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Motilal Nehru National Institute of TechnologyAllahabad Prayagraj-211004 [India]

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) {</pre>
        return -1;
    } else if (event1.logical_clock > event2.logical_clock) {
        return 1;
    } else {
        if (event1.process_id < event2.process_id) {</pre>
            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) {</pre>
       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;
Code File Edit Selection View Go Run Terminal Window Help
                                                              q.c — dis sys lab
       EXPLORER
                      ··· ome
                                                   C q2.c
                                                                                 C q.c
                                                                  C q3.c
     \checkmark DIS SYS LAB
                            as3 > C q.c
       > as1
       > as2
                                      return 0;

√ as3

        ≣ q
       C q.c
      HP
                            PROBLEMS
                                      TERMINAL
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                                                                                       Avinashs-MacBook-Air:dis sys lab anurag$ cd as3
                            Avinashs-MacBook-Air:as3 anurag$ gcc q.c -o q
                            Avinashs-MacBook-Air:as3 anurag$ ./q
(P)
                            Event A happened before Event B.
                            Avinashs-MacBook-Air:as3 anurag$
     > OUTLINE
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 Go Live
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