Systems Programming Assignment 4 B07902129 何政勳

(a)1. Parent process can retrieve the exit status of children.

2. Each child process will have unique process id before parent retrieving it.

(b) Copy-on-write reduces the time of copying all the data for the child process, and also reduces the usage of virtual memory.

(c) // strintToInt is a function that transfers a string to an integer

pid\_t double\_fork(){

int pfd[2];

pid\_t childPID;

childPID = vfork();

if (childPID == 0){

pid\_t grandChildPID:

grandChildPID = fork();

if (grandChildPID == 0){

// grand child

close(pfd[0]);

close(pfd[1]);

}

else {

char buf[16];

sprintf(buf, "%d", grandChildPID);

write(pfd[1], buf, strlen(buf));

close(pfd[1]);

return 0;

}

}

else {

char buf[16];

int status;

pid\_t grandChildPID;

read(pfd[0], buf, 16);

grandChildPID = stringToInt(buf);

close(pfd[0]);

return grandChildPID;

}