

## Pipes

### 1. pipe - [Link 1](#)

- `int pipe(int pipefd[2])`
- `pipe()` creates a pipe, a unidirectional data channel that can be used for interprocess communication. The array `pipefd` is used to return two file descriptors referring to the ends of the pipe. `pipefd[0]` refers to the read end of the pipe. `pipefd[1]` refers to the write end of the pipe.

### 2. write - [Link 1](#)

- `ssize_t write(int fd, const void buf[.count], size_t count)`
- `write()` writes up to `count` bytes from the buffer starting at `buf` to the file referred to by the file descriptor `fd`. On success, the number of bytes written is returned. On error, -1 is returned, and `errno` is set to indicate the error.

### 3. read - [Link 1](#)

- `ssize_t read(int fd, const void buf[.count], size_t count)`
- `read()` attempts to read up to `count` bytes from file descriptor `fd` into the buffer starting at `buf`. On success, the number of bytes read is returned (zero indicates the end of the file), and the file position is advanced by this number.

### 4. close - [Link 1](#), [Link 2\(Highly recommended read\)](#)

- `int close(int fd)`
- `close()` closes a file descriptor so that it no longer refers to any file and may be reused. `close()` returns zero on success. On error, -1 is returned, and `errno` is set to indicate the error.

### 5. execlp -

- `int execlp(const char *file, const char *arg, ...)`
- The file argument is the path name of an executable file to be executed. `arg` is the string we want to appear as `argv[0]` in the executable. By convention, `argv[0]` is just the executable file name; normally, it's set to the same as the file. The ... are now the additional arguments to give to the executable.

### 6. dup2 - [Link 1](#), [Link 2](#)

- `int dup(int oldfd), int dup2(int oldfd, int newfd)`
- The `dup()` system call allocates a new file descriptor that refers to the same open file description as the descriptor `oldfd`. The `dup2()` system call performs the same task as `dup()`, but instead of using the lowest-numbered unused file descriptor, it uses the file descriptor number specified in `newfd`. In other words, the file descriptor `newfd` is adjusted to now refer to the same open file description as `oldfd`.

### 7. wait - [Link 1](#),

- `pid_t wait(int *_Nullable wstatus)`
- [Kindly go through this](#)

### Problem 0

Write a C program that creates a pipe, writes a message to one end, and reads and displays it from the other end.

### Solution

```
#include <errno.h>
#include <stdio.h>
#include <stdlib.h>
#include <unistd.h>

int main(void) {
    int pfd[2];
    char buf[30];

    // Create pipe
    if (pipe(pfd) == -1) {
        perror("Error in creating pipe\n");
        exit(1);
    }

    printf("Writing to the file descriptor #%d\n", pfd[1]);
    write(pfd[1], "test", 5);
    printf("Reading from file descriptor #%d\n", pfd[0]);
    read(pfd[0], buf, 5);
    printf("We have read: \"%s\"\n", buf);
    return 0;
}
```