# Topic 12: 12. Design a C program to simulate the concept of Dining-Philosophers problem.

#include <stdio.h>  
#include <pthread.h>  
#include <semaphore.h>  
  
sem\_t chopstick[5];  
  
void\* philosopher(void\* num) {  
 int id = \*(int\*)num;  
 sem\_wait(&chopstick[id]);  
 sem\_wait(&chopstick[(id+1)%5]);  
 printf("Philosopher %d is eating\n", id);  
 sem\_post(&chopstick[id]);  
 sem\_post(&chopstick[(id+1)%5]);  
 return NULL;  
}  
  
int main() {  
 pthread\_t tid[5];  
 int i, a[5];  
 for (i = 0; i < 5; i++)  
 sem\_init(&chopstick[i], 0, 1);  
 for (i = 0; i < 5; i++) {  
 a[i] = i;  
 pthread\_create(&tid[i], NULL, philosopher, &a[i]);  
 }  
 for (i = 0; i < 5; i++)  
 pthread\_join(tid[i], NULL);  
 return 0;  
}