Project 1
Pipe Hints

Andy Wang

Operating Systems

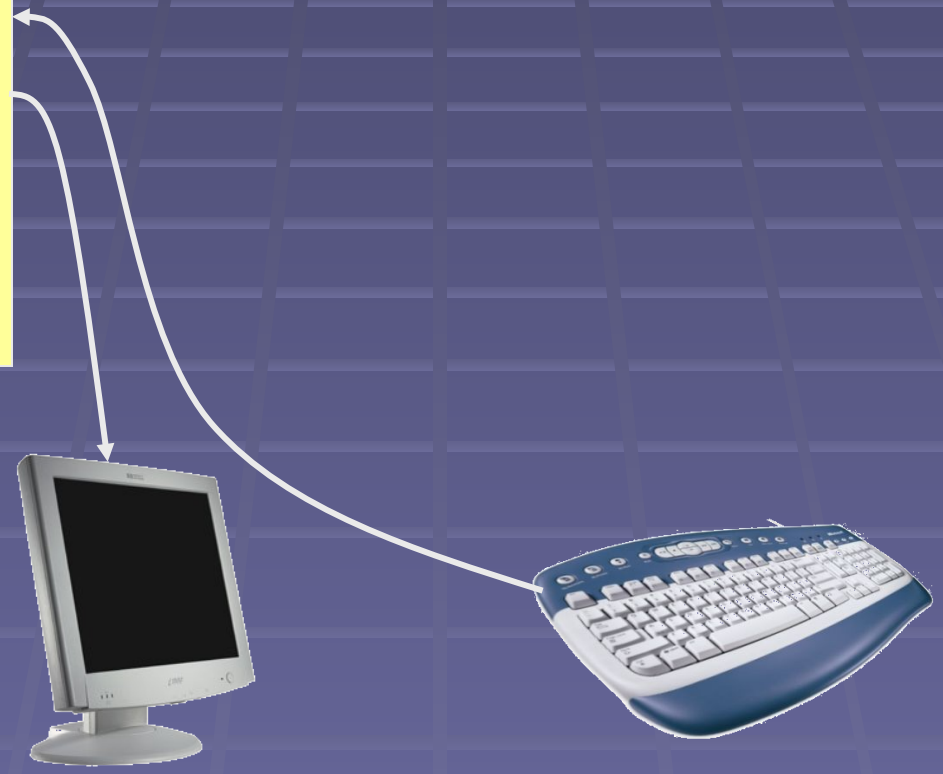
COP 4610 / CGS 5765

Pipe

```
int p1_to_p2[2];
pipe(p1_to_p2);
```

file descriptors
0 stdin
1 stdout
2 stderr

shell



Pipe

```
int p1_to_p2[2];
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file descriptors
0 stdin
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3 p1_to_p2[0]
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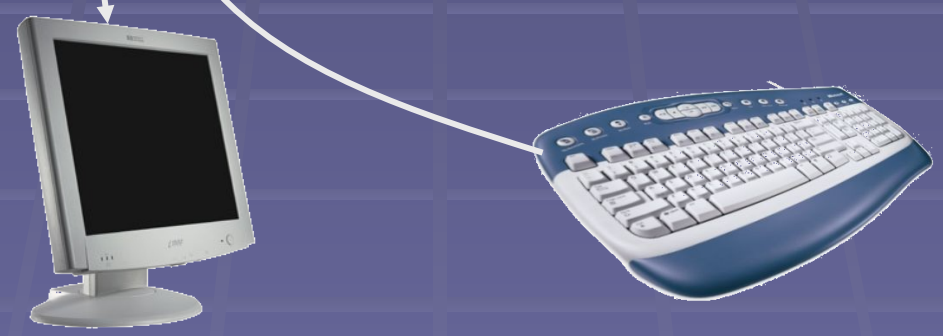
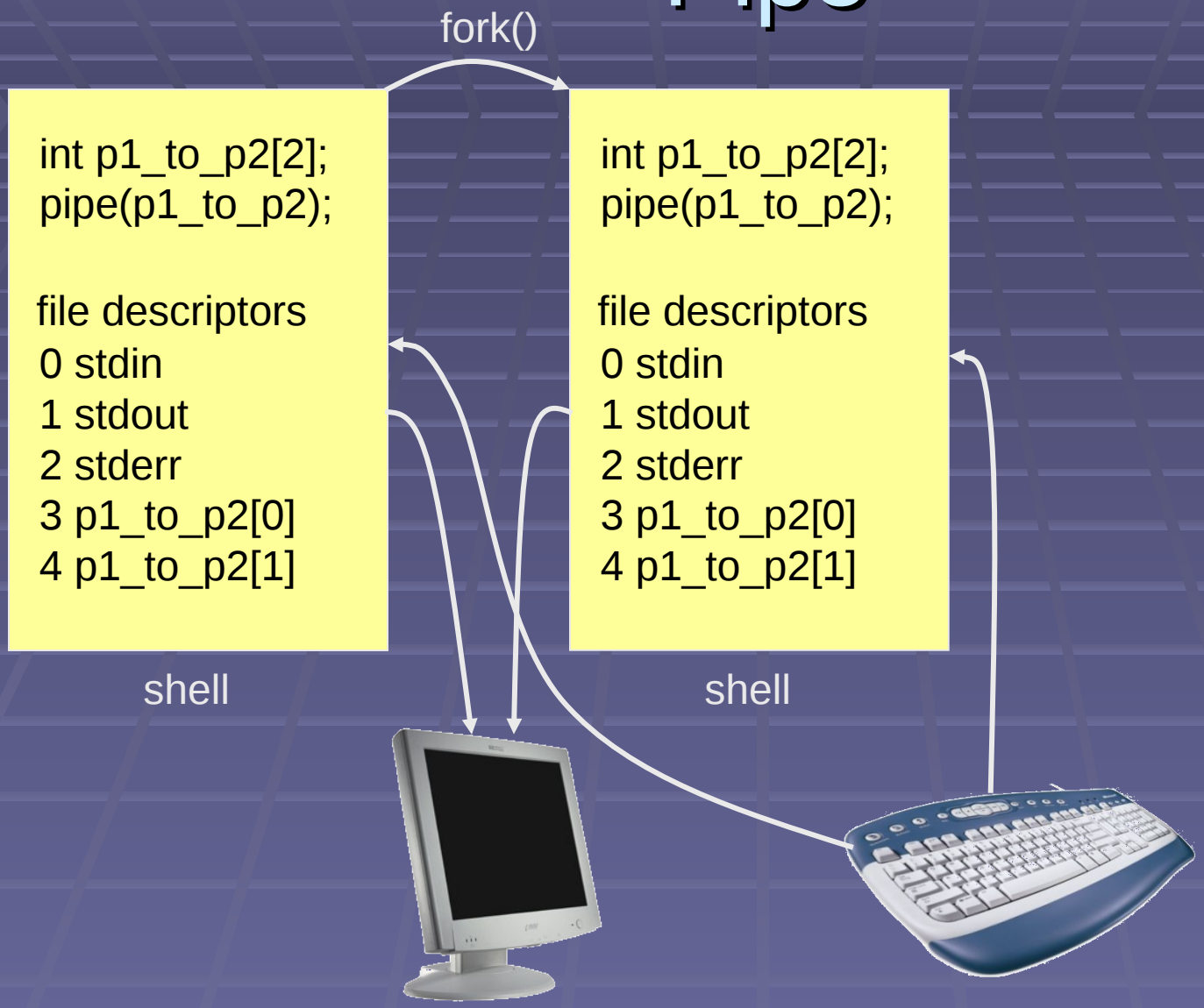


Pipe


fork()
int p1_to_p2[2];
pipe(p1_to_p2);
file descriptors
0 stdin
1 stdout
2 stderr
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4 p1_to_p2[1]
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int p1_to_p2[2];
pipe(p1_to_p2);
file descriptors
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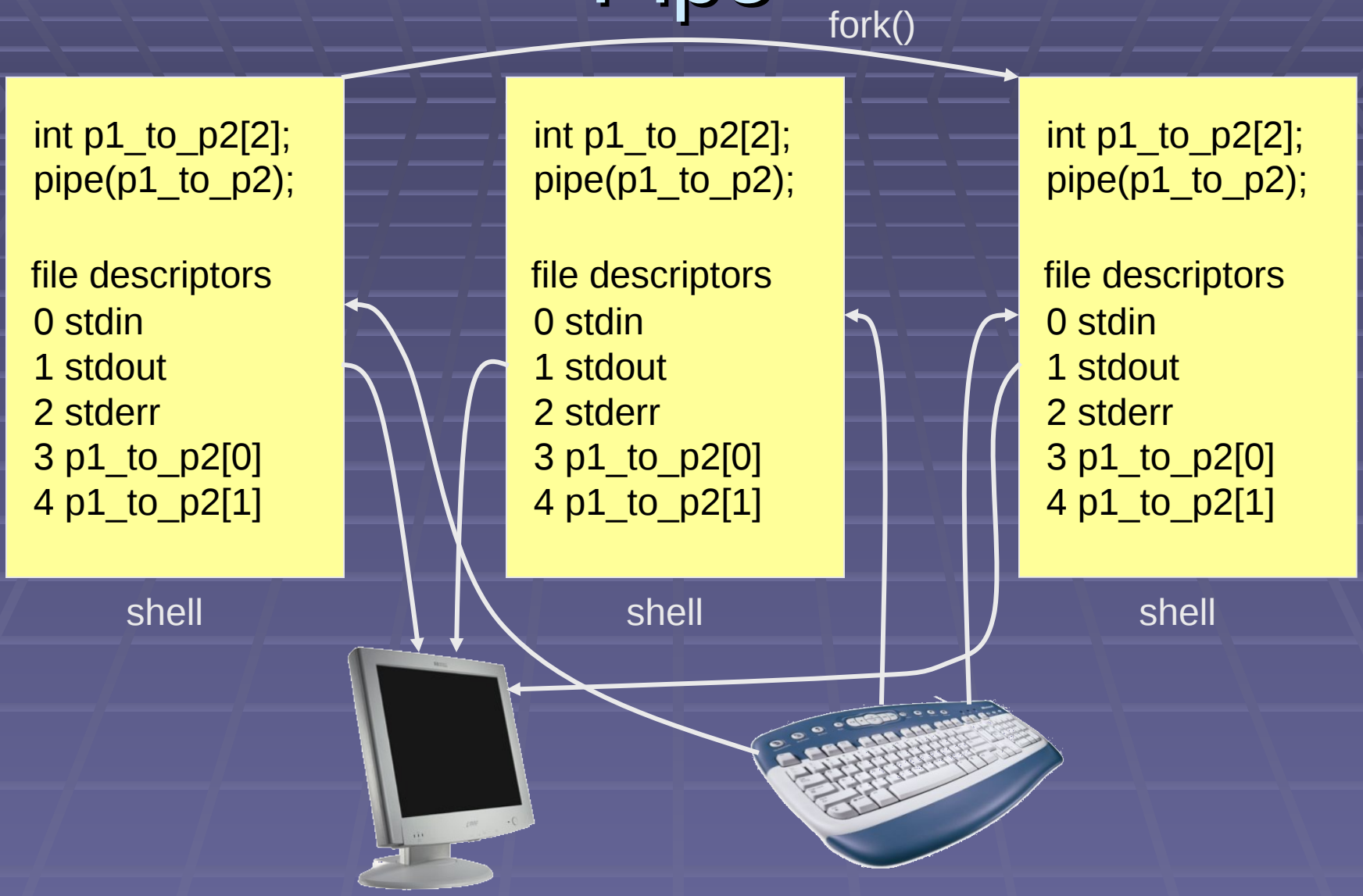
Pipe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file descriptors
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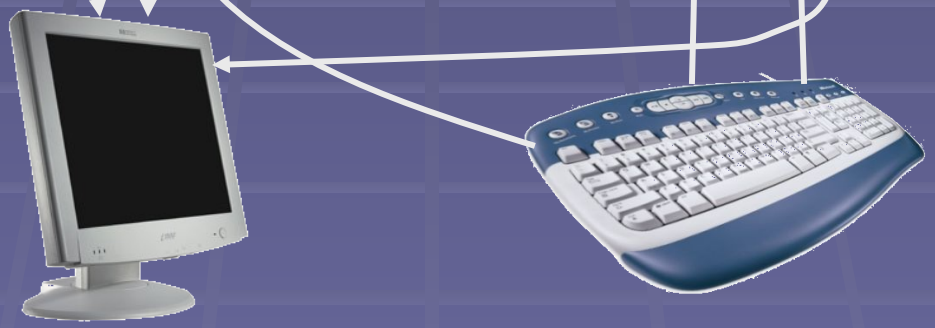

Pipe

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pipe(p1_to_p2);

file descriptors
0 stdin
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shell

dup(4)

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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2 stderr
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4 p1_to_p2[1]

shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
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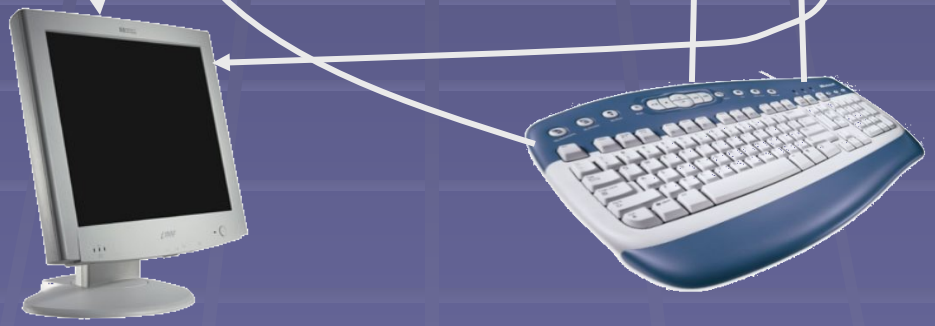
2 stderr
3 p1_to_p2[0]
4 p1_to_p2[1]

shell



Pipe

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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dup(4)

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 stdout
2 stderr
3 p1_to_p2[0]
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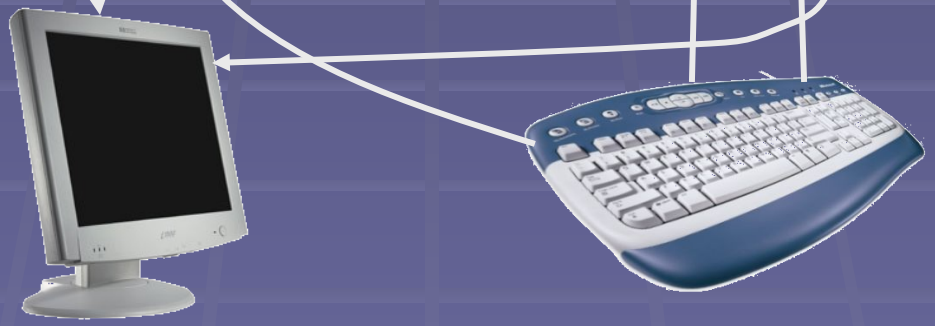
shell



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file descriptors
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pipe(p1_to_p2);

file descriptors
0 stdin
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~~3 p1_to_p2[0]~~
~~4 p1_to_p2[1]~~

shell

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file descriptors
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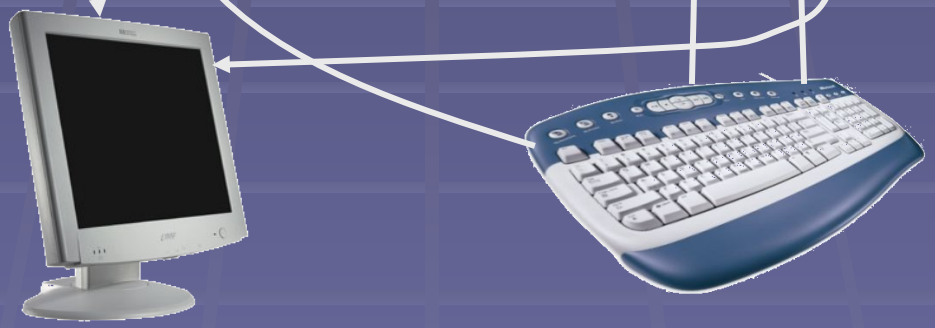
shell



Pipe

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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2 stderr
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int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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2 stderr

shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 stdout
2 stderr
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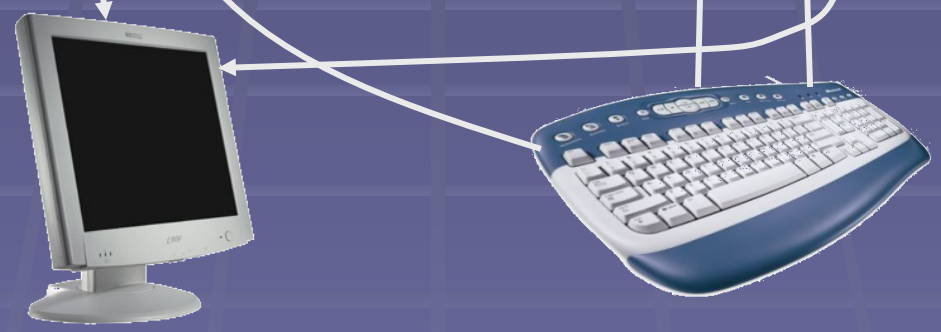
shell



Pipe

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int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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3 p1_to_p2[0]
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```

shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 p1_to_p2[1]
2 stderr

execvp(bin_path,
  argv)
```

shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 stdout
2 stderr
3 p1_to_p2[0]
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```
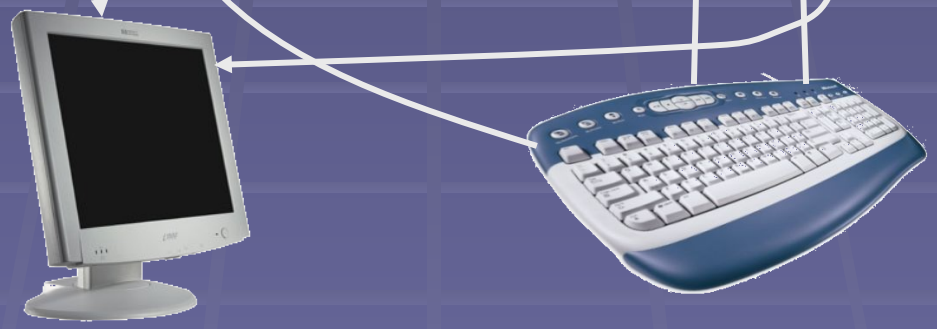

shell



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file descriptors
0 stdin
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file descriptors
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execvp(bin_path,
argv)

shell

int p1_to_p2[2];
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file descriptors
0 ~~stdin~~
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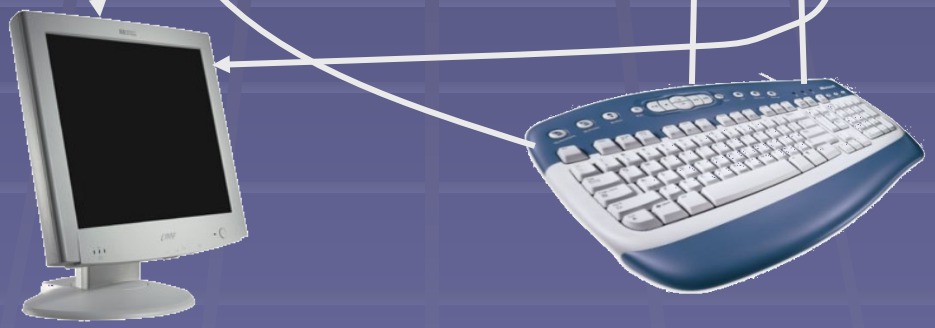
shell



Pipe

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pipe(p1_to_p2);

file descriptors
0 stdin
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3 p1_to_p2[0]
4 p1_to_p2[1]

shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 p1_to_p2[1]
2 stderr

execvp(bin_path,
argv)

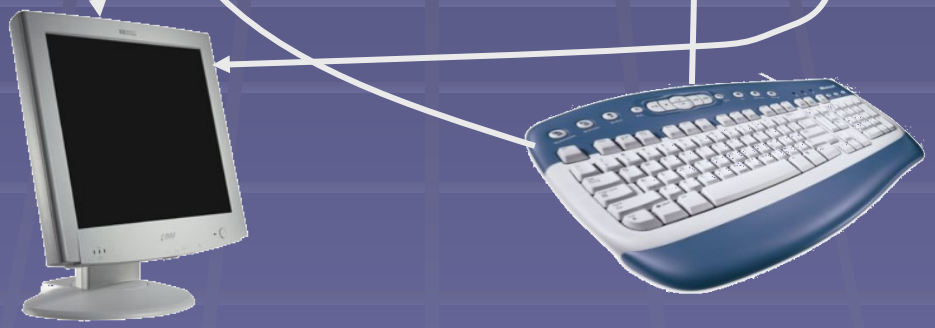
shell

dup(3)

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0
1 stdout
2 stderr
3 p1_to_p2[0]
4 p1_to_p2[1]

shell



Pipe

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 stdout
2 stderr
3 p1_to_p2[0]
4 p1_to_p2[1]

shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 p1_to_p2[1]
2 stderr

execvp(bin_path,
argv)

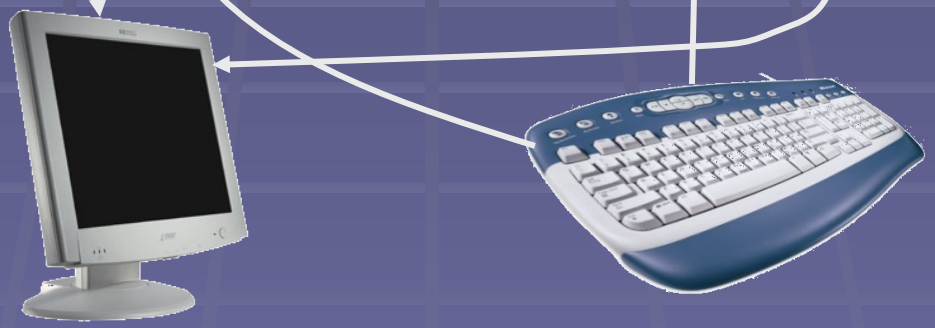
shell

dup(3)

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr
3 p1_to_p2[0]
4 p1_to_p2[1]

shell



Pipe

int p1_to_p2[2];
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file descriptors
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shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
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2 stderr

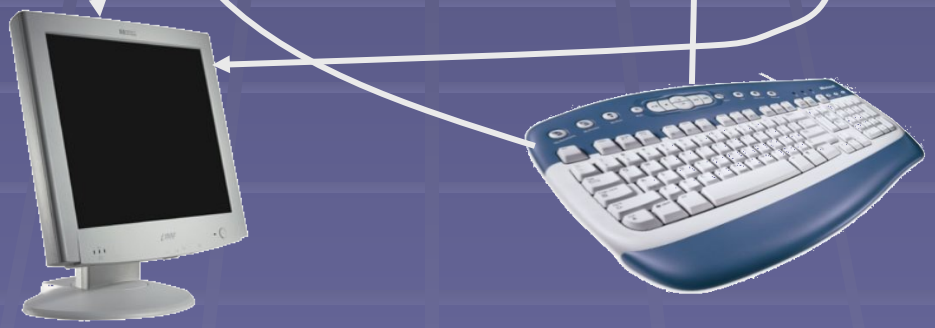
execvp(bin_path,
argv)

shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr
3 ~~p1_to_p2[0]~~
4 ~~p1_to_p2[1]~~

shell



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int p1_to_p2[2];
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1 p1_to_p2[1]
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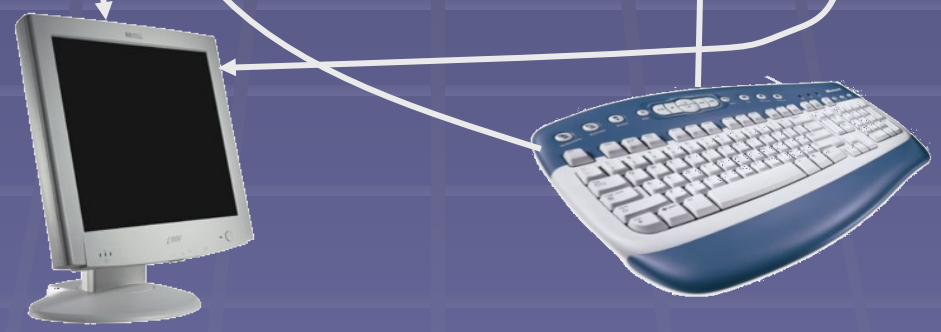
execvp(bin_path,
  argv)
```

shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr
```

shell



Pipe

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int p1_to_p2[2];
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file descriptors
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shell

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int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 p1_to_p2[1]
2 stderr

execvp(bin_path,
  argv)
```

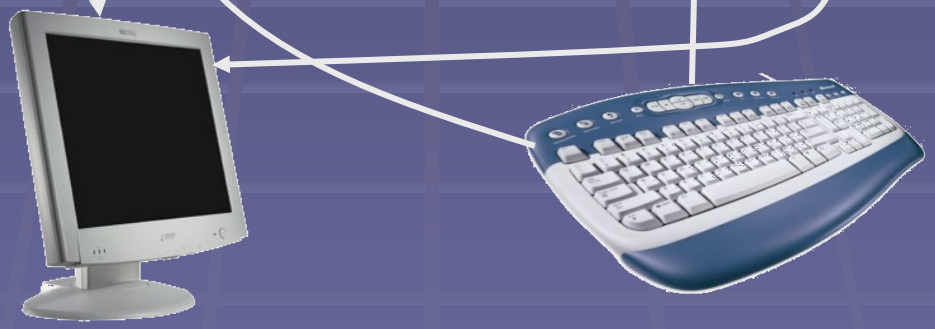
shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr

execvp(bin_path,
  argv)
```

shell



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file descriptors
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file descriptors
0 stdin
1 p1_to_p2[1]
2 stderr

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argv)

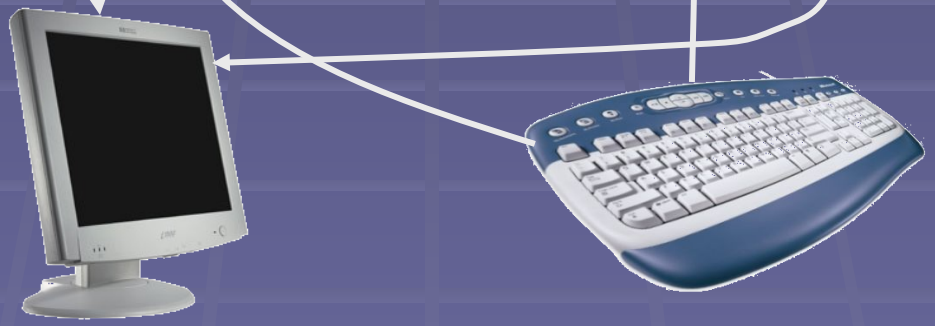
shell

int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr

execvp(bin_path,
argv)

shell



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file descriptors
0 stdin
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2 stderr

execvp(bin_path,
  argv)
```

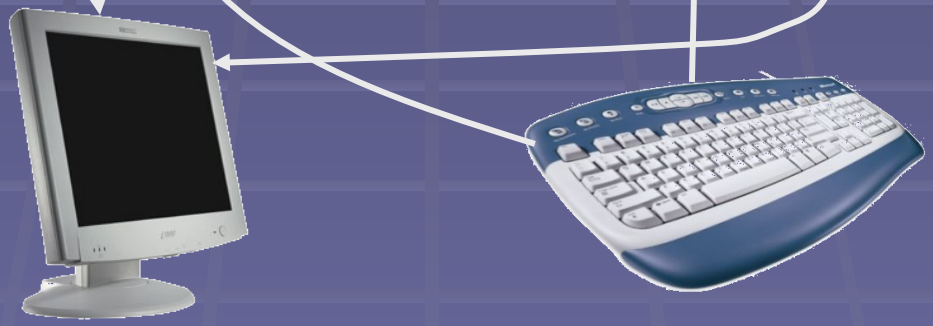
shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr

execvp(bin_path,
  argv)
```

shell



Pipe

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 stdout
2 stderr

waitpid(…)
waitpid(…)
```

shell

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int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 stdin
1 p1_to_p2[1]
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execvp(bin_path,
  argv)
```

shell

```
int p1_to_p2[2];
pipe(p1_to_p2);

file descriptors
0 p1_to_p2[0]
1 stdout
2 stderr

execvp(bin_path,
  argv)
```

shell