

EXP -11 :-

PROGRAM :-

```
#include <stdio.h>

#include <stdlib.h>

#include <pthread.h>

#include <semaphore.h>

#include <unistd.h>

#define NUM_PHILOSOPHERS 5

sem_t forks[NUM_PHILOSOPHERS];

void* philosopher(void* num) {

    int id = *(int*)num;

    while (1) {

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

        sleep(1);

        sem_wait(&forks[id]);

        sem_wait(&forks[(id + 1) % NUM_PHILOSOPHERS]);

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

        sleep(1);

        sem_post(&forks[id]);

        sem_post(&forks[(id + 1) % NUM_PHILOSOPHERS]);

    }

}

int main() {

    pthread_t philosophers[NUM_PHILOSOPHERS];

    int philosopher_ids[NUM_PHILOSOPHERS];

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

        sem_init(&forks[i], 0, 1);

        philosopher_ids[i] = i;

        pthread_create(&philosophers[i], NULL, philosopher, &philosopher_ids[i]);

    }

    for (int i = 0; i < NUM_PHILOSOPHERS; i++) {
```

```

        pthread_join(philosophers[i], NULL);
    }
    for (int i = 0; i < NUM_PHILOSOPHERS; i++) {
        sem_destroy(&forks[i]);
    }
    return 0;
}

```

OUTPUT :-

```

/rbin/ld: /tmp/cctVYriG.o: in function `philosopher':
main.c:(.text+0x46): undefined reference to `sem_wait'
/rbin/ld: main.c:(.text+0x85): undefined reference to `sem_wait'
/rbin/ld: main.c:(.text+0xba): undefined reference to `sem_post'
/rbin/ld: main.c:(.text+0xf9): undefined reference to `sem_post'
/rbin/ld: /tmp/cctVYriG.o: in function `main':
main.c:(.text+0x130): undefined reference to `sem_init'
/rbin/ld: main.c:(.text+0x173): undefined reference to `pthread_create'
/rbin/ld: main.c:(.text+0x19d): undefined reference to `pthread_join'
/rbin/ld: main.c:(.text+0x1c7): undefined reference to `sem_destroy'
ERROR!
collect2: error: ld returned 1 exit status

```

```

=== Code Exited With Errors ===

```