CS2106 Tutorial 2

AY 25/26 Sem 1 — github/omgeta

Q1. (a.) Correct

(b.) Correct

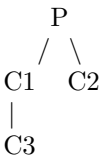
(c.) Correct

(d.) Correct

Q2. (a.) dataX is a global duplicated per-process, dataY is a stack variable duplicated per-process, ∗dataZptr is shared in the heap memory

(b.) Both processes print the line with different PID, showing duplication of the process into independent processes

(c.)



(d.) Yes, output order is non-deterministic and depends on the scheduler

(e.) Outputs within the same process will follow the same order

(f.) When a child is sleeping, the parent continues so child outputs will appear later

(g.) Parent will await for child to return, enforcing strict order for outputs

Q3. Code in Parallel.c; waitpid allows controlling the child to wait for

Q4. On hitting the base case, we fork into a new process which begins returning returning the factorial result as well. Ultimately, we print two outputs.

Q5. Possible:

```
[PID 100]: x=10, y=101
[PID 101]: x=9, y=0
[PID 102]: x=9, y=0
[PID 103]: x=8, y=0
```

Impossible (since process has decremented incorrectly):

```
[PID 100]: x=9, y=101
```

Q6. (a.) Await children in any order

(b.) Await children in the creation order