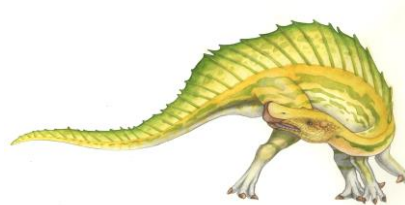




Programming Assignment 1

- Implement a simple UNIX shell
 - Can be done only on Linux, UNIX, or Mac OS X system
 - Basic process
 - ▶ 1. The parent process reads what the user enters on the command line
 - ▶ 2. Create a separate child process that performs the command
 - ▶ 3. The parent process waits for the child to exit before repeating Steps 1 and 2.
 - Task 1: Creating the child process and executing the command in the child
 - ▶ Modify the main() function of simple-shell.c so that a child process is forked and executes the command specified by the user
 - Task 2: Modifying the shell to provide a history feature
 - ▶ Modify simple-shell.c so that it outputs the list of 10 recent commands previously performed

```
osh> history
6 ps
5 ls -l
4 top
3 cal
2 who
1 date
osh>
```

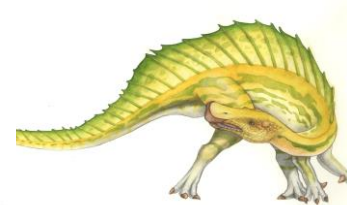




Programming Assignment 1 (Cont.)

simple-shell.c

```
1  /**
2   * Simple shell interface program.
3   *
4   * Operating System Concepts - Ninth Edition
5   * Copyright John Wiley & Sons - 2013
6   */
7
8  #include <stdio.h>
9  #include <unistd.h>
10
11
12
13  #define MAX_LINE      80 /* 80 chars per line, per command */
14
15  int main(void)
16  {
17      char *args[MAX_LINE/2 + 1]; /* command line (of 80) has max of 40 arguments */
18      int should_run = 1;
19
20      int i, upper;
21
22      while (should_run){
23          printf("osh>");
24          fflush(stdout);
25
26          /**
27           * After reading user input, the steps are:
28           * (1) fork a child process
29           * (2) the child process will invoke execvp()
30           * (3) if command included &, parent will invoke wait()
31           */
32      }
33
34      return 0;
35  }
```





Programming Assignment 1 (Cont.)

- Due date
 - 11:59 PM, Mar. 29 (20% penalty per day after deadline)
- Weight
 - 5% \approx 17 pts (out of 100) of an exam (i.e., midterm or final)
- Where to submit
 - I-Class website





In case you have to install Linux

- Install VirtualBox from:
 - <https://www.virtualbox.org/>

- Download Linux image file from the link below and follow the instructions
 - <http://people.westminstercollege.edu/faculty/ggagne/osc/vm/index.html>





Basic Linux (or Unix) commands

- About navigation of file structures
 - pwd, ls, cd, mkdir, rmdir, rm, rm -rf /, touch, man, cp, mv, locate, which
- About viewing (or editing) file contents
 - echo, cat, vi
- About authentication
 - sudo, useradd, userdel, passwd, chown, chmod, chgrp
- Ctrl + C: kill a running process
- Ctrl + Z: suspend a process (can be resumed again)

