# COMP7500/7506-Lecture 08: Examples of IPC Systems

**🟊: >85%, 🟊🟊: 70-85%, 🟊🟊🟊: 55-70%, 🟊🟊🟊🟊: 40-55%, 🟊🟊🟊🟊🟊: < 40%**

**🟊 Exercise 1:** What security feature should be built in the shared memory system in POSIX? (30 Seconds)

**🟊 Exercise 2:** Can you design four basic POSIX shared memory operations? (30 Seconds)

**🟊🟊 Exercise 3:** Given the following four operations, what is the correct sequence of these operations for producers and consumers? (30 Seconds)

**🟊🟊 Exercise 4:** Can you design two security-related operations for the POSIX shared memory? (30 Seconds)

**🟊🟊🟊 Exercise 5**: Read the following source code. Can you explain the mmap() function (e.g., input parameters)? Which two items are linked together? (2 Minutes)

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**🟊🟊 Exercise 6**: What are the problems with IPC mechanisms using shared files? (30 Seconds)

**🟊🟊 Exercise 7**: Mailboxes - needed for communication - are created via port\_allocate(). How to deal with special cases where a mailbox is full (**Hint:** design a policy)? (30 Seconds)

**Review Exercises**

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**🟊 Review Exercise 1 (Plickers):** What does POSIX stand for?

1. Portable Operating System Interprocess Interface
2. Portable Operating System Interprocess Communication
3. Portable Operating System Interface
4. Parallel Operating System Interface

**🟊🟊 Review Exercise 2 (Plickers):** What statement about the POSIX shared memory is *incorrect*?

1. It allows processes to communicate information by sharing a region of memory
2. POSIX shared memory objects have user-space persistence
3. POSIX shared memory is a variation of mapped memory
4. POSIX xhared memory objects are created in a virtual file system

**🟊 Review Exercise 3 (Plickers):** What is used in Linux to control the permissions of shared memory objects?

1. Shared memory object control lists
2. Permission control lists
3. Kernel control lists
4. Access control lists

**🟊🟊🟊 Review Exercise 4 (Plickers):** Which one of the following operations removed a shared memory object name?

1. shm\_unlink()
2. shm\_close()
3. close()
4. munmap()

**🟊 Review Exercise 5 (Plickers):** Which mmap prototype is correct?

1. void \*mmap(size\_t length, int prot, int flags, int fd, off\_t offset);
2. void \*mmap(void \*addr, int prot, int flags, int fd, off\_t offset);
3. void \*mmap(void \*addr, size\_t length, int prot, int flags, int fd, off\_t offset);
4. void \*mmap(size\_t length, int prot, int flags, int fd, off\_t offset);