UPR: Input/Output (I/O)

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https://github.com/geordi/upr-course

Outline

- **Administrative**
- Input/Output (I/O)
- Display

What did I do?

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File Descriptor

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- The notorious `printf` functions prints characters into terminal
  - using a file descripptor named `stdout`

Default File Descriptors

- Default file descriptors residing in `stdio.h` are:
  - `stdin`
  - `stdout`
  - `stderr`

Where are they?

- From `stdio.h` lines 136-143:

```c
/* Standard streams.  */
extern FILE *stdin;              /* Standard input stream.  */
extern FILE *stdout;             /* Standard output stream.  */
extern FILE *stderr;             /* Standard error output stream.  */
/* C89/C99 say they're macros.  Make them happy.  */
#define stdin stdin
#define stdout stdout
#define stderr stderr
```

I/O Redirect

[https://searchengineland.com/1000-ways-redirect-272953]

Output Redirect

```c
1  int main() {
2      printf( "Hello, World!\n" );
3
4      return 0;
5  }
```

```
$ ./hello_world > output.txt
```

```
$ cat output.txt
Hello, World!

$
```

Input Redirect

```
$ cat input.txt
2 3
$
```

```c
1 int main() {
2     int a, b;
3     scanf( "%d %d", &a, &b );
4     printf( "Sum= %d\n", a + b );
5
6     return 0;
7 }
```

```
$ ./sum < input.txt
Sum= 5
$
```

Pipe

dig

Search for the `stdin` File Descriptor

```
$ cd /usr/include
$ ack FILE | ack stdin
reglib/reglib.h:199: * @fp: FILE stream, could be stdin, or a stream ...
reglib/reglib.h:213: * @fp: FILE stream, could be stdin, or a stream ...
libdap/DDS.h:357:    void parse(FILE *in = stdin);
libdap/DAS.h:189:    virtual void parse(FILE *in = stdin);
libdap/StdinResponse.h:47:    FILE *d_stdin;
libdap/StdinResponse.h:62:    StdinResponse(FILE *s) : Response()...
libdap/StdinResponse.h:73:    virtual FILE *get_stream() const ..
libdap/StdinResponse.h:74:    virtual void set_stream(FILE *s) ...
stdio.h:137:extern FILE *stdin;  /* Standard input stream.  */
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Search for the `stdin` File Descriptor

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[VSB - TU Ostrava]