SOEN 287

Chapter 4: JavaScript (5)

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Pattern Matching

- Why pattern matching

```
var str = "Gluckenheimer";
var position = str.search(/heim/);
    /* position is now 7 */
var matchStr = str.match(/heim/);
   /* matchStr is now "heim" */
```

  - Returns the index of the matching string, or -1 if it fails
  - Return matching string
- Patterns
  - normal characters (match themselves)
  - metacharacters (special meanings—not themselves)

```
\ | ( ) [ ] { } ^ $ * + ? .
```

Character classes

```
[abcd]
```

- any one of which matches

```
[a-z]
```

- Caret (circumflex): the negation

```
[^0-9]
```

- period . a single character, except newline or line terminator

```
/snow./
```

Character classes (2)

\d	[0-9]	a digit
\D	[^0-9]	not a digit
\w	[A-Za-z_0-9]	a word character
\W	[^A-Za-z_0-9]	not a word character
\s	[\r\t\n\f]	a whitespace character
\S	[^ \r\t\n\f]	not a whitespace character

- Examples

```
/\d\.\d\d/

/\D\d\D/

/\w\w\w/
```

iClicker Question

```
var str = "Today is Thursday";
var matchStr = str.match(/\w\w\w/);
```

- What is the value of marchStr?

A. Today

B. the same as str

C. Tod

D. none of the above

Answer:C

Quantifier

{n}	exactly n repetitions
{m,}	at least m repetitions
{m, n}	at least m but not more than n repetitions

*	zero or more repetitions
+	one or more repetitions
?	zero or one

- examples

```
/xy{4}z/

/\d*/

/\d+/
```

More examples:

```
/\d+\.\d*/
```

- one or more digits followed by a decimal point and possibly more digits

```
/.*\.txt$/
```

- any characters except new line end with .txt

Anchors

- The pattern can be forced to match only at the left end with `^`; at the end with `$`

```
/^Lee/
```

- Matches? `"Lee Ann"` or `"Mary Lee Ann"`

```
/red$/
```

- Matches? `"A red car"` or `"This car is red"`

```
/^Lee/  vs.  /[^Lee]/
```

iClicker Question

```
var str = "Is this all there is?";
var position = str.search(/^Is/);
var position2 = str.search(/[^Is]/);
```

- What is the value of position?

A. -1

B. 0

C. 2

D. none of the above

Answer:B

iClicker Question

```
var str = "Is this all there is?";
var position = str.search(/^Is/);
var position2 = str.search(/[^Is]/);
```

- What is the value of position2?

A. -1

B. 0

C. 2

D. none of the above

Answer:C

Pattern modifiers

- `i` : ignore the case of letters

  `/oak/i` matches `"OAK"` and `"Oak"` and

- ~~`x` : ignore whitespace in the pattern~~
- `g` : global matching
- `m`: Multiline mode. ^ matches beginning of line or beginning of string, and $ matches end of line or end of string.

Error: x is not supported in JavaScript

Supported in JavaScript, but not talked in the textbook

Pattern matching methods of `String`

- `string.replace(`regexp/substr,newstring`)`

```
var str = "Some rabbits are rabid";
str.replace(/rab/g, "tim");
```

- `string.match(`regexp`)`

```
var str = "My 3 kings beat your 2 aces";
var matches = str.match(/\d/g);
```

- `string.split(`separator, limit`)`

```
var str = "grapes:apples:oranges";
var matches = str.split(":");
```

- `string.search(`regexp)

```
var ok = num.search(/^\d{3}-\d{4}$/)
```

The End