

# CS431 — Exercise 4

February 1, 2017

Due: Monday, February 6, 2017 before midnight (50 points)

In this exercise you will learn about the default process scheduler in the Linux kernel: the Complete Fair Scheduler (CFS) algorithm. You can work with a partner to complete this assignment.

## Research

First, you must do some research about how this scheduler works. You can try various resources:

1. The book has a short section on Linux scheduling in chapter 10 where you can get a brief introduction.
2. There is an article from IBM that discusses the scheduler: <https://www.ibm.com/developerworks/library/l-completely-fair-scheduler/>
3. The Linux kernel source code is distributed from <https://www.kernel.org/> and they have a page about CFS: <https://www.kernel.org/doc/Documentation/scheduler/sched-design-CFS.txt>
4. Check the Linux source code directly. I included a PDF on Blackboard that has an explanation about Linux scheduling and discusses CFS along with code from the Linux kernel.
5. Search online such as the library's CS databases for ACM/IEEE for more sources.

## Exercise

You need to write a short report documenting what you have found about CFS. Include the goals for this scheduler, describe the data structures used by the algorithm, time complexity for the scheduler's actions, and how and when it makes scheduling decisions.

Once you have described the scheduler, also research any ways it can be modified or optimized by end users for different environments or applications. Where in a Linux-based operating system can a user change the settings for the scheduler and what settings can be changed?

## Submission

1. On <https://codebank.xyz>, create a project named CS431-EX4. Follow this naming convention precisely including case.
2. Create your own local repository by the following:
  - (a) Navigate to your local directory for this project.
  - (b) Run `git init` to initialize the repository.

3. Make sure you add the reference to the remote repository in your local repository with:  

```
$ git remote add origin https://codebank.xyz/username/CS431-EX4.git
```
4. Instead of code, push the document that contains your answers.