

System V Message Queue - Worksheet

Section A: Objective Type (Choose the correct answer)

1. Which header file is required for System V message queues?

- a) <sys/ipc.h>
- b) <sys/msg.h>
- c) <sys/types.h>
- d) All of the above

2. Which function is used to create or access a message queue?

- a) msgopen()
- b) msgget()
- c) msgrcv()
- d) msgctl()

3. What is the prototype of the msgget() function?

- a) int msgget(key_t key, int msgflg);
- b) int msgget(int key, int flags);
- c) int msgget(key_t key, key_t msgflg);
- d) key_t msgget(int key, int msgflg);

4. What does IPC_CREAT do in msgget()?

- a) Deletes the message queue
- b) Creates a new message queue if it does not exist
- c) Reads from message queue
- d) None of the above

5. Which function is used to send a message to the message queue?

- a) msgrcv()
- b) msgsnd()
- c) msgctl()
- d) msgget()

Section B: Fill in the Blanks

- 6. The function used to receive messages from a message queue is _____.
- 7. msgsnd() returns _____ on success.
- 8. struct msgbuf must contain a field named _____ as the first member.
- 9. To remove a message queue, we use msgctl() with the command _____.
- 10. IPC stands for _____.

Section C: Programming Exercise

11. Write a small program to:

- Create a message queue.
- Send a message of type 1 with the text "Hello".

Sample Program Code:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include <string.h>
```

```
#include <sys/ipc.h>
```

```
#include <sys/msg.h>
```

```
#define MAX 100
```

```
struct msgbuf {
```

```
    long mtype;
```

```
    char mtext[MAX];
```

```
};
```

```
int main() {
```

```
    key_t key = ftok("progfile", 65);
```

```
    int msgid = msgget(key, 0666 | IPC_CREAT);
```

```
    struct msgbuf message;
```

```
    message.mtype = 1;
```

```
    strcpy(message.mtext, "Hello");
```

```
    if (msgsnd(msgid, &message, sizeof(message.mtext), 0) == -1) {
```

```
        perror("msgsnd failed");
```

```
        exit(1);
```

```
    }
```

```
printf("Message sent: %s\n", message.mtext);  
  
return 0;  
  
}
```

Answer Key

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Section A: Objective Type

1. d) All of the above
2. b) msgget()
3. a) int msgget(key_t key, int msgflg);
4. b) Creates a new message queue if it does not exist
5. b) msgsnd()

Section B: Fill in the Blanks

6. msgrcv()
7. 0
8. long mtype
9. IPC_RMID
10. Inter Process Communication

Section C: Sample Code

(Refer to the sample C program above.)