Standard Streams

Task 3 of PA3

```
java DiningPhilosophers -7.a

"-7.a" is not a positive decimal integer
Usage: java DiningPhilosophers [NUMBER_OF_PHILOSOPHERS]
```

Questions:

Where to print out these error messages?

Default standard streams

- Standard input (stdin)

- Standard output (stdout)

- Standard error (stderr)

Every program has 3 standard streams

Interaction

- stdin as "keyboard"

- stdout as "screen"

- stderr as "error reporter"

Java standard streams

- `System.out` is stdout

- `System.in` is stdin

- `System.err` is stderr

Error messages should be written on **stderr** not `stdout`

Redirect

Capture output of A then makes it as input of B

Redirect stdout

```
# Print out to screen directly
echo "Hello World"

# Redirect stdout to a new file (truncate)
echo "Hello World" > hello.log

# Redirect and append stdout to a file
echo "Hello World" >> hello.log
```

Pipe

Redirect stdout of process A to stdin of process B

```
echo "Hello World" | wc
cat langs.txt | wc -l
```

Redirect in detail

```
1>filename
  # Redirect stdout to file "filename."
1>>filename
  # Redirect and append stdout to file "filename."
2>filename
  # Redirect stderr to file "filename."
2>>filename
  # Redirect and append stderr to file "filename."
&>filename
  # Redirect both stdout and stderr to file "filename."
```

Mixed redirect & pipe

```
cat names.txt | sort > langs.txt
# `cat` reads file `names.txt` then prints in stdout
# stdout of `cat` is redirected to stdin of `sort` (Pipe)
# stdout of sort is redirected to langs.txt
```

Redirect stdin

```
sort 0< names.txt > langs.txt
# stdin is from `names.txt`
# stdout is to `langs.txt`
```

References

http://www.tldp.org/LDP/abs/html/io-redirection.html