

# CSC209 Week 3 Notes

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## Shell Programming 4 of 6

- I/O redirection

- `<:` sends *stdin* from file to variable or command

```
1 >>> var='<sample.txt '  
2 >>> echo $var  
3 hello!  
4 hi!  
5 it's a pleasure to meet you  
6
```

- `>>:` appends line to file

- `2>&1:` redirects *stderr* to the same file as *stdout*

```
1 >>> cat hello > output.txt 2>&1  
2 >>> cat output.txt  
3 cat: hello: No such file or directory  
4
```

- File Descriptors

- **0:** Standard Input

- **1:** Standard Output

- \* Channels all output

```
1 cat sample.txt  
2 hello!  
3 hi!  
4 it's a pleasure to meet you  
5 >>> cat sample.txt> output.log  
6 >>> cat sample.txt1> output.log # identical  
7 >>> cat output.log  
8 hello!  
9 hi!  
10 it's a pleasure to meet you  
11
```

- **2:** Standard Error

- \* Channels all error output

```
1 >>> cat 2> error.log
2
```

- `$#`

- Returns number of command line arguments

```
1 >>> cat arg_number_check_example.sh
2 if [ $# -ne 2 ]
3 then
4     echo usage: arg_number_check_example.sh x y >& 2
5     exit 1
6 fi
7
8 expr $1 + $2
9 >>> arg_number_check_example.sh 2
10 usage: arg_number_check_example.sh x y
11
```

- `$*`

- Means all command line arguments
  - all arguments passed are treated as one

```
1 >>> sh dollar_star_example.sh hello world hi
2 cat: hello world hi: No such file or directory
3
```

- `$@`

- Also means all command line arguments
  - each argument separated a space is treated independently
  - Works like for loop

```
1 >>> sh dollar_at_example.sh hello world hi
2 cat: hello: No such file or directory
3 cat: world: No such file or directory
4 cat: hi: No such file or directory
5
```

- `${x}`

- Works like template literal in javascript
  - Works with arguments as well!
  - Is useful when using in loop

```
1 >>> cat dolloar_curly_x_example.sh
2 a="hello"
3 cat ${a}2
4 >>> sh dolloar_curly_x_example.sh
5 cat: hello2: No such file or directory
6
```

```
1 >>> x = "hello"
2 >>> sed -n ${x}p file
3 sed: 1: "hellop": extra characters at the end of h command
4
```