

# Advanced Transfers



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# About RemObjects Software

- ▶ Developers tools company
- ▶ Infrastructure Frameworks
- ▶ Data Abstract - multi-tier database solution
- ▶ RemObjects SDK - remoting framework
- ▶ 20% Discount Code - **AnDevCon2**
- ▶ [remobjects.com](http://remobjects.com)



# Agenda

- ▶ Secrets of HTTP Downloads
- ▶ Range Requests
- ▶ Resuming Downloads
- ▶ HTTP Uploads
- ▶ Peer 2 Peer
- ▶ Zip Files

# Secrets of HTTP Downloads

- ▶ <http://web-sniffer.net/>
- ▶ telnet [www.davinciunltd.com](http://www.davinciunltd.com) 80  
HEAD /http/httptestfile.txt HTTP/1.1  
Host: [www.davinciunltd.com](http://www.davinciunltd.com)  
Connection: close

# Permission

- ▶ Need Internet permission in `AndroidManifest.xml`

```
<uses-permission android:name="android.permission.INTERNET"/>
```

# Head Request

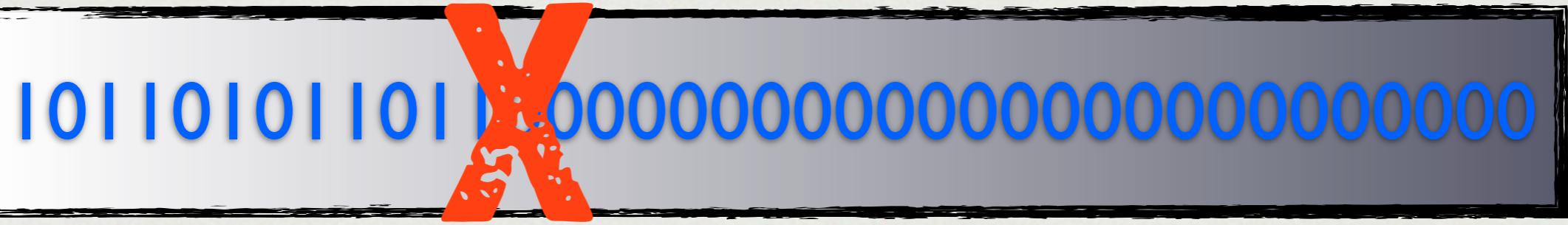
```
HttpURLConnection connection;  
connection = (HttpURLConnection) new URL(url).openConnection();  
connection.setRequestMethod("HEAD");
```

# Range Request

```
HttpURLConnection connection =  
    (HttpURLConnection) new URL(url).openConnection();  
  
connection.setRequestProperty("Range", "bytes=115-154");  
  
InputStream response = connection.getInputStream();  
  
String result = readString(response, charset);
```

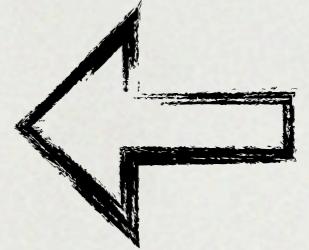
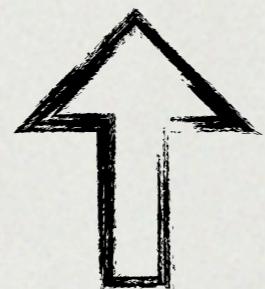
000000000000000000000000000000000000000000000000000000000

Initialize to Zero

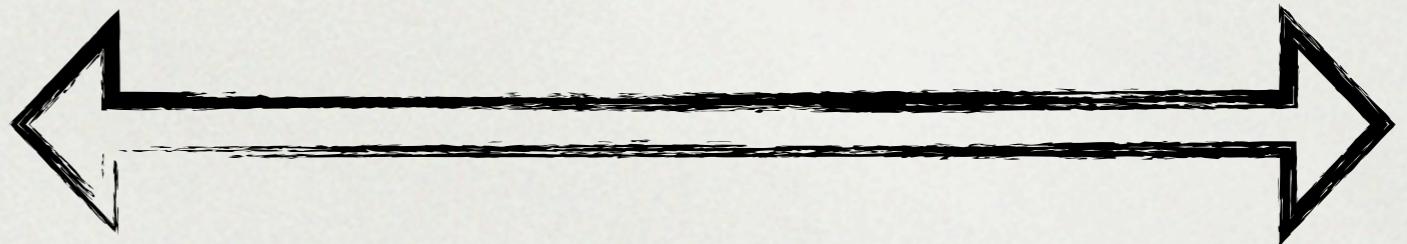


A failure occurs during  
download

```
1011010110110000000000000000000000000000
```

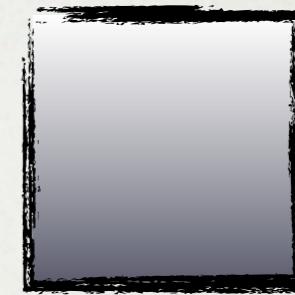
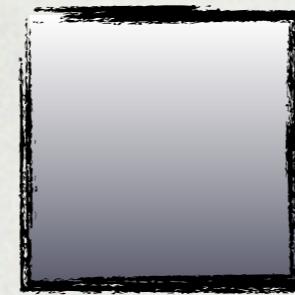
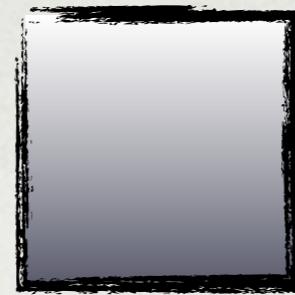
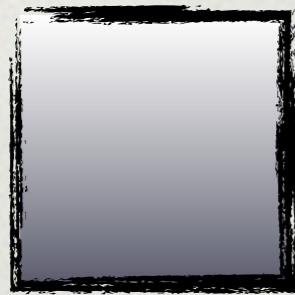


Scan for data from end



10110101101101101001101101011010111011

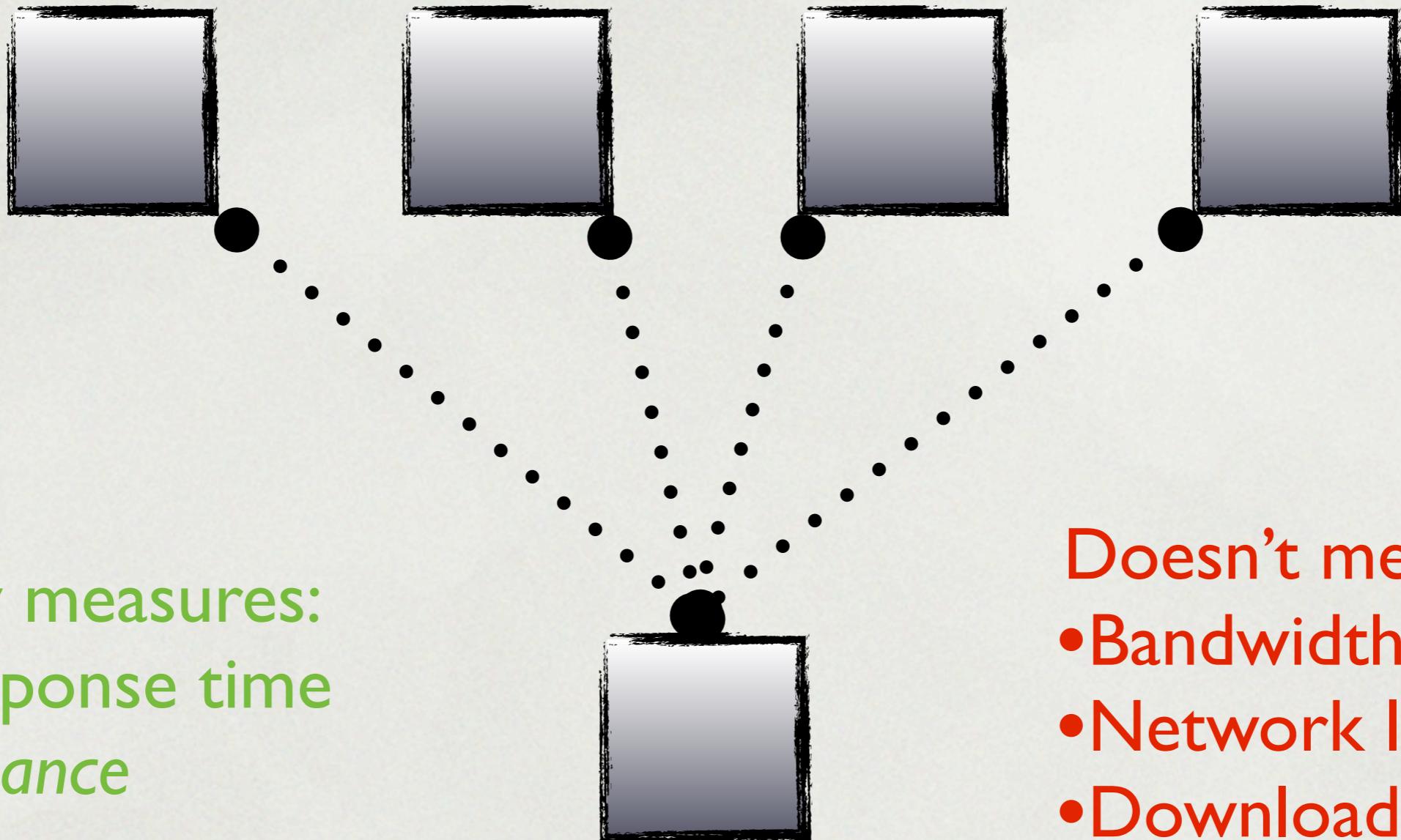
# Make a Range Request



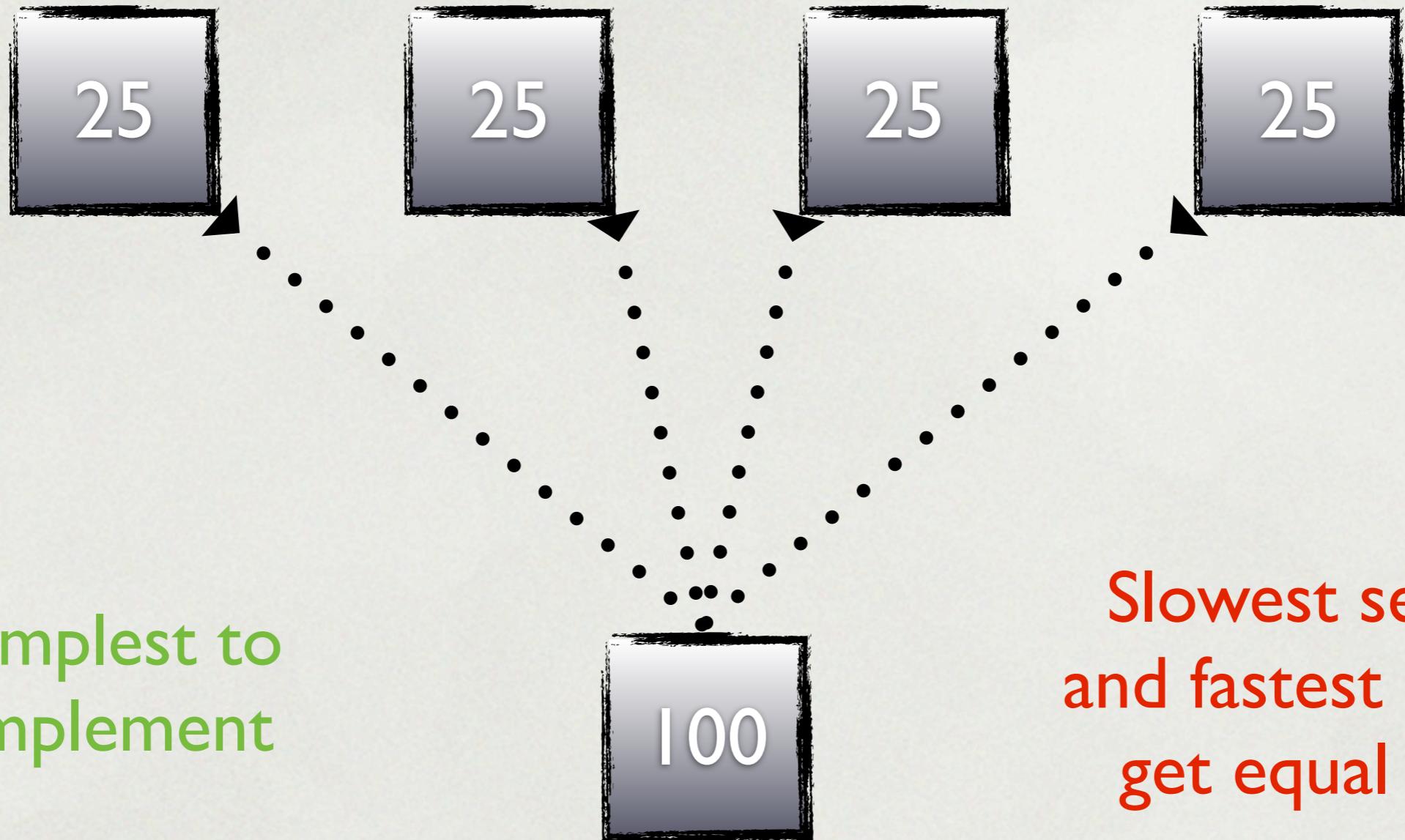
?

Divided Downloads

Unnecessary



# Ping for Speed



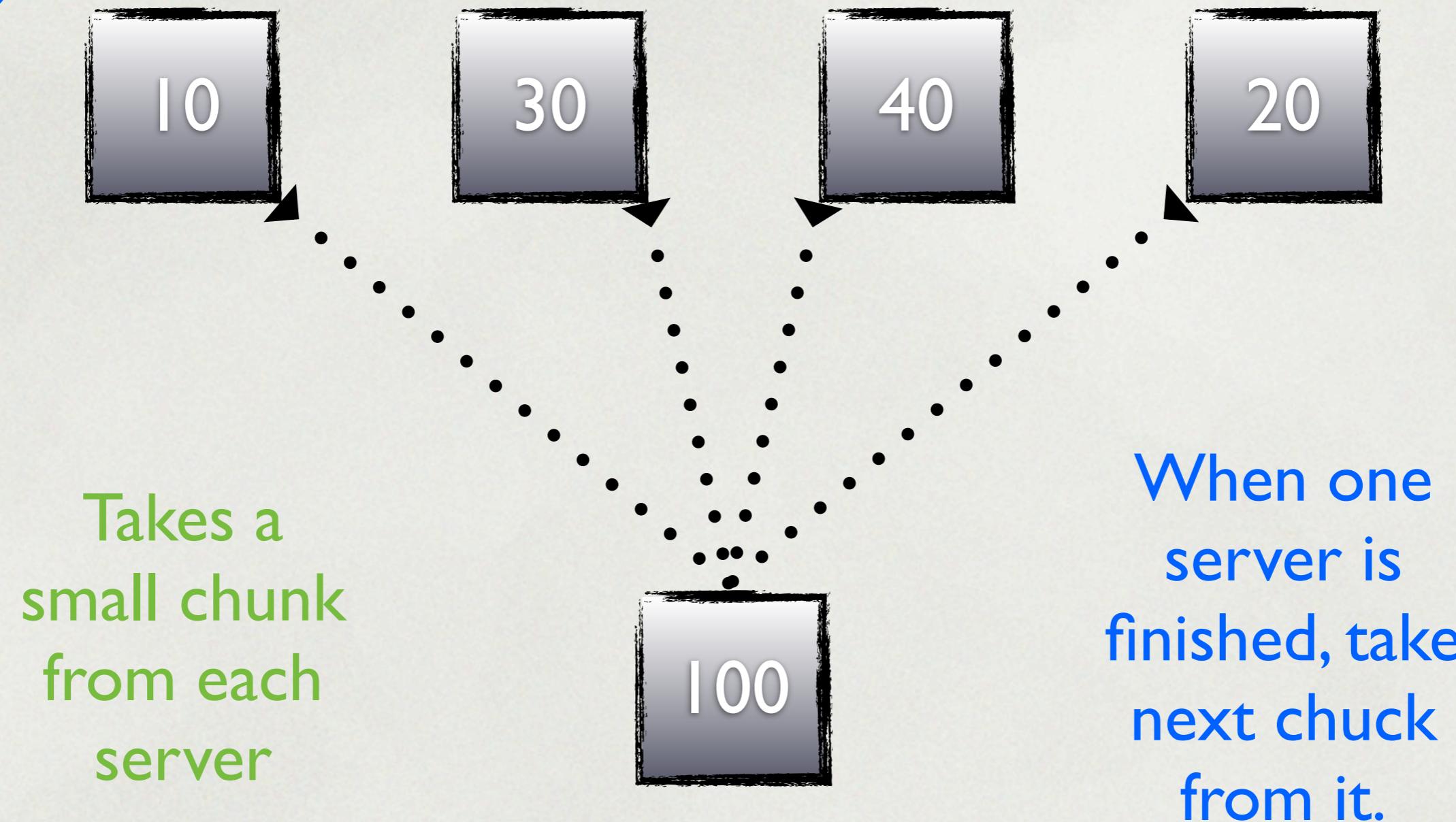
Simplest to implement

Speed =  
Slowest download /  
splits

Slowest server  
and fastest server  
get equal load

# Equal Division

Best Solution



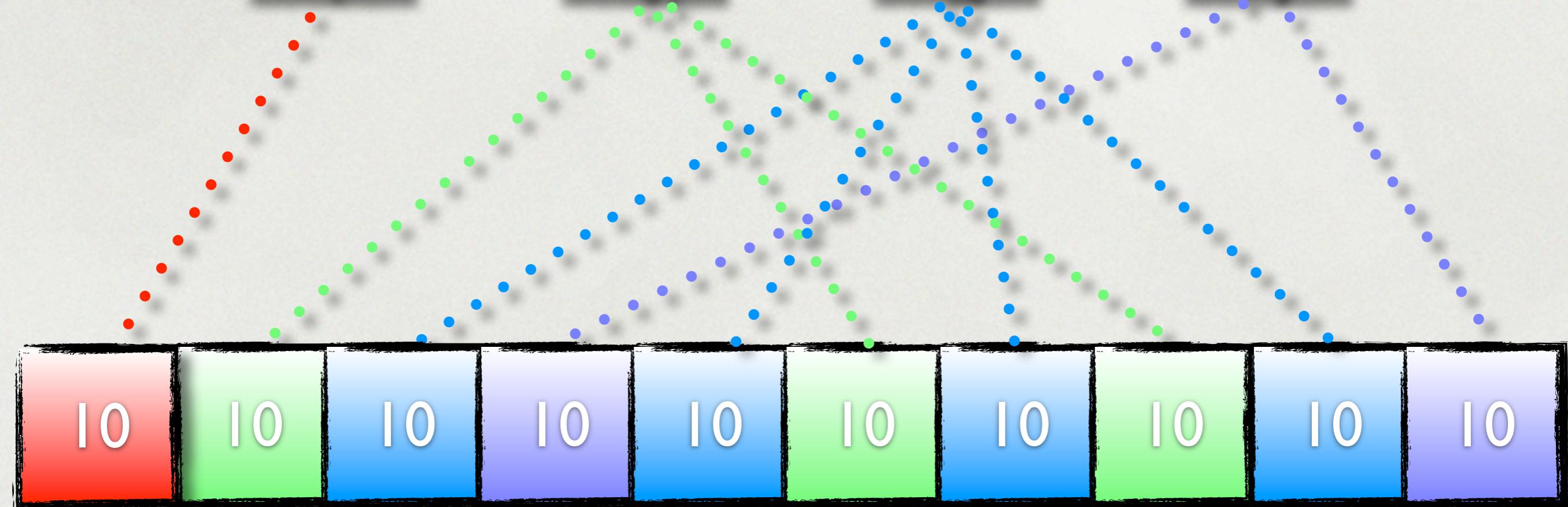
# Small Chunks

10

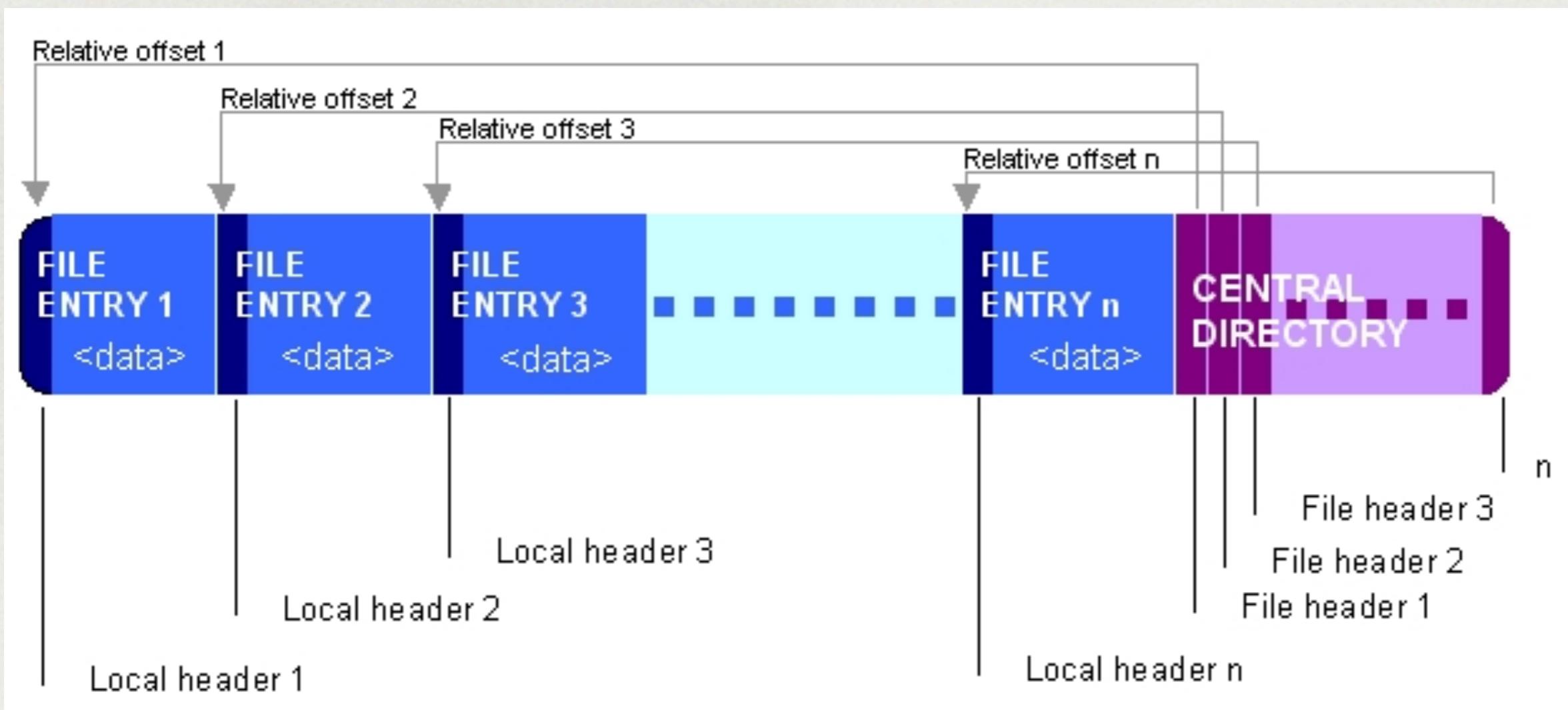
30

40

20



# Small Chunks



# Zip File Format

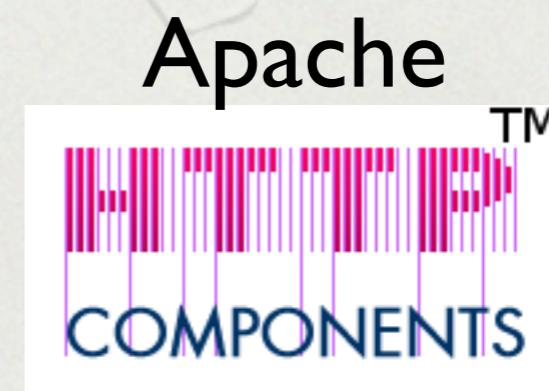
# Central Directory

- ▶ Header 0x02014b50 (little indian)
  - ▶ “P K 0x01 0x02”
- ▶ Near end of file
- ▶ Lists location of individual files
- ▶ Non “solid” archives
- ▶ [http://en.wikipedia.org/wiki/ZIP\\_\(file\\_format\)](http://en.wikipedia.org/wiki/ZIP_(file_format))



# Apache HTTP Components

- ▶ HttpComponents Core
- ▶ I/O (Blocking & Non-blocking)
- ▶ HttpComponents Client
- ▶ HttpComponents AsyncClient
- ▶ <http://hc.apache.org/>



# ZeroConf / Bonjour

- ▶ Autodiscovery
- ▶ multi-cast DNS
- ▶ Local network
- ▶ <http://jmdns.sourceforge.net/>
- ▶ android.permission.INTERNET  
android.permission.CHANGE\_WIFI\_MULTICAST\_STATE
- ▶ <http://home.heeere.com/tech-androidjmdns.html>



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- ▶ [wiki.oxygenelanguage.com](http://wiki.oxygenelanguage.com)
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