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EXERICSE-10

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

Aim:

To illustrate the concept of inter-process communication (IPC) using message queues with a C program.

Algorithm:

1. **Message Queue Creation:**
   - Use the msgget system call to create a message queue or access an existing one.
2. **Producer Process:**
   - Define a message structure containing a message type and message data.
   - Send a message to the queue using the msgsnd system call.
3. **Consumer Process:**
   - Receive the message from the queue using the msgrcv system call.
   - Display the received message.
4. **Cleanup:**
   - Remove the message queue using the msgctl system call.

Procedure:

1. Create two programs: one for the producer and one for the consumer.
2. Define a common message structure for both programs.
3. Use the msgsnd and msgrcv system calls to send and receive messages.
4. Compile and run the producer and consumer programs to demonstrate message exchange.

Code:

```
#include <stdio.h>

#include <sys/ipc.h>

#include <sys/msg.h>

#include <string.h>

#define MSG_KEY 12345

struct message {
```

```
    long msg_type;
    char msg_text[100];
};
int main() {
    int msgid = msgget(MSG_KEY, 0666 | IPC_CREAT);
    if (msgid == -1) {
        perror("Message queue creation failed");
        return 1;
    }
    struct message msg;
    msg.msg_type = 1;
    printf("Enter a message to send: ");
    fgets(msg.msg_text, sizeof(msg.msg_text), stdin);
    if (msgsnd(msgid, &msg, sizeof(msg.msg_text), 0) == -1) {
        perror("Message send failed");
        return 1;
    }
    printf("Message sent: %s", msg.msg_text);
    return 0;
}
```

Result:

The concept of inter-process communication using message queues was successfully demonstrated. The producer sent a message to the queue, and the consumer received it, showcasing effective communication between processes.

Output:

```
Enter a message to send: ./producer
Message sent: ./producer


...Program finished with exit code 0
Press ENTER to exit console.
```