INE5418 Distributed Systems - Mutual Exclusion Policy

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1.1 Class Hierarchy

This inheritance list is sorted roughly, but not completely, alphabetically:

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2.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

Chapter 3

File Index

3.1 File List

Here is a list of all documented files with brief descriptions:

Chapter 4

Class Documentation

4.1 IPC Class Reference

Class that supports the user with the IPC API usage.

```
#include "ipc.h"
```

Public Member Functions

- IPC (int id)

  Constructor.
- void init ()

  Call the file descriptor initialization.
- void **start** ()
- void start_listening ()

  Start listening for other process messages.
- message_t receive_msg ()

  Receive a message from other process.
- void send_msg (message_t)

  Send a message to another process.

Private Member Functions

- void create_process_fd ()

  Create process socket file descriptor.
- void configure_process_fd ()

  Configure process socket file descriptor.

Private Attributes

- int id_

  Process id attached to this IPC.
- int opt_

  Always 1, relative to socket operation.
- int rcv_process_fd_

  File descriptor, to received messages.
- int send_process_fd_

  File descriptor, to send messages.
- int address_length_

  Length of the address.
- int socket_port_

  Socket port that Process will be bind.
- struct sockaddr_in address_

  Struct responsible to configure sockets.

4.1.1 Detailed Description

Class that supports the user with the IPC API usage.

4.1.2 Constructor & Destructor Documentation

4.1.2.1 IPC (int *id*)

Constructor.

Set initial attributes values.

Parameters

id	the id of the process that this IPC will be responsible for.

4.1.3 Member Function Documentation

4.1.3.1 void configure_process_fd ( ) [private]

Configure process socket file descriptor.

4.1.3.2 void create_process_fd ( ) [private]

Create process socket file descriptor.

4.1.3.3 void init ( )

Call the file descriptor initialization.

4.1.3.4 message_t receive_msg ( )

Receive a message from other process.

Returns

the received message.

4.1.3.5 void send_msg (message_t *msg*)

Send a message to another process.

Parameters

msg	message to be sent.

4.1.3.6 void start_listening ( )

Start listening for other process messages.

4.1.4 Member Data Documentation

4.1.4.1 struct sockaddr_in address_ [private]

Struct responsible to configure sockets.

4.1.4.2 int address_length_ [private]

Length of the address.

4.1.4.3 int id_ [private]

Process id attached to this IPC.

4.1.4.4 int opt_ [private]

Always 1, relative to socket operation.

4.1.4.5 int rcv_process_fd_ [private]

File descriptor, to received messages.

4.1.4.6 int send_process_fd_ [private]

File descriptor, to send messages.

4.1.4.7 int socket_port_ [private]

Socket port that Process will be bind.

The documentation for this class was generated from the following files:

- include/ipc.h
- src/ipc.cpp

4.2 message_t Struct Reference

Public Attributes

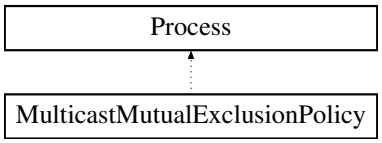
- char **source** [4]
- char **destination** [4]
- char **type** [4]
- char **data** [100]

The documentation for this struct was generated from the following file:

- include/message.h

4.3 MulticastMutualExclusionPolicy Class Reference

Inheritance diagram for MulticastMutualExclusionPolicy:



Public Member Functions

- **MulticastMutualExclusionPolicy** (int id, int n_process)
- void **run** ()

Private Member Functions

- void **process_message** ()
- int **destination** ()
- void **send_token** ()
- void **server_resource_request** ()
- void **server_resource_release** ()
- void **client_resource_request** ()
- void **client_resource_release** ()
- void **start_broadcast** ()

Private Attributes

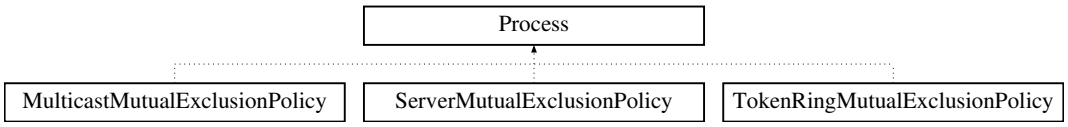
- std::queue< int > **work_queue**

The documentation for this class was generated from the following files:

- include/multicast_policy.h
- src/multicast_policy.cpp

4.4 Process Class Reference

Inheritance diagram for Process:



Public Member Functions

- **Process** (int id, int n_process)

Protected Member Functions

- void **compute** ()
- int **random_computation_time** ()

Protected Attributes

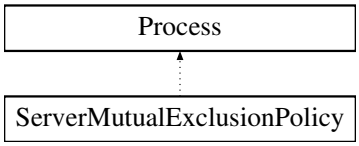
- int **id_**
- int **n_process_**
- int **computation_time_**
- IPC **ipc_**
- message_t **received_message_**

The documentation for this class was generated from the following files:

- include/process.h
- src/process.cpp

4.5 ServerMutualExclusionPolicy Class Reference

Inheritance diagram for ServerMutualExclusionPolicy:



Public Member Functions

- **ServerMutualExclusionPolicy** (int id, int n_process)
- void **run** ()

Private Member Functions

- void **process_message** ()
- int **destination** ()
- void **send_token** ()
- void **server_resource_request** ()
- void **server_resource_release** ()
- void **client_resource_request** ()
- void **client_resource_release** ()
- void **start_broadcast** ()

Private Attributes

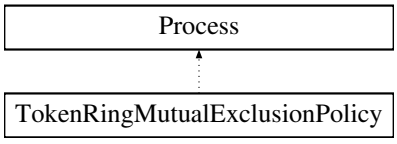
- std::queue< int > **work_queue**

The documentation for this class was generated from the following files:

- include/server_policy.h
- src/server_policy.cpp

4.6 TokenRingMutualExclusionPolicy Class Reference

Inheritance diagram for TokenRingMutualExclusionPolicy:



Public Member Functions

- **TokenRingMutualExclusionPolicy** (int id, int n_process)
- void **run** ()

Private Member Functions

- void **process_message** ()
- int **destination** ()
- void **send_token** ()

Additional Inherited Members

The documentation for this class was generated from the following files:

- include/token_ring_policy.h
- src/token_ring_policy.cpp

Chapter 5

File Documentation

5.1 include/ipc.h File Reference

High level approach to the low level IPC API.

```
#include <netinet/in.h>
#include "message.h"
```

Classes

- class IPC

  Class that supports the user with the IPC API usage.

5.1.1 Detailed Description

High level approach to the low level IPC API.

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Date

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Version

1.0

This file is a header file that contains the functions and variables of a high level approach to the IPC API.

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