Answers for section2:Processes

AbnerZheng

2016/09/04

1 Warmup

1.1 Hello World

It will print:

Hello World: 90210 Hello World: 0

or:

Hello World: 0 Hello World: 90210

2 Problems

2.1 Forks

1) It will create 8 processes.

2) It will crash the system.

2.2 Stack Allocation

Stuff is 7

Stuff is 7

2.3 Heap Allocation

Stuff is 7

Stuff is 7

2.4 Slightly More Complex Heap Allocation

0123456789

0123456700

2.5 Simple Wait

1)

It will print:

Hello World

: 0

Hello World

: 90210

2)

```c
#include "stdio.h"
#include "unistd.h"
#include "stdlib.h"
#include "sys/wait.h"
#include "sys/types.h"
int main(void) {
  pid_t pid = fork();
  pid_t pr;
  int status;
  if (pid != 0) { // excute by parent process
    do{
      pr = waitpid(pid, &status,WNOHANG);
    }while(pr==0);
  }
  printf("Hello World\n: %d\n", pid);
  return 0;
}
```

2.6 Fork and File Descriptors

it will print:

Hello World

2.7   Exec+Fork

```c
#include "stdio.h"
#include "unistd.h"
#include "stdlib.h"
#include "sys/types.h"

int main(void){
    char** argv = (char**) malloc(3*sizeof(char*)
);
    argv[0] = "/bin/ls";
    argv[1] = ".";
    argv[2] = NULL;
    for(int i = 0; i< 10; i++){
        printf("%d\n", i);
        if(i == 3){
            pid_t pi = fork();
            if(pi == 0){
                execv("/bin/ls", argv);
            }
        }
    }
    return 0;
}
```