

# Chapter 10

September 24, 2015

## John Backus famously observed about “changeable parts” and “framework”:

“Let us distinguish two parts of a programming language. First, its framework which gives the overall rules of the system, and second, its changeable parts, whose existence is anticipated by the framework but whose particular behavior is not specified by it. For example, the for statement, and almost all other statements, are part of Algol’s framework but library functions and user- defined procedures are changeable parts.” (Link)

# Frameworks in Bash

- ▶ Control structures are part of the framework of Bash
- ▶ Control structures express either alternation or iteration

# Alternation

- ▶ if/then/fi, if/then/else/fi, if/then/elif/else/fi
- ▶ case

# Iteration

- ▶ `for/in/do/done`, `for((;))/do/done`
- ▶ `while/do/done`
- ▶ `until/do/done`
- ▶ `break/continue`

## if/then/fi

- ▶ Argument for if is a program to execute, usually “test” or its synonym “[”, but it can be anything that returns a 0 for true, and something else for false.

WRONG!

```
$ if -f /etc/hosts
> then
> echo /etc/hosts
> fi
-f: command not found
```

## if/then/fi

RIGHT!

```
$ if [ -f /etc/hosts ]  
> then  
>   echo /etc/hosts  
> fi  
/etc/hosts
```

## Something other than test

```
$ if env > /dev/null  
> then  
>     echo true  
> fi
```



## if/then/else/fi

```
$ if touch /werwer 2> /dev/null
> then
>   echo created /werwer
> else
>   echo did not create /werwer
> fi
did not create /werwer
```

## if/then/elif/then/else/fi

```
$ if touch /werwer 2> /dev/null
> then
>   echo created /werwer
> elif touch /tmp/werwer 2> /dev/null
> then
>   echo created /tmp/werwer
> else
>   echo cannot create any werwer
> fi
created /tmp/werwer
```