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Overview

- Objectives
- Relevance

Module 9

Short Messages

UNIX® System Interface Programming

March 2001

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Named Pipes

mymkfifo.c

```
1  #include <sys/types.h>
2  #include <sys/stat.h>
3  
4  #define DIE(x) perror(x),exit(1)
5  
6  main() {
7  
8   if(mknod("FIFO1",S_IFIFO | 0666,0) == -1)
9    DIE("FIFO1");
10  
11  if(mkfifo("FIFO2",0666) == -1)
12   DIE("FIFO2");
13 }
```



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Named Pipes

talker.c:

```
#include <sys/types.h>
    #include <sys/stat.h>
    #include <fcntl.h>
    #include <stdio.h>
    #include <stdlib.h>
    #include <unistd.h>
8
    main() {
9
10
      int pd, n;
11
      char msg[] = "Hi, Folks!";
12
13
      printf("Talker's here.\n");
14
      /* open the pipe for write */
      pd = open("./mypipe", O WRONLY);
      if ( pd == -1) {
```

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```
18
        perror("open");
19
        exit(1);
20
21
22
      n = write(pd, msg, strlen(msg) + 1);
23
     if(n == -1) {
       perror("write");
24
25
        exit(1);
26
27
28
      close (pd);
29
      return(0);
30
```

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Named Pipes

listener.c:

```
#include <sys/types.h>
    #include <sys/stat.h>
    #include <fcntl.h>
    #include <stdio.h>
    #include <stdlib.h>
    #include <unistd.h>
    #define BUFSIZE 80
10
    main() {
11
      int pd, n = 0;
      char inmsq[BUFSIZE];
      char *introMessage = "Listener heard:";
15
16
      /* open the pipe for read */
      pd = open("./mypipe", O RDONLY);
```

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```
if(pd == -1) {
18
       perror("open");
19
20
        exit(1);
21
22
23
      write(STDOUT FILENO, introMessage, strlen(introMessage));
24
      while( (n = read(pd, inmsq, BUFSIZE) ) > 0 ) {
25
26
       write(STDOUT FILENO, inmsq, n);
27
28
29
     if(n == -1)
       perror("read");
30
31
        exit(1);
32
33
      write(STDOUT FILENO, "\n", 1);
34
35
      close(pd);
36
      return(0);
37
```



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Message Queues

- msgget() Gets messages
- msgsnd() Sends messages
- msgrcv() Receives messages
- msgctl() Removes objects, get and set status, and control information

Message Queues

```
1 #include <sys/types.h>
2 #include <sys/ipc.h>
3 #include <sys/msg.h>
4 #include <stdio.h>
5 #include <stdlib.h>
6 #include <string.h>
  #define BUFSIZE 80
10 main() {
11
    struct msgbuf *sendmsg;
    struct msqbuf *recvmsq;
    int msgaid:
15
    int rval = 0:
16
    sendmsq = (struct msqbuf *)
17
                malloc(sizeof(long)+BUFSIZE);
```

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```
/* "out" is a label near the end of main */
39
      goto out:
40
41
42
    if (msgrcv(msgqid, recvmsg, BUFSIZE, 1L, 0) == -1) {
43
      perror("msgrcv");
44
      rval = 1;
45
      goto out;
46
47
    printf("\nReceived message *%s*\n\n", recvmsg->mtext);
48
49 out:
    msgctl(msgqid, IPC RMID, (struct msqid ds *)NULL);
    system("ipcs");
52
    exit(rval);
53
```



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```
recvmsg = (struct msgbuf*)
                malloc(sizeof(long)+BUFSIZE);
19
    if (sendmsg == NULL | recvmsg == NULL)
21
      fprintf(stderr, "Out of virtual memory.\n");
22
23
    msggid = msgget ( IPC PRIVATE, IPC CREAT | 0600);
24
25
    if (msgqid == -1) {
      perror("msgget");
28
      exit(1);
29
30
    system("ipcs");
    sendmsg->mtype = 1;
    (void) strcpy(sendmsq->mtext, "Test messages.");
33
    if (msgsnd (msgqid, sendmsg, strlen (sendmsg->mtext)+1,0) == -1) {
35
      perror("msgsnd");
36
      rval = 1;
37
```

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Message Queues

```
$ mymsgqueues
IPC status from <running system> as of Sun Mar 7 13:22:11 MST 1999
                                                  GROUP
          ID
                                         OWNER
Message Queues:
```

0 staff --rw---mrh Shared Memory: 0x5001821c --rw-r--r-root root Semaphores:

Received message *Test messages.*

IPC status from <running system> as of Sun Mar 7 13:22:11 MST 1999 ID OWNER GROUP Message Queues: Shared Memory: 0 0x5001821c --rw-r--r-root root Semaphores



Exercise: Short Messages

- Objectives
- Tasks
- Discussion
- Solutions

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