【Linux Programming】Day6

Class	Understanding Linux/Unix Programming
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【Ch2】Writing cp

2.6 Project 2: Wrigin cp

`cp` makes a copy of a file. The typical usage is:

```
$ cp source-file target-file
```

If there is no target file, `cp` creates it. If there is a target file, `cp` replaces the contents of that file with the contents of the source file.

2.6.1 How does cp Create and Write?

One method to create or rewrite a file is the `creat` system call. The summary is

creat

PURPOSE	Create or zero a file	
INCLUDE	#include <fcntl.h>	
USAGE	int fd = creat(char *filename, mode_t mode)	
ARGS	filename:	the name of the file
	mode:	access permission
RETURNS	-1	on error
	fd	on success

The `creat` system call opens filename for writing.

- If there is no file with that name, the kernel creates the file.

- If there is a file with that name, the kernel discards its contents, truncating the file to a size of zero.

If the kernel creates the file, it sets the permission bits for the file to the value specified by the second argument. For example:

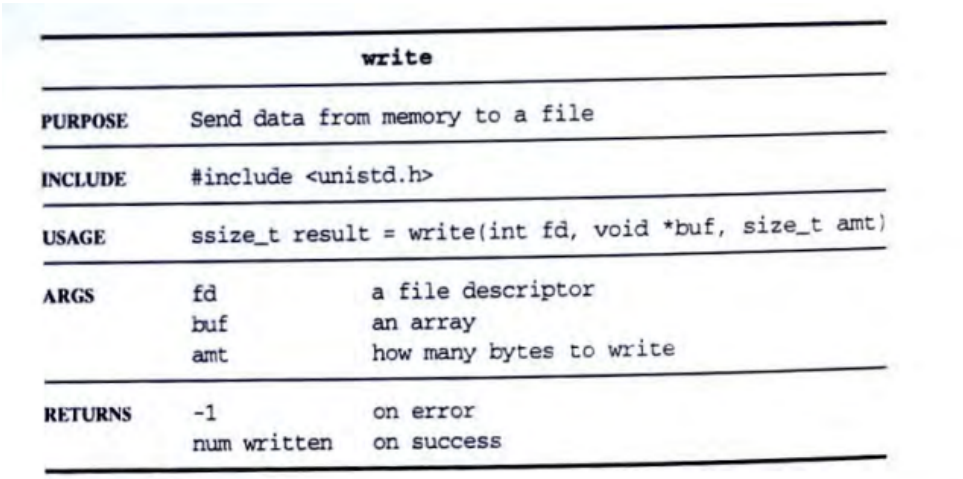
```
fd = creat("address", 0644);
```

creates or truncates a file called `address`. If the filedoes not exist, the permission bits are set to `rw-r--r--`.

If a file with that name exists, the file is now empty and the permission bits do not change.

Writing to a File

We send data to an open file with the `write` system call:



write		
PURPOSE	Send data from memory to a file	
INCLUDE	#include <unistd.h>	
USAGE	ssize_t result = write(int fd, void *buf, size_t amt)	
ARGS	fd	a file descriptor
	buf	an array
	amt	how many bytes to write
RETURNS	-1	on error
	num written	on success

The `write` system call copies data from process memory to a file.

- If the kernel is unable or unwilling to copy the data, `write` returns -1.
- If the kernel transfers data, `write` returns the number of bytes it transferred.

The system might impose limit on the maximum fil size a user could creat, or the disk might be nearly full.

If the requst would exceed the limit or space, the `write` system call writes as many bytes as possible and then stops.