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Department of Computer Science & Engineering

Programme Name: B.Tech

Semester: VII

Branch: Computer Science & Engg.

Course Code: CS17201

Course Name: Distributed Systems (Lab)

Lab Assignment 3

Lab #	Name of Experiment
3	Simulate the functioning of Lamport's Logical Clock.

```
#include <stdio.h>

struct Event {
    int process_id;
    int logical_clock;
};

void incrementLogicalClock(int *logical_clock) {
    (*logical_clock)++;
}

int compareEvents(struct Event event1, struct Event event2) {
    if (event1.logical_clock < event2.logical_clock) {
        return -1;
    } else if (event1.logical_clock > event2.logical_clock) {
        return 1;
    } else {
        if (event1.process_id < event2.process_id) {
            return -1;
        } else if (event1.process_id > event2.process_id) {
            return 1;
        } else {
            return 0;
        }
    }
}

int main() {
    struct Event eventA, eventB;
    int logicalClockA = 0;
    int logicalClockB = 0;
```

```

eventA.process_id = 1;
eventA.logical_clock = logicalClockA;
incrementLogicalClock(&logicalClockA);

eventB.process_id = 2;
eventB.logical_clock = logicalClockB;
incrementLogicalClock(&logicalClockB);

int result = compareEvents(eventA, eventB);

if (result < 0) {
    printf("Event A happened before Event B.\n");
} else if (result > 0) {
    printf("Event B happened before Event A.\n");
} else {
    printf("Event A and Event B are concurrent.\n");
}

return 0;
}

```

