CSI3131 – Operating Systems
Lab2

Systemverilog language supports the following three forms of the fork construct:

fork
  task1;
  task2;
  task3;
join
	fork
	  task1;
	  task2;
	  task3;
	join_none
		fork
		  task1;
		  task2;
		  task3;
		join_any

In the above 3 cases one parent have 3 child processes that are forked, then joined using 3 different join constructs.

- The join construct makes the parent wait for all child processes to finish before resuming the parent process.
- The join_none construct makes the parent not to wait for any child processes to finish before resuming the parent process, i.e. it runs concurrently with the child processes.
- The join_any construct makes the parent wait for at least one child process to finish before resuming the parent process. Assuming you have 3 applications in the path named task1, task2, and task3.

Write three C console programs that will fork the processes similar to the above 3 descriptions.

The solution of the first mode is provided together with a task application. The attached Lab2.zip file contains 2 files:

1. task.c is a simple console application that sleeps for 10 seconds, marking the start/end of the process
2. join_none.c is the solution of the second mode as explained above. Notice that all 4 tasks overlap concurrently, the output looks like this:

```
task 4 start ...
task 1 start ...
task 2 start ...
task 3 start ...
task 4 end
task 1 end
task 2 end
task 3 end
```

3. develop a new application join.c to solve the first mode, the outcome should look as follows:

```
task 3 start ...
task 2 start ...
task 1 start ...
task 1 end
task 2 end
```

```
        task 3 end
        task 4 start ...
        task 4 end
```

4. develop another application join_any.c to solve the last mode, the outcome should look as follows:

```
        task 3 start ...
        task 2 start ...
        task 1 start ...
        task 3 end
        task 4 start ...
        task 2 end
        task 1 end
        task 4 end
```

5. zip all files, namely task.c, join.c, join_any.c, and join_none.c in one zip file and submit your answer on Bright Space