of the CPU and so forth...

b) The CFS picks the task with the least virtual runtime to schedule next. Virtual run time is the accumulated runtime of a process. The CFS uses a Red-Black-Tree to store task information. Tasks are weighed in the Red-Black-Tree using virtual runtimes, therefore accessing the task with the minimum virtual runtime means accessing the left most leaf node. A Red-Black-Tree is used because inserting and deleting tasks is done in O(log n).

c) Yes the CFS scheduler uses time slices. There also exists 2 variable which are affecting the CFS time calculations. the first is System wide fair_ clock variable. This runs at a fraction of real time, so that it runs the ideal speed for one task when there are several tasks in the system. The second variable is the accumulated wait_ time; the wait time is the time each process waits while the CPU is assigned to a running task.

d) Each task is given some sort of static priority (which ranges from 1 to 99). Tasks with higher priority get to have more timein the CPU; while those with lower priority get less time. Processes are placed in a priority array which allow the system to find the highest priority task and completed then move it to the expired array.

Please note that all answers are referenced from the following article:
https://goo.gl/67BHVT