**Experiment:5-Illustrate the concept of inter-process communication using message queue with a C program.**

Aim:
The aim of this program is to illustrate Inter-Process Communication (IPC) using Message Queues in C. A message queue allows processes to communicate by sending and receiving messages in a queue. One process sends a message to the queue, and another process retrieves it from the queue. The messages are stored in the kernel and are accessed using a key.
Procedure:

1. Create a Message Queue:
    - Use the msgget() system call to create or access a message queue. The queue is identified by a unique key.
2. Send Message to the Queue:
    - A sender process uses the msgsnd() system call to send a message to the queue. The message is added to the queue.
3. Receive Message from the Queue:
    - A receiver process uses the msgrcv() system call to receive a message from the queue. The receiver waits for a message to be available in the queue.
4. Remove the Message Queue:
    - After the processes finish communication, the message queue is removed using the msgctl() system call to free the resources.

Steps in the Program:

1. Sender Process: Sends a message to the message queue.
2. Receiver Process: Receives a message from the message queue.
3.

C Program Implementation:
Sender Program (writes message to message queue):

```
#include <stdio.h>
#include <stdlib.h>
#include <sys/ipc.h>
#include <sys/msg.h>
#include <string.h>

#define MSG_KEY 1234  // Message Queue key

struct msg_buffer {
   long msg_type;   // Message type (must be > 0)
   char msg_text[100]; // Message content
};

int main() {
   int msgid;
   struct msg_buffer message;

   // Create message queue
   msgid = msgget(MSG_KEY, 0666 | IPC_CREAT);
   if (msgid == -1) {
      perror("msgget failed");
      exit(1);
   }
```

```
    // Prepare message to send
    message.msg_type = 1;  // Message type is 1 (can be any positive number)
    printf("Enter the message to send: ");
    fgets(message.msg_text, sizeof(message.msg_text), stdin);


    if (msgsnd(msgid, &message, sizeof(message), 0) == -1) {
        perror("msgsnd failed");
        exit(1);
    }

    printf("Message sent: %s", message.msg_text);

    return 0;
}
```

Output: