Etapa 2 - Ballenitas (G-1)

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Sistema de archivos con servidor y cliente

Packet Tracer L2 y L3

Simulación con protocolo grupal

UCR - ECCI - Proyecto Integrador Redes de Comunicación de Datos y Sistemas Operativos

FS(fileSystem):

```
class FileSystem
{
private:
    std::unordered_map<std::string, Superblock*> map;
    std::vector<Superblock*> bloques;
    std::mutex knowSuperblock;
    int numDisk;

    std::vector<std::string> lookForDisk(std::string path);
    std::string createDisk();
    Superblock* getSuperblock();

public:
    FileSystem();
    ~FileSystem();
    int rm( std::string );
    int add( std::string , std::string);
    std::string get( std::string );
    std::string list();
};
```

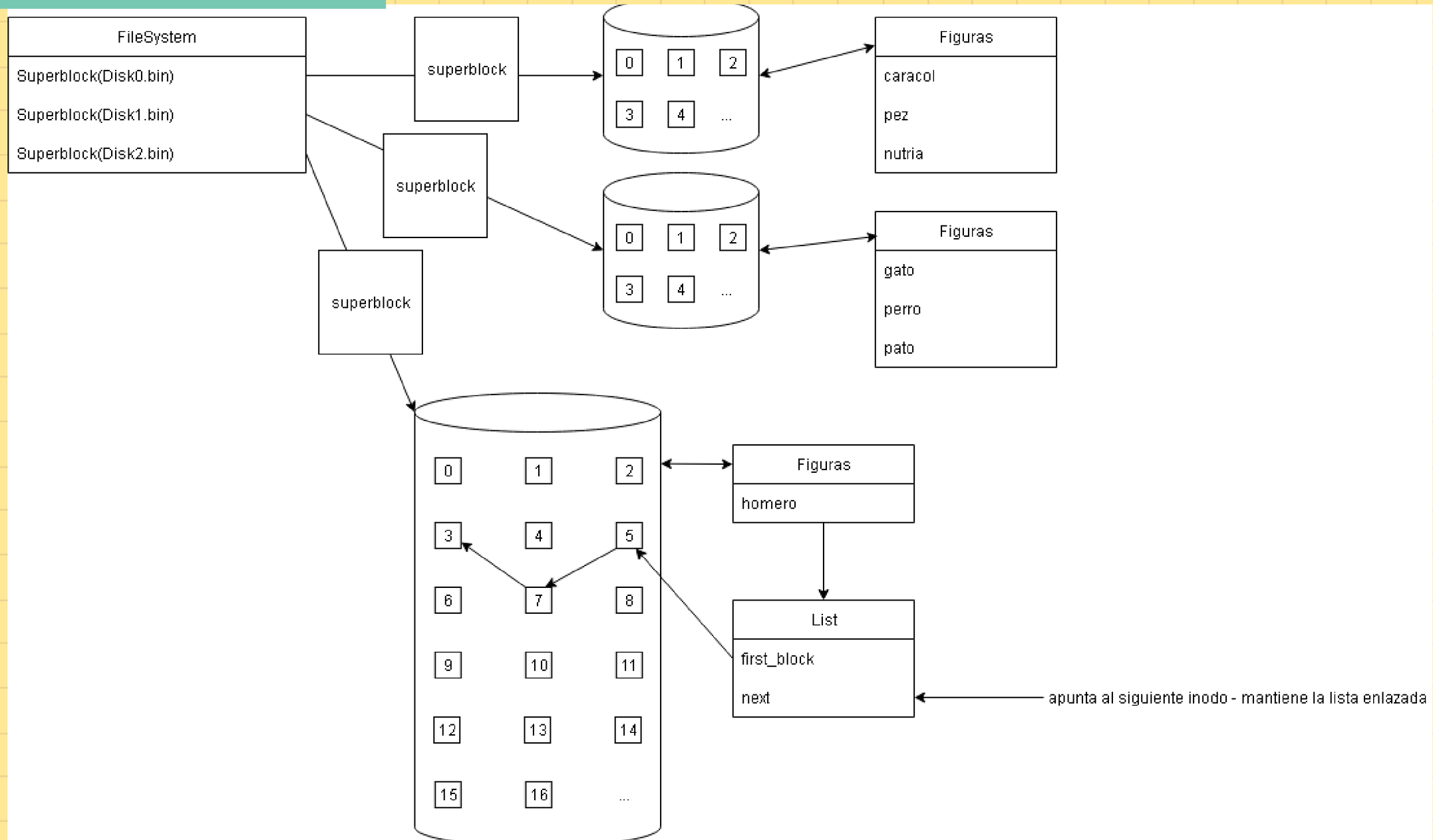
FS(fileSystem):

```
8  class Superblock {
9
10     public:
11
12     std::unordered_map<std::string, Inode*> map;
13     std::vector<Inode*> inodes;
14     std::fstream disk;
15     std::mutex diskMutex;
16     uint32_t sizeDisk;
17     uint32_t blocksize;
18     uint16_t allBlocks;
19     uint16_t freeblocks;
20     uint16_t usedblocks;
21
22     Superblock( std::string, uint32_t sizeDisk, uint32_t blocksize);
23     ~Superblock();
24
25     int rm_sb( std::string );
26     int add_sb( std::string , std::string);
27     std::string get_sb( std::string);
28     std::vector<std::string> getFiguresNames();
29
30     private:
31
32     uint16_t empty_B();
33     uint16_t clear_block(uint16_t);
34     int32_t find_inode_by_name(std::string);
35     Inode* readInode(uint16_t);
36     int writeInode(Inode*, uint16_t);
37
```

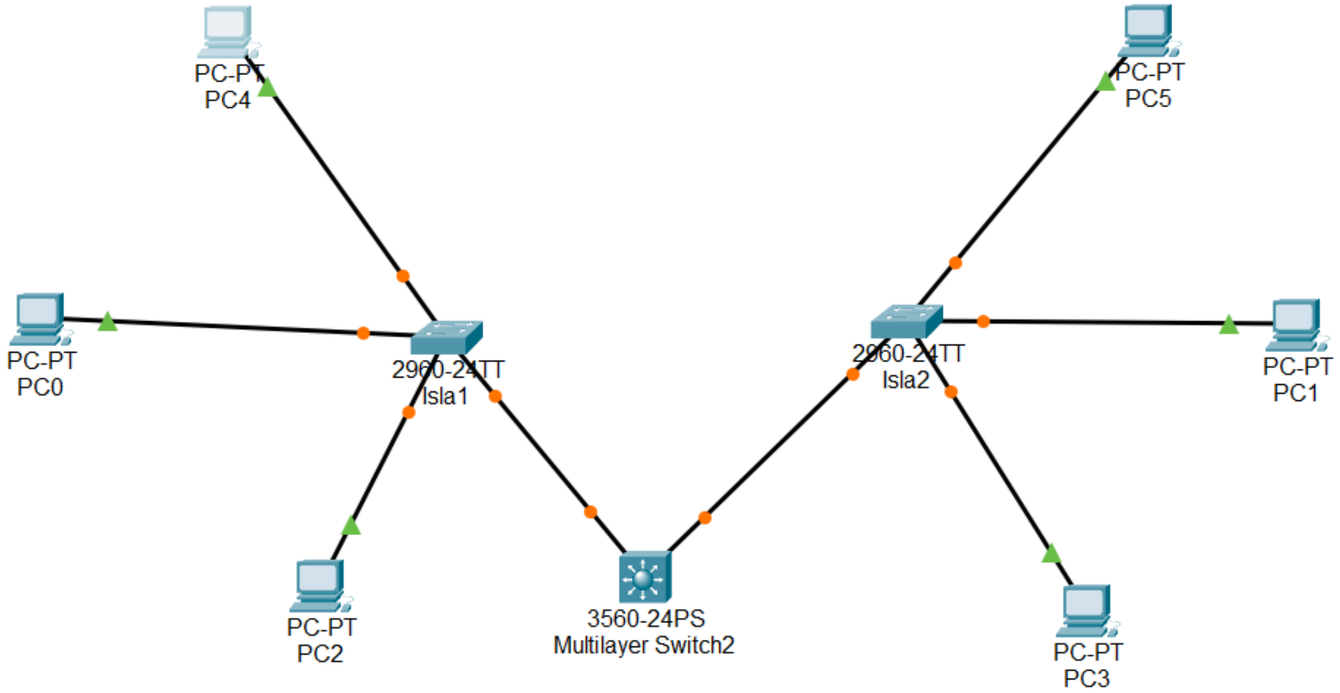
FS(fileSystem):

```
struct Inode {
    char name[maxSize];
    uint32_t size;
    uint16_t first_block;
    uint16_t jump_blocks;
    uint16_t next = 0;

  Inode(){
  }

  Inode(std::string name, uint32_t s, uint16_t fb, uint16_t jb){

    if(name.size() > maxSize){
      name = name.substr(0, maxSize);
    }

    snprintf(this -> name, maxSize, "%s", name.c_str());

    size = s;
    first_block = fb;
    jump_blocks = jb;
  }
};
```

FS(fileSystem):



Packet Tracer



PC0

Physical Config Desktop Programming Attributes

Command Prompt

```
   IPv6 Address.....................: ::
   IPv4 Address.....................: 0.0.0.0
   Subnet Mask......................: 0.0.0.0
   Default Gateway..................: ::
                                      0.0.0.0

C:\>clear
Invalid Command.

C:\>cl
Invalid Command.

C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::2D0:BAFF:FE83:C056
   IPv6 Address.....................: ::
   IPv4 Address.....................: 172.16.123.18
   Subnet Mask......................: 255.255.255.240
   Default Gateway..................: ::
                                      172.16.123.17

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: ::
   IPv6 Address.....................: ::
   IPv4 Address.....................: 0.0.0.0
   Subnet Mask......................: 0.0.0.0
   Default Gateway..................: ::
                                      0.0.0.0

C:\>ping 172.16.123.34

Pinging 172.16.123.34 with 32 bytes of data:

Request timed out.
Reply from 172.16.123.34: bytes=32 time<1ms TTL=127
Reply from 172.16.123.34: bytes=32 time<1ms TTL=127
Reply from 172.16.123.34: bytes=32 time<1ms TTL=127

Ping statistics for 172.16.123.34:
    Packets: Sent = 4, Received = 3, Lost = 1 (25% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 0ms, Average = 0ms

C:\>
```

PC1

Physical Config Desktop Programming Attributes

Command Prompt

```
Cisco Packet Tracer PC Command Line 1.0
C:\>ip config
Invalid Command.

C:\>ipconnfig
Invalid Command.

C:\>ipconfig

FastEthernet0 Connection:(default port)

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: FE80::2D0:BAFF:FE8A:8188
   IPv6 Address.....................: ::
   IPv4 Address.....................: 172.16.123.34
   Subnet Mask......................: 255.255.255.240
   Default Gateway..................: ::
                                      172.16.123.33

Bluetooth Connection:

   Connection-specific DNS Suffix..:
   Link-local IPv6 Address.........: ::
   IPv6 Address.....................: ::
   IPv4 Address.....................: 0.0.0.0
   Subnet Mask......................: 0.0.0.0
   Default Gateway..................: ::
                                      0.0.0.0

C:\>ping 172.16.123.18

Pinging 172.16.123.18 with 32 bytes of data:

Reply from 172.16.123.18: bytes=32 time=7ms TTL=127
Reply from 172.16.123.18: bytes=32 time<1ms TTL=127
Reply from 172.16.123.18: bytes=32 time<1ms TTL=127
Reply from 172.16.123.18: bytes=32 time<1ms TTL=127

Ping statistics for 172.16.123.18:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 0ms, Maximum = 7ms, Average = 1ms

C:\>
```

Simulación con protocolo

Formato de Request y Response

Formato General:

COMANDO BEGIN/metadada/END

contenido

Eliminar figura:

DELETE BEGIN/cat.txt/port/END

Apagar/Encender:

BEGIN/OFF/CLIENTE/IP/port/END

Agregar figura:

ADD BEGIN/cat.txt/contentLength100/port/END

<figura>

Listar figuras:

LIST BEGIN/listFigures/port/END

Simulación con protocolo

```
Ingrese la operación por realizar:
GET
ADD
LIST
EXIT
DELETE
>> LIST
* Client sending: LIST BEGIN/listFigures/END
...
* Fork received (client request): LIST BEGIN/listFigures/END

Server: received 27 bytes
Server: Command: LIST, Metadata: listFigures, Content length: 0
Server: Sending response: BEGIN/200 OK/contentLength19/END
No files availabl
* Fork received (server response):
BEGIN/200 OK/contentLength19/END
No files available

* Client received:
BEGIN/200 OK/contentLength19/END
No files available
```

Simulación con protocolo

```
>> ADD
Ingrese el nombre de la figura sin la extensión
>> cat
* Client sending: ADD BEGIN/cat.txt/contentLength181/END
        / >    フ
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      / ` ニ＿xノ
     /         |
    /    ヽ     ノ
    |     |  |  |
/ ￣|     |  |  |
(￣ ヽ___ヽ_)__)
＼二)...
* Fork received (client request): ADD BEGIN/cat.txt/contentLength181/END
        / >    フ
       |   _  _|
      / ` ニ＿xノ
     /         |
    /    ヽ     ノ
    |     |  |  |
/ ￣|     |  |  |
(￣ ヽ___ヽ_)__)
＼二)
Server: received 220 bytes
Server: Command: ADD, Metadata: cat.txt/contentLength181, Content length: 181
Server: Adding file: cat, size: 181
File added successfully. Used 2 blocks.
Server: Sending response: BEGIN/200 OK/added:cat/END

* Fork received (server response):
BEGIN/200 OK/added:cat/END

* Client received:
BEGIN/200 OK/added:cat/END
```

Simulación con protocolo

```
>> GET
Ingrese el nombre de la figura sin la extensión
>> cat
* Client sending: GET BEGIN/cat/END
...
* Fork received (client request): GET BEGIN/cat/END

Server: received 18 bytes
Server: Command: GET, Metadata: cat, Content length: 0
Server: Sending response: BEGIN/200 OK/contentLength:256/END
        / > 
* Fork received (server response):
BEGIN/200 OK/contentLength:256/END
        / >    フ
       |   _  _|
      / ` ≕ __ xノ
    /          |
   /    \      /
   |     |  |  |
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(¯ \ __ -
* Client received:
BEGIN/200 OK/contentLength:256/END
        / >    フ
       |   _  _|
      / ` ≕ __ xノ
    /          |
   /    \      /
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```

Gracias por su atención.