LAB 06

Course: CT-353-Operating Systems

Department: BCIT (Specialisation in Data Science)

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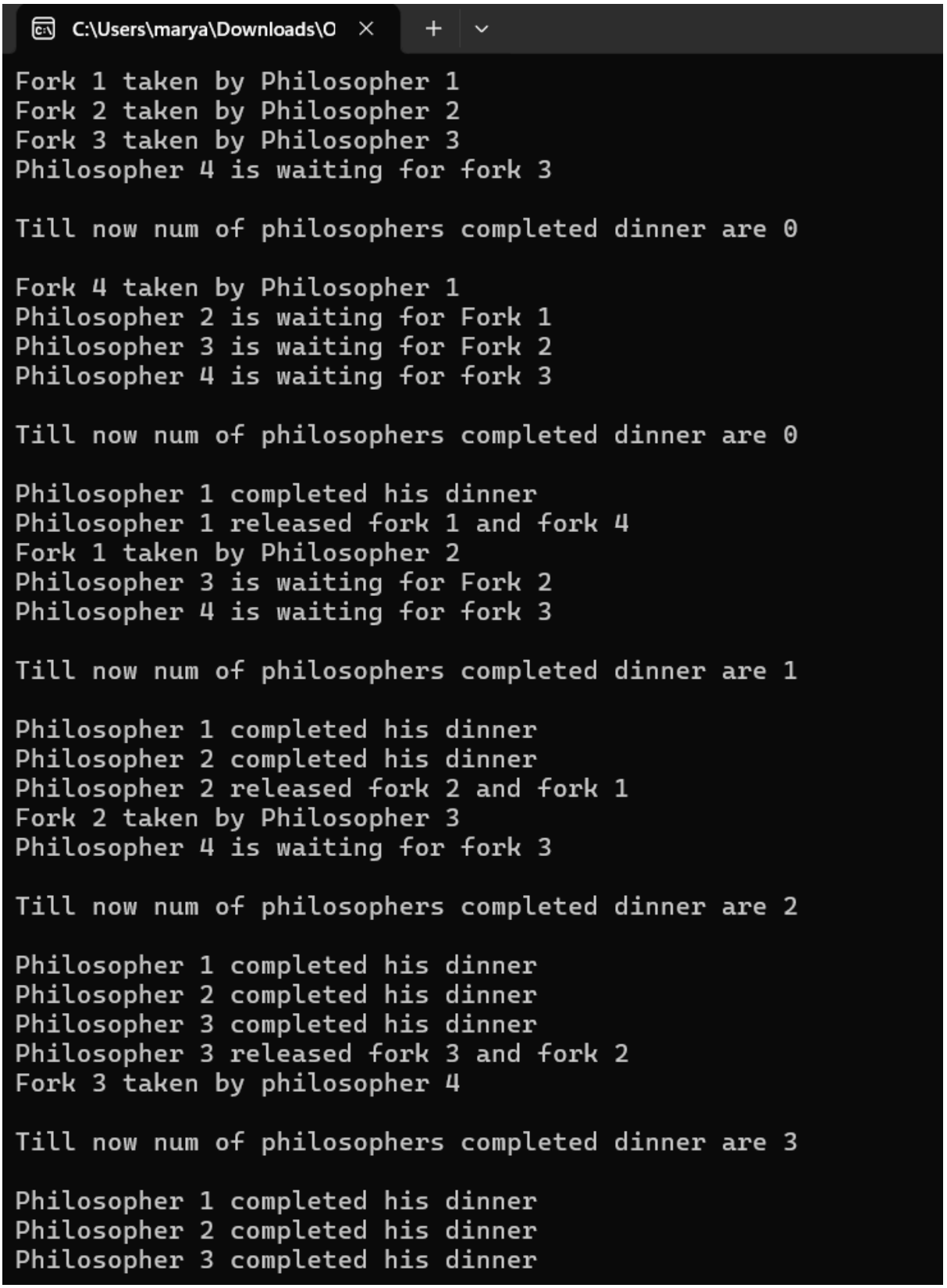
1) Implement the above code and paste the screen shot of the output.

OS_LAB_07.cpp

```cpp
#include<stdio.h>
#define n 4

int completedPhilo = 0, i;

struct fork {
    int taken;
} ForkAvil[n];

struct philosp {
    int left;
    int right;
} Philostatus[n];

void goForDinner(int philNE) {
    if(Philostatus[philNE].left==10 && Philostatus[philNE].right==10)
        printf("Philosopher %d completed his dinner\n",philNE+1);
    else if(Philostatus[philNE].left==1 && Philostatus[philNE].right==1) {
        printf("Philosopher %d completed his dinner\n",philNE+1);
        Philostatus[philNE].left = Philostatus[philNE].right = 10;
        int otherFork = philNE-1;
        if(otherFork== -1)
            otherFork=(n-1);
        ForkAvil[philNE].taken = ForkAvil[otherFork].taken = 0;
        printf("Philosopher %d released fork %d and fork %d\n",philNE+1,philNE+1,otherFork+1);
        completedPhilo++;
    }
    else if(Philostatus[philNE].left==1 && Philostatus[philNE].right==0) {
        if(philNE==(n-1)) {
            if(ForkAvil[philNE].taken==0) {
                ForkAvil[philNE].taken = Philostatus[philNE].right = 1;
                printf("Fork %d taken by philosopher %d\n",philNE+1,philNE+1);
            } else {
                printf("Philosopher %d is waiting for fork %d\n",philNE+1,philNE+1);
            }
        } else {
            int dupphilID = philNE;
            philNE-=1;
            if(philNE== -1)
                philNE=(n-1);
            if(ForkAvil[philNE].taken == 0) {
                ForkAvil[philNE].taken = Philostatus[dupphilID].right = 1;
                printf("Fork %d taken by Philosopher %d\n",philNE+1,dupphilID+1);
            } else {
                printf("Philosopher %d is waiting for Fork %d\n",dupphilID+1,philNE+1);
            }
        }
    }
    else if(Philostatus[philNE].left==0) {
        if(philNE==(n-1)) {
            if(ForkAvil[philNE-1].taken==0) {
                ForkAvil[philNE-1].taken = Philostatus[philNE].left = 1;
                printf("Fork %d taken by philosopher %d\n",philNE,philNE+1);
            } else {
                printf("Philosopher %d is waiting for fork %d\n",philNE+1,philNE);
            }
        } else {
            if(ForkAvil[philNE].taken == 0) {
                ForkAvil[philNE].taken = Philostatus[philNE].left = 1;
                printf("Fork %d taken by Philosopher %d\n",philNE+1,philNE+1);
            } else {
                printf("Philosopher %d is waiting for Fork %d\n",philNE+1,philNE+1);
            }
        }
    }
}

int main() {
    for(i=0;i<n;i++)
        ForkAvil[i].taken=Philostatus[i].left=Philostatus[i].right=0;

    while(completedPhilo<n) {
        for(i=0;i<n;i++)
            goForDinner(i);
        printf("\nTill now num of philosophers completed dinner are %d\n\n",completedPhilo);
    }

    return 0;
}
```

Output:


C:\Users\marya\Downloads\O
Fork 1 taken by Philosopher 1
Fork 2 taken by Philosopher 2
Fork 3 taken by Philosopher 3
Philosopher 4 is waiting for fork 3
Till now num of philosophers completed dinner are 0
Fork 4 taken by Philosopher 1
Philosopher 2 is waiting for Fork 1
Philosopher 3 is waiting for Fork 2
Philosopher 4 is waiting for fork 3
Till now num of philosophers completed dinner are 0
Philosopher 1 completed his dinner
Philosopher 1 released fork 1 and fork 4
Fork 1 taken by Philosopher 2
Philosopher 3 is waiting for Fork 2
Philosopher 4 is waiting for fork 3
Till now num of philosophers completed dinner are 1
Philosopher 1 completed his dinner
Philosopher 2 completed his dinner
Philosopher 2 released fork 2 and fork 1
Fork 2 taken by Philosopher 3
Philosopher 4 is waiting for fork 3
Till now num of philosophers completed dinner are 2
Philosopher 1 completed his dinner
Philosopher 2 completed his dinner
Philosopher 3 completed his dinner
Philosopher 3 released fork 3 and fork 2
Fork 3 taken by philosopher 4
Till now num of philosophers completed dinner are 3
Philosopher 1 completed his dinner
Philosopher 2 completed his dinner
Philosopher 3 completed his dinner

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