

OS Program1

開發環境：Ubuntu20.04

1.Using fork and control the order

```
1  int main(){
2      pid_t q;
3      cout << "before fork" << endl;
4      q = fork();
5      if(q<0){
6          cout << "error" << endl;
7      }
8      else if(q == 0){
9          cout << "child having pid " << getpid() << endl;
10         cout << "My parent's pid is " << getppid() << endl;
11     }
12     else{
13         // wait(NULL);
14         // sleep(1);
15         cout << "I am parent having pid " << getpid() << endl;
16         cout << "My Child's pid is " << q << endl;
17     }
18     cout << "common" << endl;
19 }
```

result

without wait (command掉wait(NULL))

```
before fork
I am parent having pid 3798
child having pid 3799
My Child's pid is 3799
My parent's pid is 3798
common
common
```

with wait

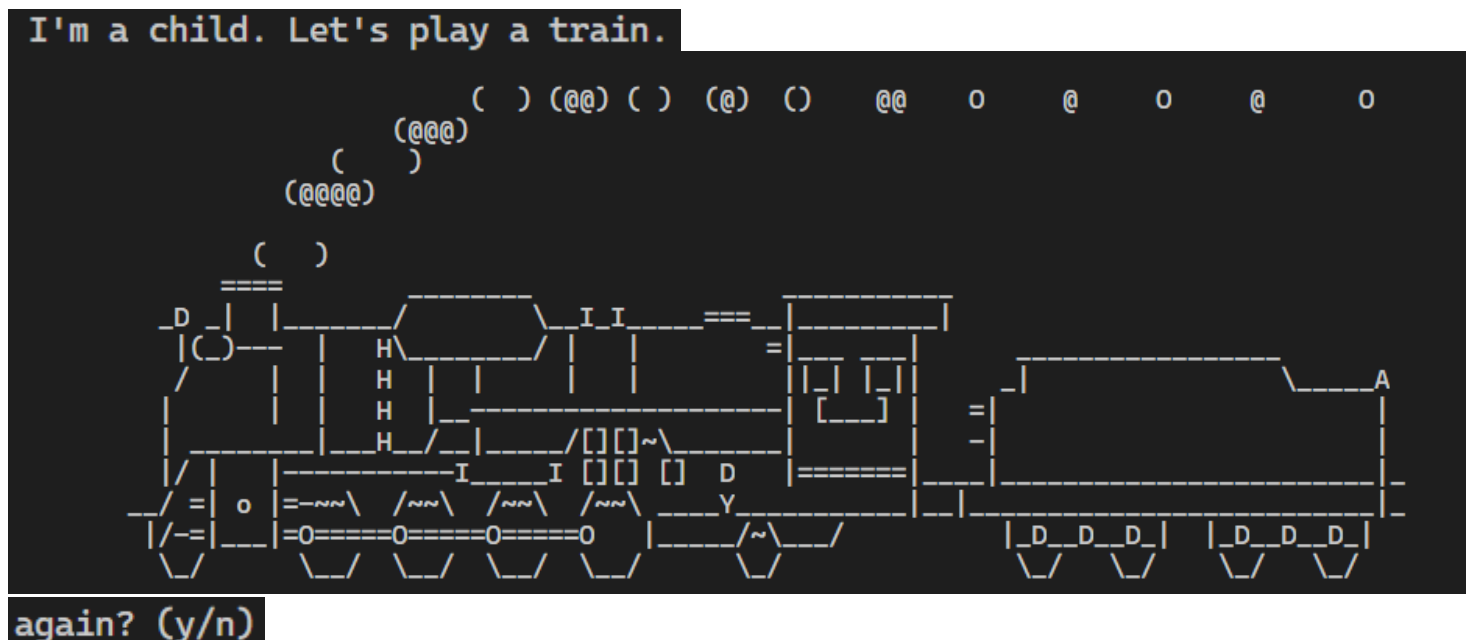
```
before fork
child having pid 3699
My parent's pid is 3698
common
I am parent having pid 3698
My Child's pid is 3699
common
```

實作功能 _ 讓小火車重複跑在terminal上

```
1 | sudo apt-get install sl
```

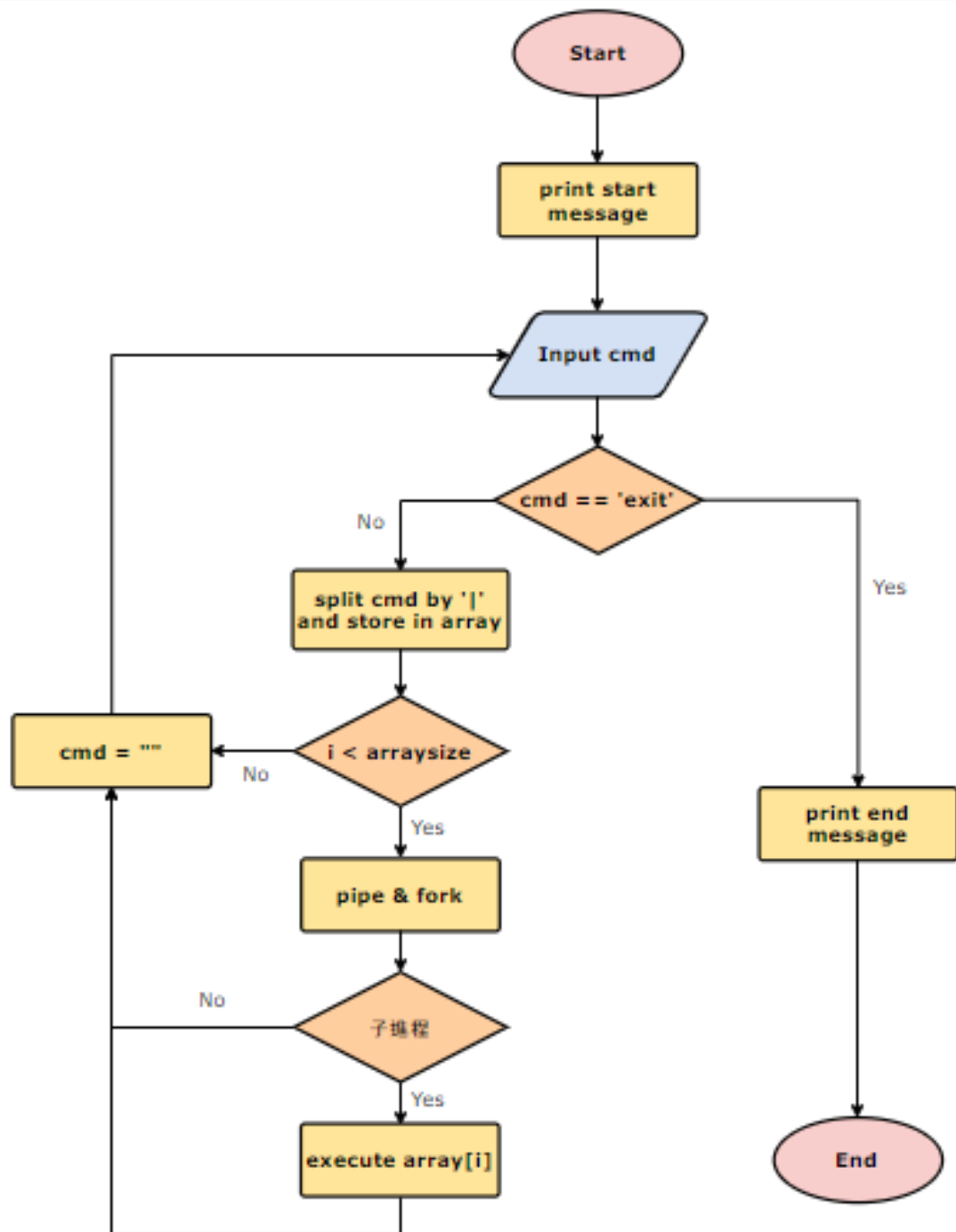
```
1 | bool again = true;
2 | char check;
3 | int main(){
4 |     pid_t q;
5 |     while(again){
6 |         q = fork();
7 |         if(q<0){
8 |             cout << "error" << endl;
9 |         }
10 |        else if(q == 0){
11 |            char *argv[] = {(char*)"sl", NULL};
12 |            cout << "I'm a child. Let's play a train." << endl;
13 |            sleep(5);
14 |            execvp("sl", argv);
15 |        }
16 |        else{
17 |            waitpid(q, NULL, 0);
18 |            cout << "again? " << "(y/n)" << endl;
19 |            cin >> check;
20 |            if(check == 'y'){
21 |                again = true;
22 |            }else{
23 |                again = false;
24 |            }
25 |        }
26 |    }
27 | }
```

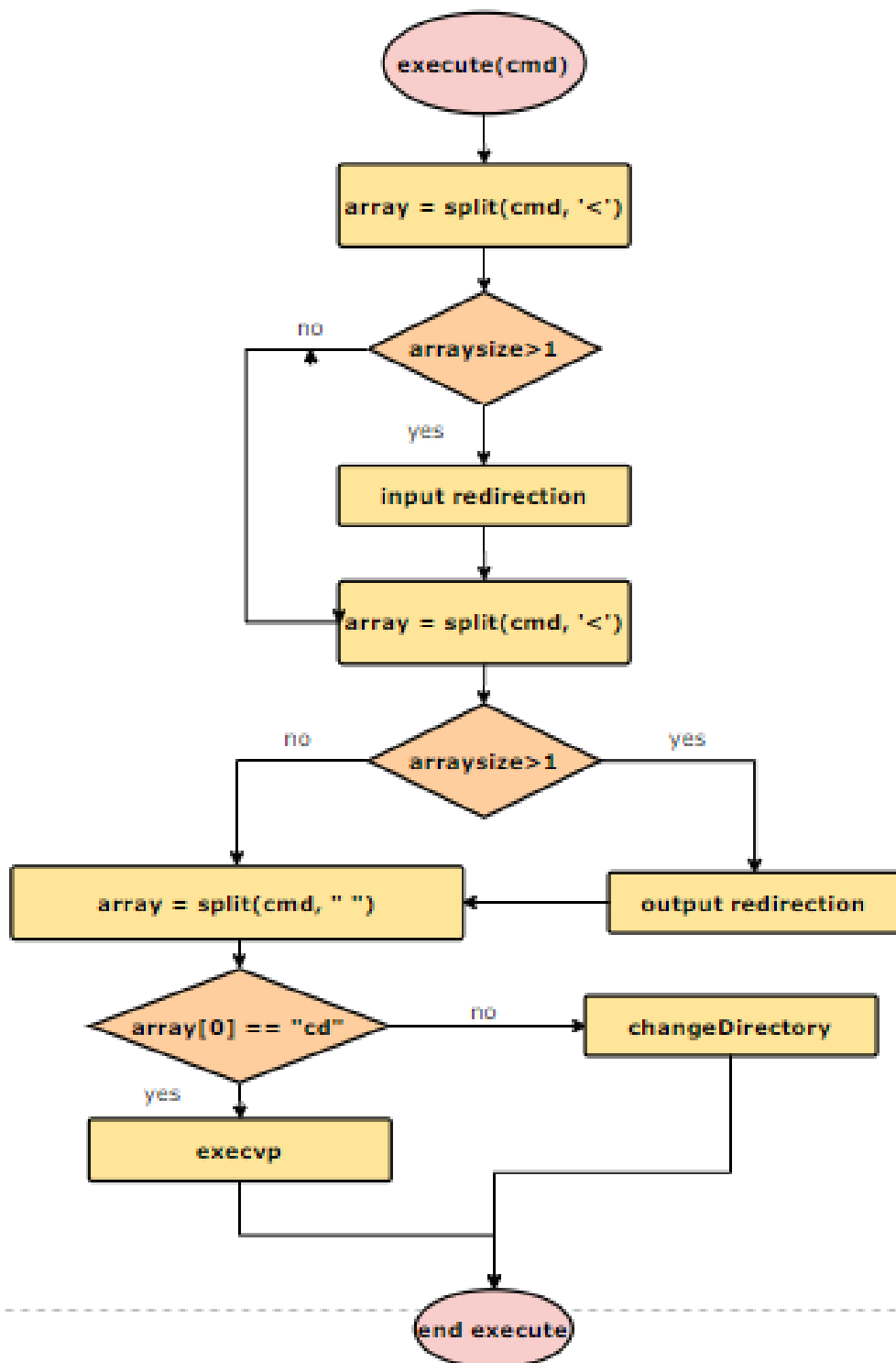
result



2.Shell

程式邏輯





functions

```
1 void execute(string cmd){
2     確認輸入的cmd裡有沒有'<'、'>'，如果有，則split(cmd, < or >)，
3     並執行redirection，然後重組cmd(讓cmd裡沒有< or >)。
4     vector<string> argstr = split(cmd, ' ')
5     確認argstr[0]是不是"cd"，如果是則呼叫changeDirectory(argstr)。
6     不是的話，將整個argstr轉成char_array，然後呼叫execvp執行命令。
7 }
8
9 void changeDirectory(vector<string> args){
10     如果只有cd 則轉到HOME目錄。
11     如果cd後面的目錄不存在，則輸出 No Such Directory
12     其餘正常進入目錄。
13 }
14
15 char **char_array(vector<string> parts){
16     將vector內的string轉成char_array
17 }
18
19 vector<string> split(string line, string separator){
20     將輸入的string，以separator為分界，弄成一個string array
21 }
22
23 string trim(string input){
24     去空格
25 }
26
```