Why do I need to learn OS?

The following are a few examples:

1. Provide various services to “the programs in execution” (i.e., “processes”), such as:
   (a) Process (program) synchronization
      - In MS Word, how the main program and the spell-checker synchronize?
      - In a networked OS, how simultaneous on-line transactions from multiple ATM stations can be handled at a central computer without corrupting customer account balance?
   (b) Prevent process deadlocking
      - Many machines are controlled by a computer system (aircraft auto-pilot, equipment control, reaction control system (RCS) for satellites, and etc.) today. If the processes on board freeze each other (i.e., “added-locked”), that will cause very serious consequences.

2. Managing processing resources in a computer system
   - Process scheduling – especially for “real-time systems”
     Note: Real-time systems are the computer (or hardware) systems that have specific time requirement for each task to be executed (and completed).

3. Security
   (a) User authentication and authorization
   (b) Protection of data while programs are running in memory
   (c) “Boot-sector viruses” – the most fatal viruses. Once your PC is infected by a boot sector virus, I suggest you to wipe out everything in your PC and re-install everything (i.e., don’t even think about virus removers – since none of them will guarantee).