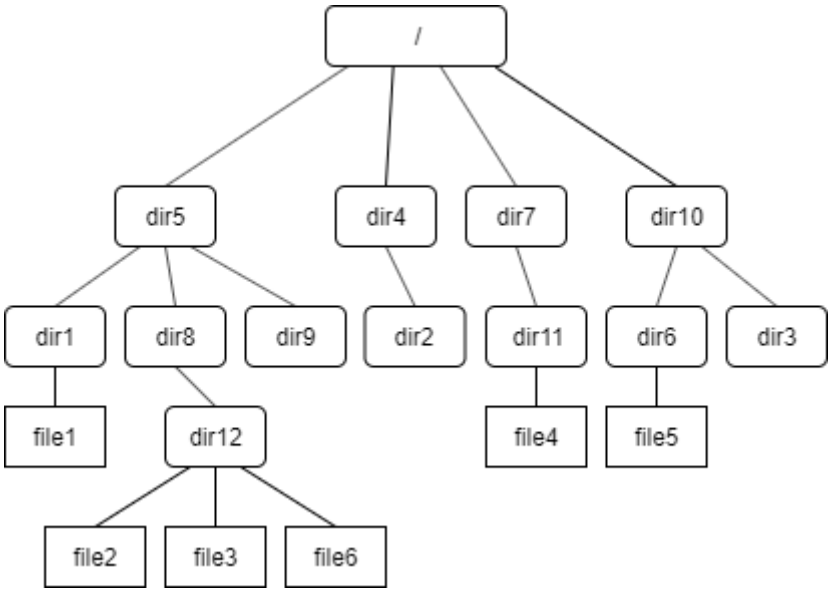
Test Cases

1. HD

   The HD file represent the hard disk. The file system structure has been initialized properly on this hard disk. You do not need to do any modifications on HD.

   The file system structure is shown below:



2. Recommend test cases:

(1) open_test()

You can call open_t() to get the inode of a file, for example :

char pathname[MAX_COMMAND_LENGTH] = "/dir5/dir1/file1";

inode_number = open_t(pathname);

The test cases are shown below:

filepath	note
/	The root directory
/dir5	One of the 1st level directory
/dir5/dir1	One of the 2nd level directory
/dir5/dir1/file1	A file under the 2nd level directory
/dir5/dir8/dir12/file2	A file under the 3rd level directory

The test code is shown blow:

```
#include "call.h"

int main (int argc, char *argv[])
{
    char filename[5][MAX_COMMAND_LENGTH] = {"/", "/dir5", "/dir5/dir1",
"/dir5/dir1/file1", "/dir5/dir8/dir12/file2"};

    int expected[5] = {0, 1, 5, 13, 14};

    //Start testing
    for(int i = 0; i < 5; i++)
    {
        int inode_number = open_t(filename[i]);
        printf("======case %d: open \'%s\' =======\n", i, filename[i]);
        printf("returned inode number: %d\t expected result: %d\n\n", inode_number,
expected[i]);
    }
    return 0;
}
```

(2) read_test()

Then use read_t() reading some content of file1 to buffer and display read size. In grading process, we will use similar approach to test your code.

Here are several suggested cases:

read_t (inode_number, **offset**, buf, **count**)

(Only the offset and count will be changed for each case.)

offest	**count**	**note**	
0	100	Begin at direct block, end in the same block	Access only one block
4100	1000	Begin at direct block, end in the same block	
8500	300	Begin at indirect block, end in the same block	
40965	800	Begin at indirect block, end in the same block	
15	5000	Begin at direct block, end in another direct block	Access multiple blocks
100	50000	Begin at direct block, end in indirect block	
9000	60000	Begin at indirect block, end in indirect block	
File_size - 50	10000		Overflowing original file test
File_size + 50	10		Offset out of range
10	MAX_FILE_SIZE-100		Access the maximum number of blocks

The test code is shown below:

```
#include "call.h"

int main (int argc, char *argv[])
{
	//argv[1]= A new file in SFS with full pathname
	char filename[MAX_COMMAND_LENGTH]="/dir5/dir1/file1";

	/*
	Allocate a buf with MAX_FILE_SIZE.
	*/
	char buf[MAX_FILE_SIZE];

	int read_size;
	int test_inode=open_t(filename);
	//Start testi
	int offset_list[10] = {0, 4100, 8500, 40965, 15, 100, 9000, 1048576 - 50, 1048576 + 50, 10};
	int count_list[10] = {100, 1000, 300, 800, 5000, 50000, 60000, 10000, 10, MAX_FILE_SIZE - 100};
	int expected[10] = {100, 1000, 300, 800, 5000, 50000, 60000, 50, 0, 1048566};
	//read_t test
	for(int i = 0; i < 10; i++)
	{
		int cnt = count_list[i];
		int off = offset_list[i];
		printf("====case %d: read %d bytes from %d offest=======\n", i, cnt, off);
		read_size = read_t(test_inode, off, buf, cnt);
		buf[read_size] = '\0';
		printf("read size: %d\t expected: %d\n\n",read_size, expected[i]);
	}
	return 0;
}
```