Batch Scripting

Starter's Guide

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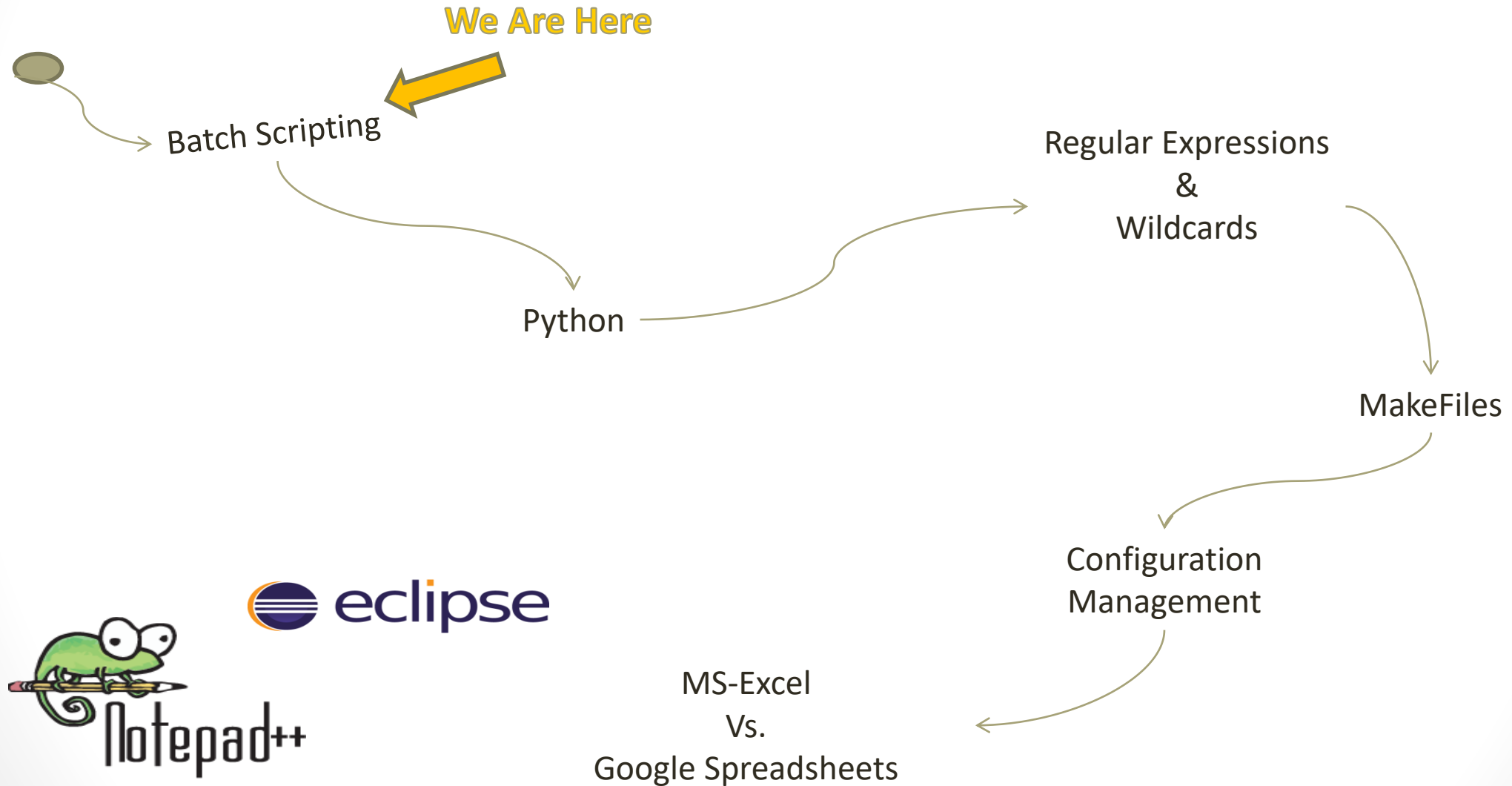
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Abstract

- Introduction
- General Notes
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Introduction History

- Early PC's had DOS (Disc Operating System), a text-only command-line interface

- Dos is a 16 bit (data bus) limited while CMD does not have the 16 bit limitations

- while CMD command interpreter is cmd.exe (not like the old DOS command interpreter "command.com")

Introduction
What are batch scripts?

- These are simple text files containing some lines with commands that get executed in sequence, one after the other. These files have the special extension BAT or CMD.

- Files of this type are recognized and executed through an interface (sometimes called a shell) provided by a system file called the command interpreter (cmd.exe)

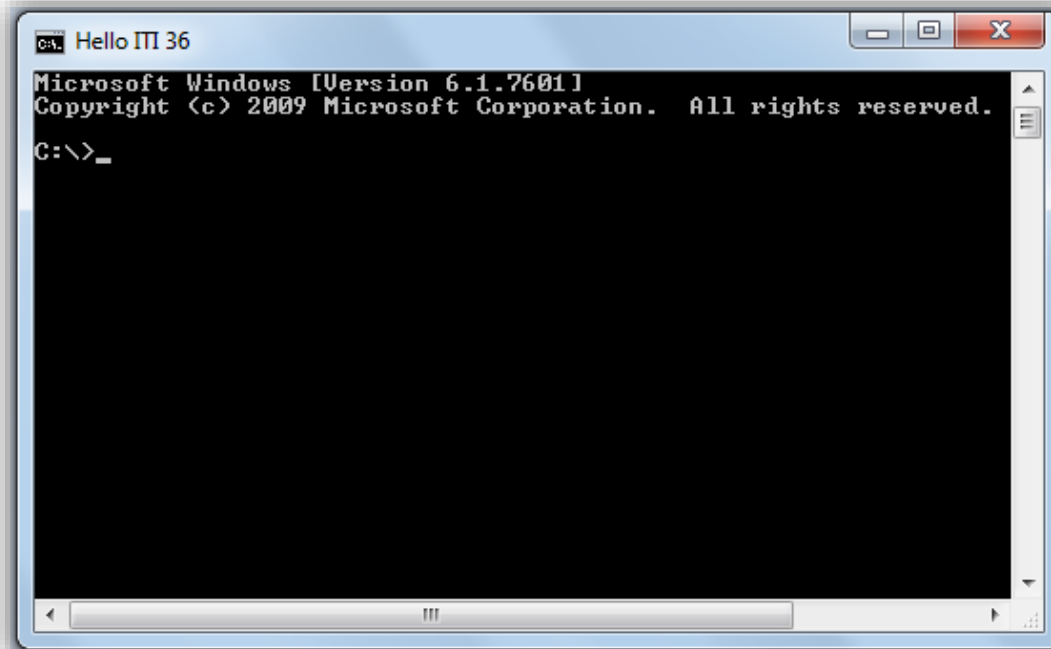# Introduction
Uses Of Batch Scripting

- Automation of simple time consuming tasks

- Speeding Up tasks that can be run in parallel "using Multiple threads"

General Notes

How to open a cmd?

1. Type CMD inside start menu search bar.
2. Press window button + R (Run prompt) then type CMD.
3. Press Shift + right click then choose "open CMD here"
4. Type CMD in the windows explorer address bar.

General Notes

- Don't use Wordpad or Word when writing batch scripts unless you are very careful to save all files in pure text format, use notepad or notepad++ instead.

- Batch Script commands are not case sensitive

- To get help for most of commands type the command and then "/?" or for general CMD help type "help"

General Notes

- Commands are either
  - Internal commands that are interpreted by the cmd interpreter
  - External commands that are exe files which can be found in the PATH environment variable

- Structure for commands
  - COMMAND [options] [Arguments]

- Options and arguments are not mandatory for all commands

Basic Operations
General Useful Commands

- DIR
  - Displays a list of files and subdirectories in a directory.

- DATE /T & TIME /T
  - To display date and time.

- CLS
  - Clears the current cmd window.

- PAUSE
  - Suspends processing of a batch program and displays the message
                    " Press any key to continue . . . "
- REM
  - A command that identifies that the following text is a comment or a remark

For many CMD Tricks:
https://www.lifewire.com/command-prompt-tricks-and-hacks-2618104

Basic Operations "Echo"

- used for displaying text
- Example

```
@ECHO OFF

ECHO "Hello World"
```

@: show only output of the command

Basic Operations "redirection >"

- redirects the output of a command to an output file
- Example

```
@ECHO OFF
ECHO "Hello World" >output.txt
```

Basic Operations "redirection >>"

- redirects the output of a command to the end of an output file (i.e. appends)
- Example

```
@ECHO OFF
ECHO "Hello World" >>output.txt
```

Basic Operations "SET"

- create and set environment variables for this session
- environment variables are variables used by batch script
- To access an environment variable the used syntax is %var_name%
- Syntax for SET:
  - `SET var= str`
  - `SET /P var=[please enter value]`
  - `SET /A "var=var+1"`

Basic Operations "SET"

- Example

```
@ECHO OFF
SET text_value="Hello World"
Set output_file="output.txt"
ECHO %text_value%>%output_file%
```

Basic Operations "redirection <"

- redirects the data in the file to a certain variable
- Example

```
@ECHO OFF
SET text_value="Hello World"
Set output_file="output.txt"
ECHO %text_value%>%output_file%
SET /p test=<output.txt
ECHO %test%
```

Basic Operations "Attrib"

- used for setting attributes of files
- ATTRIB [+/-][R/H] [path+file]
- Example

```
@ECHO OFF
SET text_value="Hello World"
Set output_file="output.txt"
attrib -r  %output_file%
ECHO %text_value%>%output_file%
attrib +r %output_file%
```

ATTRIB command is used to cancel the effects of "modern shortcut virus". Just open the cmd as administrator and type
attrib -h -r -s /s /d <Your USB drive letter>:*. *

Basic Operations "MKDIR"

- Used for creating folders
- Example

```
@ECHO OFF
SET text_value="Hello World"
Set output_file="TXT\output.txt"
MKDIR TXT
attrib -r  %output_file%
ECHO %text_value%>%output_file%
attrib +r %output_file%
```

Basic Operations "IF"

- To take certain action based on certain conditions

```
@ECHO OFF
SET text_value="Hello World"
Set output_file="TXT\output.txt"
IF NOT EXIST TXT (
MKDIR TXT
)
attrib -r  %output_file%
ECHO %text_value%>%output_file%
attrib +r %output_file%
```

Self-Study

ERRORLEVEL: HTTP://SS64.COM/NT/ERRORLEVEL.HTML

Basic Operations "CD"

- To change the current working directory

```
@ECHO OFF
SET text_value="Hello World"
Set output_folder="TXT"
Set output_file="output.txt"
IF NOT EXIST %output_folder% (
MKDIR %output_folder%
)
CD %output_folder%
attrib -r  %output_file%
ECHO %text_value%>%output_file%
attrib +r %output_file%
CD..
```

Basic Operations "goto"

- To jump the execution path to a certain label

```
@ECHO OFF
SET text_value="Hello World"
Set output_folder="TXT"
Set output_file="output.txt"
IF EXIST %output_folder% (
GOTO AFTERDIRECTORY
)
MKDIR %output_folder%
:AFTERDIRECTORY
CD %output_folder%
attrib -r  %output_file%
ECHO %text_value%>%output_file%
attrib +r %output_file%
CD..
```

Label

Basic Operations "Arguments"

- A command line argument (or parameter) is any value passed into a batch script:
  - ITI.bat "ITI-Smartvillage" "ES-39"

- You can get the value of any argument using a % followed by it's numerical position on the command line. The first item passed is always %1 the second item is always %2 and so on

- %* in a batch script refers to all the arguments (e.g. %1 %2 %3 %4 %5 ...%255)
  only arguments %1 to %9 can be referenced by number.

Excercise1

- Create a batch file named HelloWorld.
- Use the developed batch script in the previous slides as your base.
- Input the `text_value, output_folder and output_file` as an argument to the batch script.
- Check on all batch script arguments and if any of them is empty do not do any operations and print `invalid input` to the user and exit.
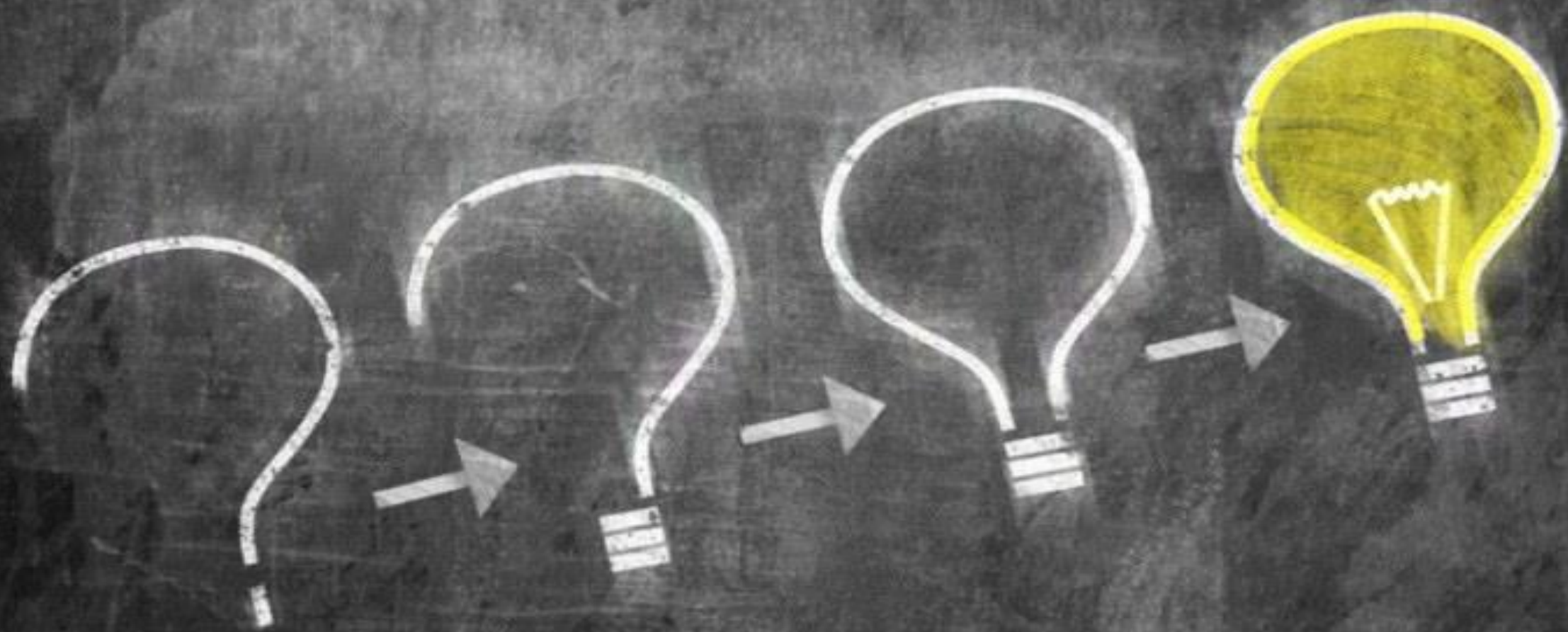
You can get the history of all the used command in cmd in the current session by pressing F7

References

- Microsoft Documentation: http://www.microsoft.com/resources/documentation/windows/xp/all/proddocs/en-us/ntcmds.mspx?mfr=true
- Command line reference – Web, Database and OS scripting: http://ss64.com/nt/
- The Command Line in Windows: http://www.didiermorandi.fr/vbscript/doc/Windows_Command_Line_Vic_Laurie.pdf
- System Administrator guides (Copy, Xcopy): http://www.xtraficient.com/batch-files/copy-and-rename-files
- Redirection reference: http://www.robvanderwoude.com/redirection.php
- Shortcut virus removal guide: http://vintaytime.com/1250/remove-shortcut-virus/

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