Job Dependencies

**How to implement job dependencies?**

Sometimes it's important to introduce job dependencies in the workflow. For example, you might need the job "produce_data" to be successfully completed before the job "data_analysis" can start, even if you want to submit both jobs at the same time.

This can be accomplished easily using in the submission of the second job ("data_analysis") the `qsub` option `-hold_jid` followed by the JOBID or the JOBNAME of the job that needs to be completed first ("produce_data").

```
[testuser@login-node-1-0 ~]$ qsub -q all.q -N produce_data simulation.txt
Your job 2323148 ("produce_data") has been submitted
[testuser@login-node-1-0 ~]$ qsub -q all.q -N data_analysis -hold_jid produce_data analysis.txt
Your job 2323149 ("data_analysis") has been submitted
```

Or alternatively, using the JOBID instead of the JOBNAME (in case you have multiple jobs with the same name)

```
[testuser@login-node-1-0 ~]$ qsub -q all.q -N produce_data simulation.txt
Your job 2323148 ("produce_data") has been submitted
[testuser@login-node-1-0 ~]$ qsub -q all.q -N data_analysis -hold_jid 2323148 analysis.txt
Your job 2323149 ("data_analysis") has been submitted
```

In both cases, the job "data_analysis" will remain in the queue with status "on hold" (hqw) until the other job has completed.