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Assignment # 04

Subject: Parallel Distributed Computing

Date: 6 Feburary, 2023

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Q:- Write a C program to create four threads and those Threads send message to each other?

Solution:

```c
#include   <stdio.h>
#include   <pthread.h>
#include   <string.h>


#define   NUMBER_OF_THREADS   4
#define   MESSAGE_LENGTH        100


char      message [NUMBER_OF_THREADS][MESSAGE-LENGTH];
pthread_mutex_t    message_mutex [NUMBER_OF_THREADS];


void   * Thread_communication ( void *thread_id) {

        int   tid  = *((int *) thread_id);
```

```c
int  next-id;
for (int i=1; i < NUMBER-OF-THREADS; i++) {
        next-id = (tid+i) % NUM_THREADS;
        pthread-mutex-lock(& message-mutex[next-tid]);
        sprintf (message [next-tid], "Hello from thread %d", tid);
        pthread_mutex-unlock(& message-mutex[next-tid]);
   }
   pthread-exit(NULL);

}


int    main() {

    pthread-t    threads [NUMBER-OF-THREADS];
    int i, rc;
    for (i = 0; i < NUMBER-OF-THREADS; i++) {

        rc = pthread_mutex_init( & message-mutex[t], NULL);
        if (rc) {
            printf("Error creating mutex %d \n", t);
            return 1;
        }
        rc = pthread-create(&threads[t], NULL, thread_function,
                                                   (void*)&t);
        if (rc) {
            printf("Error creating thread %d \n", t);
            return 1;
        }
   }
}
```

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~~for (t=0;~~

```
for (i =0;  i < NUMBER-OF- THREADS; i++) {

        pthread_join (threads [t], NULL);

        printf(" Thread %d  recieved message:
                     %s , %s, %s \n ",
                                        THREADS],
                t, message [(t+1) % NUMBER-OF-
          message [ (t+2), % NUMBER -OF- THREADS ],
          message [(t +3) % NUMBER-OF- THREADS]);

   }
     return 0;
}
```

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