

Regular Expressions: Meta Characters

- meta characters: ! \$ & () * + - . : < = > ? [] ^ | some regain their literal meaning when preceded by a \ e.g. \?.
- A dot (.) matches any character
- * matches zero or more occurrences of the preceding regexp
- + matches one or more occurrences of the preceding regexp
- ? matches zero or one occurrences of the preceding regexp
- | means: either the preceding or the following regexp
- ^ matches the regexp at beginning of a line
- \$ matches the regexp at the end of a line

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- () groups regexps; groups can be used for further processing.
- (a|b|c) matches a or b or c.
- {n} matches range of exactly n occurrences of single character
- {n,} matches range of n or more occurrences of single character
- {n,m} matches range of n up to and including m occurrences of single character

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- [] : character class:
 - [a-z] only a lower case character
 - [a-zA-Z][.?!] matches any character upper/lowercase followed by . or ! or ?
 - [-+*/] matches arithmetic operators; - should be at beginning or end!
- excluding class: with [^...]
 - [^0-9] matches any character except a digit
 - [^aeiou] matches anything but vowels

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- \A matches only the beginning of a string
- \Z Matches only at the end of the string
- \b matches the empty string, but only at the beginning or end of a word. A word is defined as a sequence of alphanumeric or underscore characters, so the end of a word is indicated by whitespace or a non-alphanumeric, non-underscore character.
- \B matches the empty string, but only when it is not at the beginning or end of a word. This is just the opposite of \b
- \d matches a digit; this is equivalent to the set [0-9]
- \D matches any non-digit character; this is equivalent to the set [^0-9]

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- `\s` matches a white space character; this is equivalent to the set `[\t\n\r\f\v]`
- `\S` matches any non-whitespace character; this is equivalent to the set `[^\t\n\r\f\v]`
- `\w` matches any alphanumeric character and the underscore; this is equivalent to the set `[a-zA-Z0-9_]`
- `\W` matches any non-alphanumeric character; this is equivalent to the set `[^\a-zA-Z0-9_]`
- `\$` matches the character '\$', because \$ is a meta character

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Examples: 1

```
static final Pattern COIN = Pattern.compile( "←
-[125]0?$" );

static boolean isCoinFaceNumber( String value )←
{
  return COIN.matcher( value ).matches();
}
```

```
// valid faces
{"1", true},
{"2", true},
{"5", true},
{"10", true},
{"20", true},
{"50", true},
// phony faces
{"100", false},
{"200", false},
{"25", false},
{"15", false},
{"100", false},
{"250", false},
{"500", false},
{"222", false},
{"251", false},
{"12", false},
```

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Examples: 2

```
static final Pattern BILJET =
  Pattern.compile( "←
(50{0,2}|[12]0{1,2})←
$" );
```

```
// valid faces
{"5", true},
{"50", true},
{"500", true},
{"10", true},
{"100", true},
{"20", true},
{"200", true},
// phony faces
{"2", false},
{"1", false},
{"1000", false},
{"502", false},
{"51", false},
{"150", false},
{"250", false},
{"5000", false},
{"1250", false},
{"12", false},
```

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