CS314: Lecture Note (Lecture #10, February 8, 2024)

1. **Ask students to come forward and pick up:**

   - Attendance card

2. **Announcements:**

   - Quiz #5 is scheduled today (10 to 15 minutes at the end)

3. **Process deadlock**

   - Process_Deadlock.ppt

4. **The suggested Project #1 base structure**

Shared Memory

int reader_counter;	// the reader counter, <u>initialized by '0'</u>
char msg[MAX_MSG_SIZE];	// the memory space for a message

Semaphores

sem MUTEX1;	// a mutex semaphore (initialized by '1')
sem MUTEX2;	// a mutex semaphore (initialized by '1')

Writer Process

```
for (i = 0; i < NUM_REPEATS; i++)
{
    A = generate_message(....);

    wait (MUTEX1);

    write_to_shared_memory(msg, A);

    signal(MUTEX1);

    delay_time = rnd();
    delay(delay_time);
}
```

Reader Process

```
while (TRUE)
{
    wait(MUTEX2);
    reader_counter = reader_counter + 1;
    if (reader_counter == 1)
      {  wait(MUTEX1);  }
    signal(MUETX2);

    B = read_from_shared_memory (msg);

    wait(MUTEX2);
    reader_counter = reader_counter - 1;
    if (reader_counter == 0)
    {  signal (MUETX1);  }
    signal(MUTEX2);

    display_the_message(B);

    delay_time = rnd();
    delay(delay_time);
}
```

5. **Quiz #5 (10 to 15 minutes)**

   - A timekeeper wanted