



BATCH SCRIPTING

tutorialspoint

SIMPLY EASY LEARNING

www.tutorialspoint.com

 <https://www.facebook.com/tutorialspointindia>

 <https://twitter.com/tutorialspoint>

About this Tutorial

Batch scripts are stored in simple text files containing lines with commands that get executed in sequence, one after the other. Scripting is a way by which one can alleviate this necessity by automating these command sequences in order to make one's life at the shell easier and more productive.

This tutorial discusses the basic functionalities of batch scripting along with relevant examples for easy understanding.

Audience

This tutorial has been prepared for beginners to understand the basic concepts of batch scripting.

Prerequisites

A reasonable knowledge of computer programming and concepts such as variables, commands, syntax, etc. is desired.

Copyright & Disclaimer

© Copyright 2016 by Tutorials Point (I) Pvt. Ltd.

All the content and graphics published in this e-book are the property of Tutorials Point (I) Pvt. Ltd. The user of this e-book is prohibited to reuse, retain, copy, distribute or republish any contents or a part of contents of this e-book in any manner without written consent of the publisher.

We strive to update the contents of our website and tutorials as timely and as precisely as possible, however, the contents may contain inaccuracies or errors. Tutorials Point (I) Pvt. Ltd. provides no guarantee regarding the accuracy, timeliness or completeness of our website or its contents including this tutorial. If you discover any errors on our website or in this tutorial, please notify us at contact@tutorialspoint.com

Table of Contents

About this Tutorial	i
Audience	i
Prerequisites	i
Copyright & Disclaimer.....	i
Table of Contents	ii
1. BATCH SCRIPTING – OVERVIEW.....	1
2. BATCH SCRIPTING – ENVIRONMENT.....	2
Writing and Executing	2
Environment Variables	4
3. BATCH SCRIPTING – COMMANDS.....	5
ver.....	5
ASSOC	5
CD	6
CLS	7
Copy.....	7
DEL.....	8
DIR	9
DATE	9
ECHO.....	10
EXIT.....	11
MD.....	11
MOVE.....	12
PATH	12
PAUSE	13
PROMPT.....	13

RD	14
REN	14
REM	15
START	15
TIME.....	15
TYPE	16
VOL	16
ATTRIB	17
CHKDSK.....	18
CHOICE.....	18
CMD	19
COMP	19
CONVERT.....	19
DRIVERQUERY.....	20
EXPAND.....	21
FIND	21
FORMAT.....	21
HELP	22
IPCONFIG	23
LABEL	24
MORE.....	24
NET	25
PING.....	26
SHUTDOWN	27
SORT	28
SUBST.....	28
SYSTEMINFO	28

TASKKILL	29
TASKLIST	29
XCOPY	30
TREE	30
FC	31
DISKPART	31
TITLE	32
SET	32
4. BATCH SCRIPTING – FILES.....	33
Creating Batch Files.....	33
Saving Batch Files.....	33
Executing Batch Files.....	34
Modifying Batch Files.....	35
5. BATCH SCRIPTING – SYNTAX.....	36
6. BATCH SCRIPTING – VARIABLES.....	37
Command Line Arguments.....	37
Set Command.....	38
Working with Numeric Values.....	38
Local vs Global Variables.....	39
Working with Environment Variables.....	40
7. BATCH SCRIPTING – COMMENTS.....	41
Comments Using the Rem Statement.....	41
Comments Using the :: Statement.....	42
8. BATCH SCRIPTING – STRINGS	44
Create String	44
Empty String.....	44

String Interpolation	45
String Concatenation.....	45
String length.....	46
toInt	46
Align Right.....	47
Left String.....	48
Mid String	48
Remove.....	49
Remove Both Ends	49
Remove All Spaces	50
Replace a String.....	50
Right String	51
9. BATCH SCRIPTING – ARRAYS.....	52
Creating an Array	52
Accessing Array's.....	52
Modifying an Array	53
Iterating Over an Array	54
Length of an Array.....	54
Creating Structures in Arrays.....	55
10. BATCH SCRIPTING – DECISION MAKING	57
If Statement	57
Checking Variables	58
Checking Command Line Arguments	59
If/else Statement	60
Checking Variables	60
if defined.....	62
if exists.....	63

Nested If Statements.....	63
If errorlevel	64
Goto Statement.....	64
11. BATCH SCRIPTING – OPERATORS.....	66
Arithmetic Operators	66
Relational Operators	67
Logical Operators	68
Assignment Operators.....	69
Bitwise Operators	71
Redirection.....	72
12. BATCH SCRIPTING – DATE AND TIME.....	76
DATE	76
TIME.....	76
13. BATCH SCRIPTING – INPUT / OUTPUT	78
14. BATCH SCRIPTING – RETURN CODE	79
Error Level.....	79
Loops	81
While Statement Implementation	81
For Statement - List Implementations	83
Looping through Ranges.....	85
Classic for Loop Implementation	86
Looping through Command Line Arguments	87
Break Statement Implementation	88
15. BATCH SCRIPTING – FUNCTIONS	91
Function Definition	91
Calling a Function	92

Functions with Parameters.....	92
Functions with Return Values.....	93
Local Variables in Functions	94
Recursive Functions	94
File I/O	96
Creating Files.....	96
Writing to Files.....	96
Appending to Files.....	97
Reading from Files.....	98
Deleting Files.....	99
Renaming Files	100
Moving Files	100
Batch Files – Pipes	101
Batch Files – Inputs	103
Using the SHIFT Operator	104
Folders	106
Creating Folders	106
Listing Folder Contents.....	107
Deleting Folders	109
Renaming Folders.....	110
Moving Folders	111
16. BATCH SCRIPTING – PROCESS.....	113
Viewing the List of Running Processes.....	113
Killing a Particular Process	115
Starting a New Process.....	116

17. BATCH SCRIPTING – ALIASES	118
Creating an Alias	118
Deleting an Alias	119
Replacing an Alias	120
18. BATCH SCRIPTING – DEVICES.....	121
19. BATCH SCRIPTING – REGISTRY.....	125
Reading from the Registry.....	125
Adding to the Registry.....	126
Deleting from the Registry	127
Copying Registry Keys	128
Comparing Registry Keys.....	129
20. BATCH SCRIPTING – NETWORK	130
NET ACCOUNTS	130
NET CONFIG	131
NET COMPUTER	131
NET USER	131
NET STOP/START	133
NET STATISTICS	133
NET USE.....	135
21. BATCH SCRIPTING – PRINTING.....	136
Command Line Printer Control	136
Testing if a Printer Exists	137

22. BATCH SCRIPTING – DEBUGGING	139
Error Messages.....	139
Complex Command Lines	139
Subroutines.....	140
Windows Versions.....	140
23. BATCH SCRIPTING – LOGGING.....	142

1. Batch Scripting – Overview

Batch scripting is incorporated to automate command sequences which are repetitive in nature. Scripting is a way by which one can alleviate this necessity by automating these command sequences in order to make one's life at the shell easier and more productive. In most organizations, batch scripting is incorporated in some way or the other to automate stuff.

Some of the features of batch scripting are:

- Can read inputs from users so that it can be processed further.
- Has control structures such as for, if, while, switch for better automating and scripting.
- Supports advanced features such as Functions and Arrays.
- Supports regular expressions.
- Can include other programming codes such as Perl.

Some of the common uses of batch scripting are:

- Setting up servers for different purposes.
- Automating housekeeping activities such as deleting unwanted files or log files.
- Automating the deployment of applications from one environment to another.
- Installing programs on various machines at once.

Batch scripts are stored in simple text files containing 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. On Windows systems, this interpreter is known as cmd.exe.

Running a batch file is a simple matter of just clicking on it. Batch files can also be run in a command prompt or the Start-Run line. In such case, the full path name must be used unless the file's path is in the path environment. Following is a simple example of a batch script. This batch script when run deletes all files in the current directory.

```
:: Deletes All files in the Current Directory With Prompts and Warnings  
::(Hidden, System, and Read-Only Files are Not Affected)
```

:: @ECHO OFF

DEL . DR

2. Batch Scripting – Environment

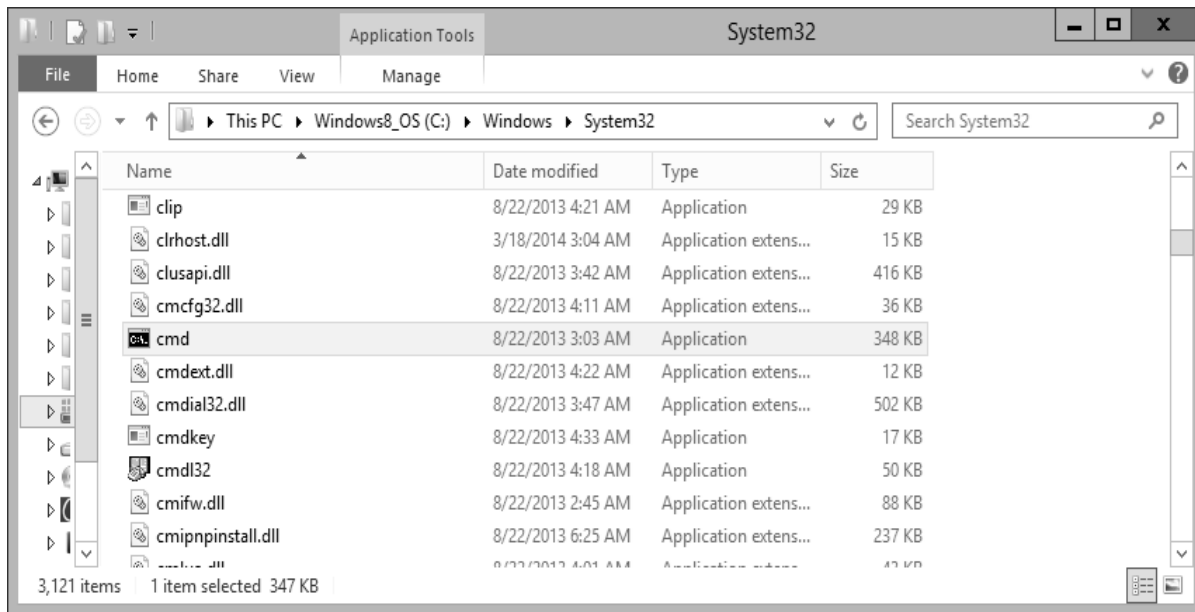
This chapter explains the environment related to batch scripting.

Writing and Executing

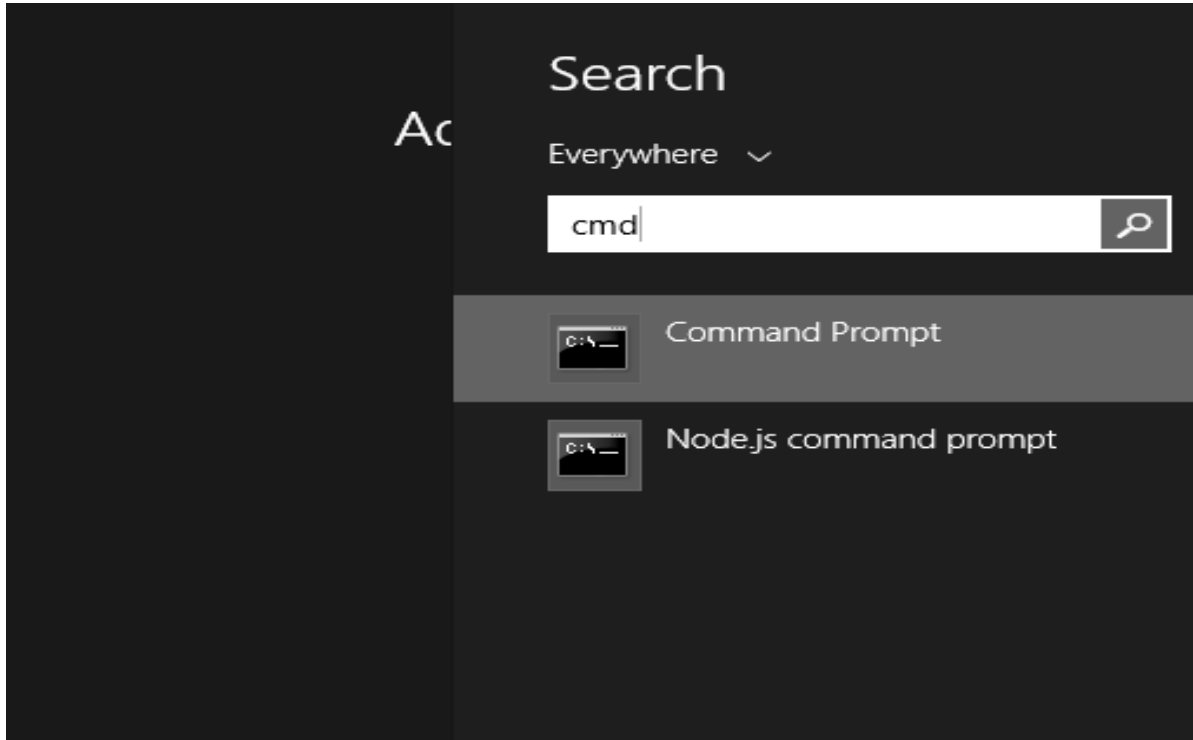
Typically, to create a batch file, notepad is used. This is the simplest tool for creation of batch files. Next is the execution environment for the batch scripts. On Windows systems, this is done via the command prompt or cmd.exe. All batch files are run in this environment.

Following are the different ways to launch cmd.exe:

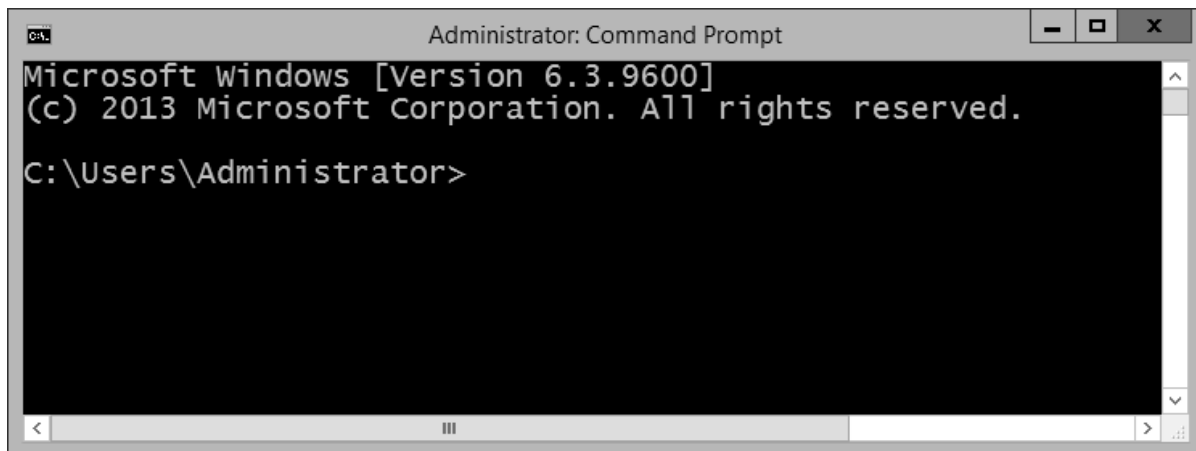
Method 1: Go to C:\Windows\System32 and double click on the cmd file.



Method 2: Via the run command – The following snapshot shows to find the command prompt(cmd.exe) on Windows server 2012.



Once the cmd.exe is launched, you will be presented with the following screen. This will be your environment for executing your batch scripts.



Environment Variables

In order to run batch files from the command prompt, you either need to go to the location to where the batch file is stored or alternatively you can enter the file location in the path environment variable. Thus assuming that the batch file is stored in the location C:\Application\bin, you would need to follow these instructions for the PATH variable inclusion.

OS	Output
Windows	Append the String; C:\Application\bin to the end of the system variable PATH.

3. Batch Scripting – Commands

In this chapter, we will look at some of the frequently used batch commands.

ver

This batch command shows the version of MS-DOS you are using.

Syntax

```
ver
```

Example

```
@echo off  
ver
```

Output

The output of the above command is as follows. The version number will depend upon the operating system you are working on.

```
Microsoft Windows [Version 6.3.9600]
```

ASSOC

This is a batch command that associates an extension with a file type (FTYPE), displays existing associations, or deletes an association.

Syntax

```
assoc - Displays all the file extensions  
assoc | find ".ext" - Displays only those file extensions which have the extension  
ext.
```

Example

```
@echo off  
assoc > C:\lists.txt
```

15


```
assoc | find “.doc” > C:\listsdoc.txt
```

Output

The list of file associations will be routed to the file lists.txt. The following output shows what is there in the listsdoc.txt file after the above batch file is run.

```
.doc=Word.Document.8  
.dohtml=wordhtmlfile  
.docm=Word.DocumentMacroEnabled.12  
.docmhtml=wordmhtmlfile  
.docx=Word.Document.12  
.docxml=wordxmlfile
```

CD

This batch command helps in making changes to a different directory, or displays the current directory.

Syntax

```
cd
```

Example

The following example shows how the cd command can be used in a variety of ways.

```
@echo off  
Rem The cd without any parameters is used to display the current working directory  
cd  
Rem Changing the path to Program Files  
cd\Program Files  
cd  
Rem Changing the path to Program Files  
cd %USERPROFILE%  
cd  
Rem Changing to the parent directory
```

```
cd..
cd
Rem Changing to the parent directory two levels up
cd..\..
cd
```

Output

The above command will display the following output after changing to the various folder locations.

```
C:\Users\Administrator
C:\Program Files
C:\Users\Administrator
C:\Users
C:\
```

CLS

This batch command clears the screen.

Syntax

```
cls
```

Example

```
@echo off
Cls
```

Output

The command prompt screen will be cleared.

Copy

This batch command is used for copying files from one location to the other.

Syntax

```
Copy [source] [destination]
```

The files will be copied from source to destination location.

Example

The following example shows the different variants of the **copy** command.

```
@echo off
cd
Rem Copies lists.txt to the present working directory. If there is no destination
identified , it defaults to the present working directory.
copy c:\lists.txt
Rem The file lists.txt will be copied from C:\ to C:\tp location
copy C:\lists.txt c:\tp
Rem Quotation marks are required if the file name contains spaces
copy "C:\My File.txt"
Rem Copies all the files in F drive which have the txt file extension to the
current working directory
copy F:\*.txt
Rem Copies all files from dirA to dirB. Note that directories nested in dirA will
not be copied
copy C:\dirA dirB
```

Output

All actions are performed as per the remarks in the batch file.

DEL

This batch command deletes files and not directories.

Syntax

```
del [filename]
```

Example

The following example shows the different variants of the **del** command.

```
@echo off
Rem Deletes the file lists.txt in C:\
```

```
del C:\lists.txt
Rem Deletes all files recursively in all nested directories
del /s *.txt
Rem Deletes all files recursively in all nested directories , but asks for the
confirmation from the user first
Del /p /s *.txt
```

Output

All actions are performed as per the remarks in the batch file.

DIR

This batch command lists the contents of a directory.

Syntax

```
dir
```

Example

The following example shows the different variants of the **dir** command.

```
@echo off
Rem All the directory listings from C:\ will be routed to the file lists.txt
dir C:\>C:\lists.txt
Rem Lists all directories and subdirectories recursively
dir /s
Rem Lists the contents of the directory and all subdirectories recursively, one
file per line, displaying complete path for each listed file or directory.
dir /s /b
Rem Lists all files with .txt extension.
dir *.txt
Rem Includes hidden files and system files in the listing.
dir /a
Rem Lists hidden files only.
dir /ah
```

Output

All actions are performed as per the remarks in the batch file.

DATE

This batch command help to find the system date.

Syntax

```
DATE
```

Example

```
@echo off  
echo %DATE%
```

Output

The current date will be displayed in the command prompt. For example,

```
Mon 12/28/2015
```

ECHO

This batch command displays messages, or turns command echoing on or off.

Syntax

```
ECHO "string"
```

Example

The following example shows the different variants of the dir command.

```
Rem Turns the echo on so that each command will be shown as executed  
echo on  
echo "Hello World"  
Rem Turns the echo off so that each command will not be shown when executed  
@echo off
```

```
echo "Hello World"  
Rem Displays the contents of the PATH variable  
echo %PATH%
```

Output

The following output will be displayed in the command prompt.

```
C:\>Rem Turns the echo on so that each command will be shown as executed  
  
C:\>echo on  
  
C:\>echo "Hello World"  
"Hello World"  
  
C:\>Rem Turns the echo off so that each command will not be shown when executed  
  
"Hello World"  
C:\Users\ADMINI~1\AppData\Local\Temp
```

EXIT

This batch command exits the DOS console.

Syntax

```
Exit
```

Example

```
@echo off  
echo "Hello World"  
exit
```

Output

The batch file will terminate and the command prompt window will close.

MD

This batch command creates a new directory in the current location.

Syntax

```
md [new directory name]
```

Example

```
@echo off
md newdir
cd newdir
cd
Rem "Goes back to the parent directory and create 2 directories"
cd..
md newdir1 newdir1
cd newdir1
cd
cd..
cd newdir2
cd
```

Output

The above command produces the following output.

```
C:\newdir
C:\newdir1
C:\newdir2
```

MOVE

This batch command moves files or directories between directories.

Syntax

```
move [source] [destination]
```

The files will be copied from source to destination location.

Example

The following example shows the different variants of the move command.

```
@echo off
Rem Moves the file list.txt to the directory c:\tp
move C:\lists.txt c:\tp
Rem Renames directory Dir1 to Dir2, assuming Dir1 is a directory and Dir2 does not
exist.
move Dir1 Dir2
Rem Moves the file lists.txt to the current directory.
move C:\lists.txt
```

Output

All actions are performed as per the remarks in the batch file.

End of ebook preview

If you liked what you saw...

Buy it from our store @ <https://store.tutorialspoint.com>

