EECE.4810/EECE.5730: Operating Systems

Spring 2017

Lecture 2: Key Questions
January 23, 2017

1. Explain the basic characteristics of a process. What is the difference between a process and a program?

2. What actions can the operating system take to manage processes?

3. What are the key components of a process?

4. What information does a process store in memory, and how is that information organized?

5. What are the possible states in which a process can exist?

6. How does the operating system track all necessary information about a process? When does that information get updated?

7. Describe the different queues used to manage process scheduling.

8. Describe the basics of how and why a process transitions from one queue to another.

9. What is a context switch?

10. Describe the general steps in process creation and the system calls commonly used to accomplish these tasks.

11. Describe the operation of this basic program, which ultimately represents two separate processes.

```
#include <sys/types.h>
#include <stdio.h>
#include <unistd.h>

int main()
{
pid_t pid;

    /* fork a child process */
    pid = fork();

    if (pid < 0) { /* error occurred */
       fprintf(stderr, "Fork Failed");
       return 1;
    }
    else if (pid == 0) { /* child process */
       execlp("/bin/ls","ls",NULL);
    }
    else { /* parent process */
       /* parent will wait for the child to complete */
       wait(NULL);
       printf("Child Complete");
    }

    return 0;
}
```

12. Describe how processes are terminated.