Lecture Assignment 9

Due date: 20-Nov-2023

Spondon Sayeed

110101278

Select two questions based on your preference!

**How to retrieve the list of the following type of processes:**

**a. Orphans**   
 To identify orphan processes, you can query the child processes of the init process.

Ex: ps -eo pid,ppid,cmd | awk '$2 == 1 {print $1, $3}'

**b. Zombies**   
 To identify zombies, you can query the process table for processes with a status of 'Z'.

Ex: ps aux | awk '$8 == "Z" {print $2, $11}'

**c. Blocked**

You can identify them by analyzing the process state information in the process table.

Ex: ps aux | awk '$8 ~ /D/ {print $2, $11}'

**d. Ready**

use tools like ps or system calls like getrusage to get information about processes in the ready queue.  
Ex: ps aux | awk '$8 ~ /R/ {print $2, $11}'

**e. Running**

You can identify them by examining the process state information or using tools like ps or top.

Ex: ps aux | awk '$8 ~ /R/ {print $2, $11}'

**How can a process have a grandchild? Explain by an example.**

A process can have a grandchild by forking twice. After the initial fork, both the parent and the child processes can independently fork again, creating a grandchild for each. Each process will have a unique process ID (PID) and its own address space.

int main() {

pid\_t child\_pid, grandchild\_pid;

child\_pid = fork();

if (child\_pid == 0) {

grandchild\_pid = fork();

}

return 0;

}