

Perl - Regular Expressions

Because Perl makes heavy use of strings, regular expressions are a very important component of the language.

They can be used:

- in conditional expressions to test whether a string matches a pattern

e.g. checking the contents of a string

```
if ($name =~ /[0-9]/) { print "name contains digit\n"; }
```

- in assignments to modify the value of a string

e.g. convert McDonald to MacDonald

```
$name =~ s/Mc/Mac/;
```

e.g. convert to upper case

```
$string =~ tr/a-z/A-Z/;
```

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Perl Regular Expressions

Perl extends POSIX regular expressions with some shorthand:

`\d` matches any digit, i.e. `[0-9]`

`\D` matches any non-digit, i.e. `[^0-9]`

`\w` matches any "word" char, i.e. `[a-zA-Z_0-9]`

`\W` matches any non "word" char, i.e. `[^a-zA-Z_0-9]`

`\s` matches any whitespace, i.e. `[\t\n\r\f]`

`\S` matches any non-whitespace, i.e. `[^ \t\n\r\f]`

Perl Regular Expressions

Perl also adds some new anchors to regexps:

`\b` matches at a word boundary

`\B` matches except at a word boundary

And generalises the repetition operators:

`patt*` matches 0 or more occurrences of `patt`

`patt+` matches 1 or more occurrences of `patt`

`patt?` matches 0 or 1 occurrence of `patt`

`patt{n,m}` matches between `n` and `m` occurrences of `patt`

Perl Regular Expressions

The default semantics for pattern matching is "first, then largest".

E.g. `/ab+/` matches `abbbabbbb` not `abbbabbbb` or `abbbabbbb`

A pattern can also be qualified so that it looks for the shortest match.

If the repetition operator is followed by `?` the "first, then shortest" string that matches the pattern is chosen.

E.g. `/ab+?/` would match `abbbabbbb`

Perl Regular Expressions

Regular expressions can be formed by interpolating strings in between `/.../`.

Example:

```
$pattern = "ab+";  
$replace = "Yoda";  
$text = "abba";
```

```
$text =~ s/$pattern/$replace/;
```

```
# converts "abba" to "Yoda"
```

Note: Perl doesn't confuse the use of `$` in `$var` and `abc$`, because the anchor occurs at the end.

Using Matching Results

In a scalar context matching & substitute operators return how many times the match/substitute succeeded.

This allows them to be used as the controlling expression in `if/while` statements.

For example:

```
print "Destroy the file system? "  
$answer = <STDIN>;  
if ($answer =~ /yes|ok|affirmative/i) {  
    system "rm -r /";  
}
```

```
s/[aeiou]//g or die "no vowels to replace";
```

Using Matching Results

In a list context the matching operators returns a list of the matched strings.

For example:

```
$string = "-5==10zzz200_";  
@numbers = $string =~ /\d+/g;  
print join(",", @numbers), "\n";  
# prints 5,10,200
```

If the regex contains `()`s only the captured text is returned

```
$string = "Bradley, Marion Zimmer";  
($family_name, $given_name) = $string =~ /([^\,]*) (\S+)/;  
print "$given_name $family_name\n";  
# prints Marion Bradley
```

Pattern Matcher

A Perl script to accept a pattern and a string and show the match (if any):

```
#!/usr/bin/perl
```

```
$pattern = $ARGV[0];    print "pattern=/$pattern/\n";
```

```
$string = $ARGV[1];    print "string =\"$string\"\n";
```

```
$string =~ /$pattern/;  print "match  =\"$&\"\n";
```

You might find this a useful tool to test out your understanding of regular expressions.