19.Design a C program to simulate the concept of Dining-Philosophers problem

**PROGRAM:**

**#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);**

**}**

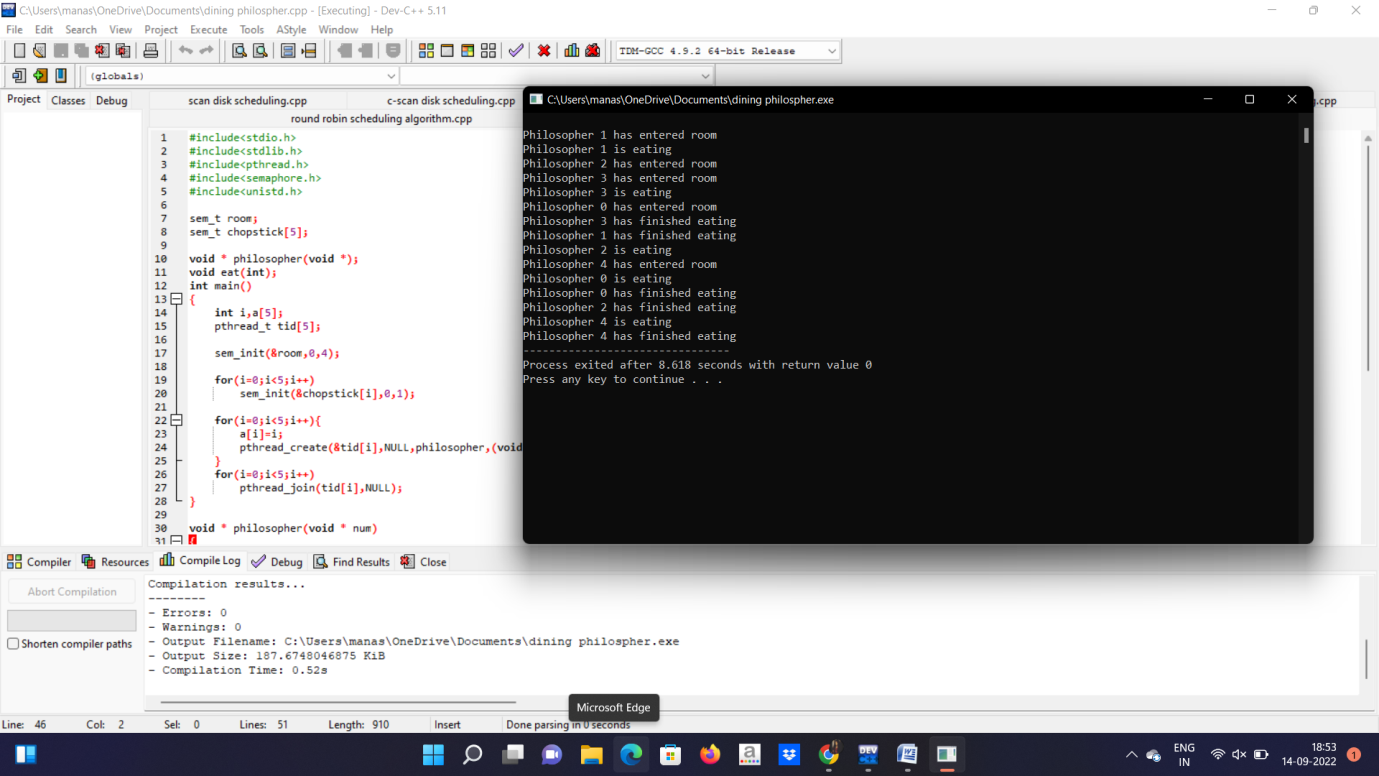
**void eat(int phil)**

**{**

**printf("\nPhilosopher %d is eating",phil);**

**}**

**OUTPUT:**

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