**USP Week 11 Lab Assignments**

|  |  |
| --- | --- |
| **1** | Synchronize access to shared memory segment using semaphore.  Parent process creates a shared memory segment which can hold 10 integers and initializes it with random values. Create two child processes P1 and P2 by doing fork and exec. P1 and P2 should execute simultaneously. P1 modifies the shared memory segment by multiplying each integer by 2. P2 modifies shared memory segment by adding 100 to each integer. P1 should be scheduled for execution before P2 and P2 can modify shared memory segment only after P1 has modified memory segment. Use semaphore to synchronize access.  Parent has to wait until P1 and P2 has finished execution and finally contents of shared memory has to be printed. |
| **2** | Consider two processes P1 and P2 are printing characters from ‘a’ to ‘z’ alternately. P1 starts execution first and it will print character ‘a’ and wait for P2 (which is initially in blocked state) to print character ‘b’. Once P2 has printed character ‘b’ it will signal process P1and wait for P1 to print next character. This should continue until all characters have been printed. Make use of two semaphores to synchronize P1 and P2. |