COM S 352

Assignment 2

Due: January 26, 2018

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

3.12 Including the initial parent process, how many processes are created by the program shown in

Figure3.32?

```
#include <stdio.h>
#include <unistd.h>
int main()
{
        int i;
        for (i = 0; i < 4; i++)
        fork();
        return 0;
}
```

Figure 3.32 How many processes are created?

3.15 Give an example of a situation in which ordinary pipes are more suitable than named pipes and an example of a situation in which named pipes are more suitable than ordinary pipes.

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

```
#include <sys/types.h>
#include <stdio.h>
#include <unistd.h>
#define SIZE 5
int nums[SIZE] = {0,1,2,3,4};
int main()
{
        int i;
        pid t pid;
        pid = fork();
        if (pid == 0) { for (i = 0; i < SIZE; i++) { nums[i] *= -i;
        printf("CHILD: %d ",nums[i]); /* LINE X */
        }
}
        else if (pid > 0) { wait(NULL);
        for (i = 0; i < SIZE; i++)
        printf("PARENT: %d ",nums[i]); /* LINE Y */
        }
        return 0;
}
```

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

3.18 What are the benefits and the disadvantages of each of the following? Consider both the system level and the programmer level.

a. Synchronous and asynchronous communication

b. Automatic and explicit buffering

c. Send by copy and send by reference

d. Fixed-sized and variable-sized messages