

### Code 8

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#include <stdio.h>

#include <semaphore.h>

#include <pthread.h>

#include <unistd.h>


#define N 5

sem_t chopstick[N];

pthread_t philosopher[N];


void *dine(void *num) {
    int id = *(int *)num;

    printf("Philosopher %d is thinking\n", id);

    sem_wait(&chopstick[id]);

    sem_wait(&chopstick[(id+1)%N]);

    printf("Philosopher %d is eating\n", id);

    sleep(1);

    sem_post(&chopstick[id]);

    sem_post(&chopstick[(id+1)%N]);

    printf("Philosopher %d finished eating\n", id);

    return NULL;
}


int main() {

    int i, ids[N];

    for(i=0;i<N;i++) sem_init(&chopstick[i],0,1);

    for(i=0;i<N;i++) {

        ids[i]=i;
```

```
        pthread_create(&philosopher[i],NULL,dine,&ids[i]);
    }
    for(i=0;i<N;i++)
        pthread_join(philosopher[i],NULL);
    for(i=0;i<N;i++) sem_destroy(&chopstick[i]);
    return 0;
}
```