PROGRAM NUMBER :8

AIM:
Write a program to simulate the working of the dining philosopher's problem.

PROGRAM

```
ng@ng-TravelMate-5742:~$ cd system
ng@ng-TravelMate-5742:~/system$ cat dining.c
#include<stdio.h>
#include<stdlib.h>
#include<pthread.h>
#include<semaphore.h>
#include<unistd.h>

sem_t room;
sem_t chopstick[5];

void * philosopher(void *);
void eat(int);
int main()
{
int i,a[5];
pthread_t tid[5];
sem_init(&room,0,4);
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,(void *)&a[i]);
}
for(i=0;i<5;i++)
pthread_join(tid[i],NULL);
}
void * philosopher(void * num)
{
 int phil=*(int *)num;
sem_wait(&room);
printf("\nPhilosopher %d has entered room",phil);
sem_wait(&chopstick[phil]);
sem_wait(&chopstick[(phil+1)%5]);
eat(phil);
sleep(2);
printf("\nPhilosopher %d has finished eating",phil);
sem_post(&chopstick[(phil+1)%5]);
sem_post(&chopstick[phil]);
sem_post(&room);
}
void eat(int phil)
{
printf("\nPhilosopher %d is eating",phil);
}
```

OUTPUT


```
Philosopher 0 has entered room
Philosopher 0 is eating
Philosopher 1 has entered room
Philosopher 2 has entered room
Philosopher 2 is eating
Philosopher 4 has entered room
Philosopher 2 has finished eating
Philosopher 0 has finished eating
Philosopher 1 is eating
Philosopher 3 has entered room
Philosopher 4 is eating
Philosopher 1 has finished eating
Philosopher 4 has finished eating
Philosopher 3 is eating
Philosopher 3 has finished eating


...Program finished with exit code 0
Press ENTER to exit console.
```

RESULT

Program is executed successfully and output is obtained.

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