```
C:\> echo %USERNAME%
Ansgar Wiechers
C:\> off_the_.bat
```

Batch files. Are. Butt-ugly.

Why Not …

- … use VBScript?

```
Set sh  = CreateObject("WScript.Shell")
Set cmd = sh.Exec("C:\PATH\TO\some.exe")
Do While cmd.Status = 0
    WScript.Sleep 100
Loop
If cmd.ExitCode <> 0 Then
    Wscript.Echo cmd.StdErr.ReadAll
Else
    Wscript.Echo cmd.StdOut.ReadAll
End If
```

- … use PowerShell?
- … use Perl/Python/whatever?

Redirection

- `<, >, >>, 2>, 2>>`
- `2>&1, 1>&2`
- `>nul`
- `3>, >&3`

Command Chaining

- |
- &&, ||
- &
- ()

Variables

- %COMPUTERNAME%, %SystemDrive%, %SystemRoot%, %ProgramFiles%
- %USERNAME%, %USERDOMAIN%, %USERDNSDOMAIN%
- %PATH%
- %DATE%, %TIME%, %CD%, %RANDOM%
- %ERRORLEVEL%
- set

Prompts

- ~~choice~~
- `set /p FOO=More? [y/n]`
- `set /p NAME=Your Name:`

Calculation

- `set /a FOO += 1`
- `set /a "FOO >>= 2"`
- `set /a "a+=1, a*=2, a-=1"`

Conditionals

- `if [/i] "%1"=="foo" …`
- `if [not] exists PATH …`
- `if [not] defined VAR …`
  - `"%1"==""` ✓
  - `"%VAR%"==""` ✗
- `if %ERRORLEVEL% geq 8 …`
- `if CONDITION ( … ) else ( … )`

Loops

- `for /l %%i in (start,step,end) do …`
- `for %%f in (*) do …`
  `for /d %%d in (*) do …`
- `for /r [PATH] %%a in (*.txt) do …`
- `for /f %%l in (FILE) do …`
  `for /f %%l in ('COMMAND') do …`
  - `eol`
  - `skip`
  - `tokens`
  - `delims`
  - `usebackq`

for-Variables

- %%a ≠ %%A
- %%A, %%~A
- %%~dpnxA, %%~ftzaA
  - dpnx, f, s
  - a
  - t
  - z
- %%~f$PATH:A

Delayed Expansion

- **!VAR!**
- **variables normally expanded when command is entered/read**
- **for-loop is one command**

String Operations

- `echo %TIME::=.%`
- ~~`wildcards`~~
- `replacing '%'?`
  - ~~`set FOO=%BAR:%%=_%`~~
  - `set FOO=!BAR:%%=_!`
  - `set FOO=!BAR:%BAZ%=_!`
- `substrings`
  - `set DAY=%DATE:~0,2%`
    `set MONTH=%DATE:~3,2%`
    `set YEAR=%DATE:~-4%`

Calls

- external scripts
  - call foo.cmd
- „dynamic“ variables
  - call set DYN_VAR=%foo_%i%%
  - not in scripts, though :(
- functions
  - call :Sleep 5
  - call :SOMETHING && exit /b 1

Escaping

- ^
- reserved characters
- pipes in "for" statements
- multiline echo

Example (multiline)

```
 1  echo set context persistent nowriters ^
 2
 3  set metadata %METADATA_FILE% ^
 4
 5  set verbose off ^
 6
 7  delete shadows exposed %DRIVE% ^
 8
 9  begin backup ^
10
11  add volume %SRC_VOLUME% alias DataVolumeShadow ^
12
13  create ^
14
15  expose %%DataVolumeShadow%% %DRIVE% ^
16
17  exec %ROBOCOPY_SCRIPT% ^
18
19  delete shadows exposed %DRIVE% ^
20
21  end backup >"%DISKSHADOW_SCRIPT%"
22  echo @echo off ^
23
24  robocopy "%SRC_SHADOW%" "%DST%" *.vhd %ROBOCOPY_OPTS% ^
25
26  set rc=%%errorlevel%% ^
27
28  if %%rc%% geq 8 exit /b %%rc%% ^
29
30  exit /b 0 >"%ROBOCOPY_SCRIPT%"
31  diskshadow /s "%DISKSHADOW_SCRIPT%" >"%LOGFILE%" 2>&1
```

Small Stuff

- empty files
  - `echo. >out.txt`
  - `type nul >out.txt`
- codepages
  - `chcp 1252`
- echo on/off (@)

Useful Commands (1)

- setx
- netsh
- reg
- cacls/xcacls/icacls
- runas
- find/findstr

Useful Commands (2)

- diskpart
- eventcreate
- xcopy/robocopy
- sc
- tasklist/taskkill
  - `tasklist /fi "PID eq 1234"`
  - `taskkill /f /fi "WINDOWTITLE eq foo*"`

Useful Commands (3)

- **wmic**
  - `wmic OS get Caption,Version`
  - `wmic pagefileset where name="C:\\pagefile.sys" set InitialSize=2000MB,MaximumSize=2000MB`
  -
```
set OU=OU=Server,DC=example,DC=org
set QUERY=dsquery computer "%OU%" -o samid
for /f %%h in ('%QUERY%') do (
   set host=%%h
   wmic /node:"!host:$=!" LogicalDisk ^
      where DriveType="3" ^
      get DeviceID,FreeSpace,Size,SystemName
)
```

Warning!

NEVER edit batch files during execution!

?

Have fun!