#include <stdio.h>

#include <unistd.h>

#include <pthread.h>

pthread\_mutex\_t chopstick[5];

void\* tfn(void\* arg)

{

int i = (int)arg;

while (1) {

if (i % 2 == 0) //偶数哲学家，先右后左。

{

printf("哲学家%d开始思考...\n", i);

sleep(4);

printf("哲学家%d是偶数哲学家，先拿右筷子后拿左筷子\n", i);

pthread\_mutex\_lock(&chopstick[(i + 1) % 5]);

pthread\_mutex\_lock(&chopstick[i]);

printf("哲学家%d开吃...\n", i);

sleep(3);

pthread\_mutex\_unlock(&chopstick[(i + 1) % 5]);

pthread\_mutex\_unlock(&chopstick[i]);

}

else //奇数哲学家，先左后右。

{

printf("哲学家%d开始思考...\n", i);

sleep(3);

printf("哲学家%d是奇数哲学家，先拿左筷子后拿右筷子\n", i);

pthread\_mutex\_lock(&chopstick[i]);

pthread\_mutex\_lock(&chopstick[(i + 1) % 5]);

printf("哲学家%d开吃...\n", i);

sleep(3);

pthread\_mutex\_unlock(&chopstick[i]);

pthread\_mutex\_unlock(&chopstick[(i + 1) % 5]);

}

}

}

int main()

{

pthread\_t pth[5];

//初始化五根筷子

for (int i = 0; i < 5; i++) {

pthread\_mutex\_init(&chopstick[i], NULL);

}

//创建5个哲学家

for (int i = 0; i < 5; i++) {

pthread\_create(&pth[i], NULL, tfn, (void\*)i);

}

//回收子线程

for (int i = 0; i < 5; i++) {

pthread\_join(pth[i], NULL);

}

//退出

pthread\_exit(NULL);

}