1. List and briefly define the four main elements of a computer.
2. Suppose the hypothetical processor of Figure 1.3 also has two I/O instructions:

   0011 = Load AC from I/O

   0111 = Store AC to I/O

   In these cases, the 12-bit address identifies a particular external device. Show the program execution (using format of Figure 1.4) for the following program:

   1. Load AC from device 5.
   2. Add contents of memory location 940.
   3. Store AC to device 6.

   Assume that the next value retrieved from device 5 is 3 and that location 940 contains a value of 2.
3. What are three objectives of an OS design?
4. What is the purpose of system calls, and how do system calls relate to the OS and to the concept of dual-mode (kernel-mode and user-mode) operation?
5. What is swapping and what is its purpose?
6. The following state transition table is a simplified model of process management, with the labels representing transitions between states of READY, RUN, BLOCKED, and NONRESIDENT.

	READY	RUN	BLOCKED	NONRESIDENT
READY	-	1	-	5
RUN	2	-	3	-
BLOCKED	4	-	-	6

   Give an example of an event that can cause each of the above transitions. Draw a diagram if that helps