## 8. ADVANCED FEATURES

## Character Slashes

## Introduction

We have already seen the use of the slash to match special characters:

| Code | Description | Code | Description |
| :--- | :--- | :--- | :--- |
| $\backslash$. | Matches the period. | $\backslash ?$ | Matches the question mark. |
| $\backslash$ | Matches the vertical bar. | $\backslash^{*}$ | Matches the wildcard star. |
| $\backslash($ | Matches the open round bracket. | $\backslash+$ | Matches the plus symbol. |
| $\backslash$ | Matches the close round bracket. | $\backslash$ | Matches the front slash. |
| $\backslash[$ | Matches the open square bracket. | $\backslash\{$ | Matches the open curly braces. |
| $\backslash]$ | Matches the close square bracket. | $\backslash\}$ | Matches the close curly braces. |

There are other slash codes to match with character types and white spaces:

| Code | Description |
| :---: | :---: |
| \d | Matches any of the digit characters (0-9) |
| \D | Matches any character other than the digit ones (a-z, A-Z, @, \$, etc.) |
| Iw | Matches any of the word characters (a-z, A-Z, and " ${ }^{\text {" }}$ ) |
| IW | Matches any character other than the word ones (0-9, @, \$, etc.) |
| \s | Matches any whitespace character (space, tab, newline, etc.). |
| \S | Matches any character other than the whitespace ones (a-z, A-Z, 0-9, etc.) |
| \t | Matches the tab character |
| \r | Matches the return character |
| \n | Matches the new line character |

## Examples

- "X" matches pattern " $\backslash w$ "
- "XXX" matches pattern " $\mathrm{w} \backslash \mathrm{w} \backslash w$ "
- "XXX" matches pattern " $\backslash w\{3\}$ "
- " 3 " matches pattern " $\backslash d$ "
- "3X3" matches pattern " $\backslash d \backslash w \backslash d$ "
- "12.345" matches pattern "\d+\.\d+"
- "[34]" matches pattern " $\backslash \backslash \backslash d \backslash d \backslash]$ "
- "Array[5]" matches pattern " $\backslash w+\backslash[\backslash d+\backslash] "$
- "(abc)" matches pattern " $\backslash(\backslash w \backslash w \backslash w \backslash)$ "
- "3D" matches pattern " $\backslash d \backslash w \backslash s$ "


## Raw Notation

We mentioned that programming languages prefer to have two backslashes instead of one, so in programming the question mark character " $\backslash$ ?" becomes " $\backslash \backslash$ ?". The backslash character itself is matched to " $\backslash \backslash$ " which when programming becomes " $\backslash \backslash \backslash \backslash$ ", which is just too much. If we put the letter " $r$ " at the start of a computer program RegEx, it goes into "raw notation" and we don't need for the extra slashes.

- " $\backslash \backslash$ ?" is the same as $r$ " $\backslash$ ?" and " $\backslash \backslash \backslash \backslash$ " is the same as $r$ " $\backslash \backslash$ "

