Chapter 2

5. Define three types of user-mode to kernel-mode transfers.

6. Define four types of kernel-mode to user-mode transfers.

7. Most hardware architectures provide an instruction to return from an interrupt, such as iret. This instruction switches the mode of operation from kernel-mode to user-mode.

   a) Explain where in the operating system this instruction would be used.

   b) Explain what happens if an application program executes this instruction.

Chapter 3

10. What is the output of the following programs? (Please try to solve the problem without compiling and running the programs.)

```
// Program 1
main () {
      int val = 5;
      int pid;


      if (pid = fork ())
            wait (pid );
      val++;
      printf ("%d\n", val);
      return val;

}
```

```
// Program 2:
main () {
      int val = 5;
      int pid;
      if (pid = fork ())
            wait (pid );
      else
            exit (val);
      val++;
      printf ("%d\n", val);
      return val;

}
```