Com S 352

Assignment 2

Due: September 15, 2017

3.8 (15) Describe the differences among short-term, medium-term, and long-term scheduling.

3.9(10) Describe the actions taken by a kernel to context-switch between processes.

3.12(25) Including the initial parent process, how many processes are created by the program shown in Figure Figure 3.32?

```
1. #include <stdio.h>
2. #include <unistd.h>
3. int main()
4. { int i;
5. for (i = 0; i < 4; i++)
6. fork();
7. return 0;
8. }
```

Figure 3.32 How many processes are created?

3.14(25) Using the program in Figure Figure 3.34, identify the values of pid at lines A, B, C, and D. (Assume that the actual pids of the parent and child are 2600 and 2603, respectively.)

```
1. #include <sys/types.h>
2. #include <stdio.h>
3. #include <unistd.h>
4. int main()
5. {pid_t pid, pid1;
6. /* fork a child process */
7. pid = fork();
8. if (pid < 0) { /* error occurred */
9. fprintf(stderr, "Fork Failed");
10. return 1;
11. }else if (pid == 0) { /* child process */
12. pid1 = getpid();
13. printf("child: pid = %d",pid); /* A */
14. printf("child: pid1 = %d",pid1); /* B */
15. }else { /* parent process */
16. pid1 = getpid();
17. printf("parent: pid = %d",pid); /* C */
18. printf("parent: pid1 = %d",pid1); /* D */
19. wait(NULL);
20. }
21. return 0;
22. }
```

Figure 3.34 What are the pid values?

3.17(25) Using the program shown in Figure 3.35, explain what the output will be at lines X and Y.

```
1.  #include <sys/types.h>
2.  #include <stdio.h>
3.  #include <unistd.h>
4.  #define SIZE 5
5.  int nums[SIZE] = {0,1,2,3,4};
6.  int main()
7.  {
8.  int i;
9.  pid_t pid;
10. pid = fork();
11. if (pid == 0) { for (i = 0; i < SIZE; i++) { nums[i] *= -i;
12. printf("CHILD: %d ",nums[i]); /* LINE X */
13. }
14. }else if (pid > 0) { wait(NULL);
15. for (i = 0; i < SIZE; i++)
16. printf("PARENT: %d ",nums[i]); /* LINE Y */
17. }
18. return 0;
19. }
```

Figure 3.35 What output will be at Line X and Line Y?