

System File API

File redirection: shell

- The shell provides syntax to redirect the three standard files (stdin, stdout, stderr) from/to other files.
- For example, by specifying the ‘>’ symbol and the name of an ordinary file, the shell will redirect standard output to the named file:

```
ls > dir-contents.txt
```

- By specifying the ‘<’ symbol, then a file name, the shell will read bytes from the named file instead of standard input from the keyboard:

```
wc < data.txt
```

- In order to redirect stderr, you may use the file descriptor, which is 2. In order to redirect stderr to stdout, specify stdout by placing the ‘&’ character before the file descriptor, 1:

```
grep 2>&1
```

File redirection: dup2

- File redirection can be achieved programmatically by use of the dup2 function.

```
#include <unistd.h>
```

```
int dup2(int fd, int fd2);
```

```
    returns: nonnegative descriptor if OK,  
            -1 on error
```

- Specifically, dup2 overwrites the descriptor data referenced by fd2 so that fd2 now points to the same file pointed to by fd.
- Example:
 - redirect-test.c