

Herzlich Willkommen bei Inf-Einf-B Woche 8.

Heute geht es um HTML, CSS, JavaScript, also Techniken für Webanwendungen mit Fokus auf der Client-Seite (Browser).

Erste Shorts sind morgen online, weitere folgen im Laufe der Woche.

Wichtig: Notes und Code zur Vorlesung durchschauen für die wesentlichen Konzepte.

Die Vorlesung nächste Woche ist die letzte in Präsenz. Nutzen Sie die übrige Zeit für die Arbeit an Ihren Abschlussprojekten. Die Tutoren helfen Ihnen dabei gerne in den Tutorien.

Melden Sie sich gerne weiterhin mit Ihren Ideen für das **Abschlussprojekt**, entweder bei mir, im Forum (geeignet zur Suche von Projektpartnern!) oder bei den Tutoren. Bei Teilnahme und Vorstellung auf der Messe gibt es 10 Bonuspunkte (= 2 Notenstufen).

Hackathon zur Arbeit an den Projekten:
Freitag, 31.01.25 ab 16.00 Uhr
inkl. Pizza am Abend

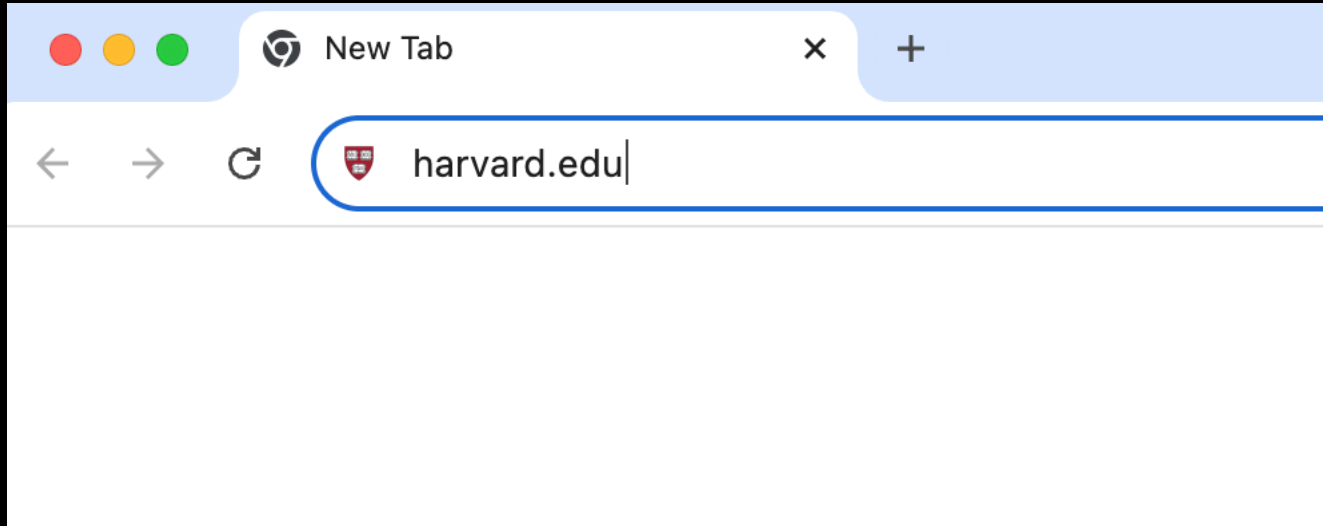
Projektmesse: Montag, 03.02.25 ab 16 Uhr
(offen für alle) im Irmeler-Musiksaal (WE5-Foyer) mit Tombola und Keksen

This is CS50

Dies ist Inf-Einf-B.

HTTP

Hypertext Transfer Protocol



Was passiert da eigentlich?

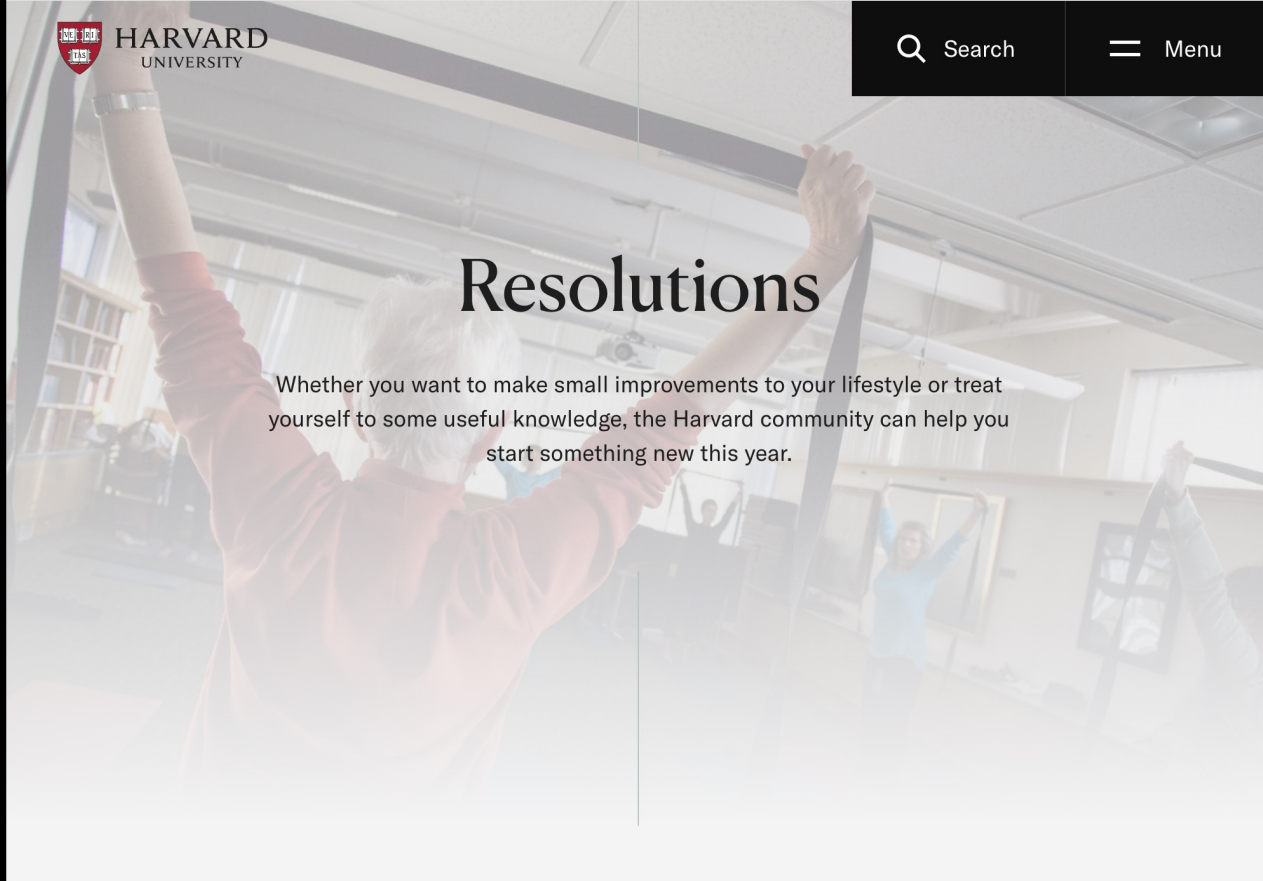


🔍 Search

☰ Menu

Resolutions

Whether you want to make small improvements to your lifestyle or treat yourself to some useful knowledge, the Harvard community can help you start something new this year.



<https://www.example.com>

<https://www.example.com/>

/
Default-Page

<https://www.example.com/path>

<https://www.example.com/file.html>

Pfad auf dem Webserver
und ggf. Datei mit Endung

<https://www.example.com/folder/>

Pfad auf dem Webserver
und ggf. Datei mit Endung

<https://www.example.com/folder/file.html>

Pfad auf dem Webserver
und ggf. Datei mit Endung

<https://www.example.com/folder/file.html>

Vollständige Domain

<https://www.example.com/folder/file.html>

Second-Level Domain

<https://www.example.com/folder/file.html>

Top-Level Domain

<https://www.example.com/folder/file.html>

Hostname innerhalb
einer Domain (optional)

<https://www.example.com/folder/file.html>

Protokoll
(früher: http)

GET

POST

...

GET / HTTP/2

Host: www.harvard.edu

...

HTTP/2 200

Content-Type: text/html

...

developer tools

HTTP/2 301

Location: <https://www.harvard.edu/>

...

GET / HTTP/2

Host: harvard.edu

...

HTTP/2 404

Content-Type: text/html

...

HTTP Status Codes

200 OK

301 Moved Permanently

302 Found

304 Not Modified

307 Temporary Redirect

401 Unauthorized

403 Forbidden

404 Not Found

418 I'm a Teapot

500 Internal Server Error

503 Service Unavailable

...

HTML

Tags

Attribute

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
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  </body>
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</html>
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http-server

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<!DOCTYPE html>
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<html lang="en">
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  <head>
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    <title>
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      hello, title
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    </title>
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    </title>
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  </head>
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  <body>
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    hello, body
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  </body>
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</html>
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<!DOCTYPE html>
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    <title>
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      hello, title
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    </title>
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  </head>
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  <body>
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    hello, body
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  </body>
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</html>
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```
<!DOCTYPE html>

<html lang="en">
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

```
<!DOCTYPE html>

<html lang="en">
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
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<!DOCTYPE html>
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    </title>
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  </head>
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  <body>
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    hello, body
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  </body>
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</html>
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```
<!DOCTYPE html>

<html lang="en">
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

```
<!DOCTYPE html>
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```
<html lang="en">
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  <head>
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    <title>
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      hello, title
```

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    </title>
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  </head>
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  <body>
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```
    hello, body
```

```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

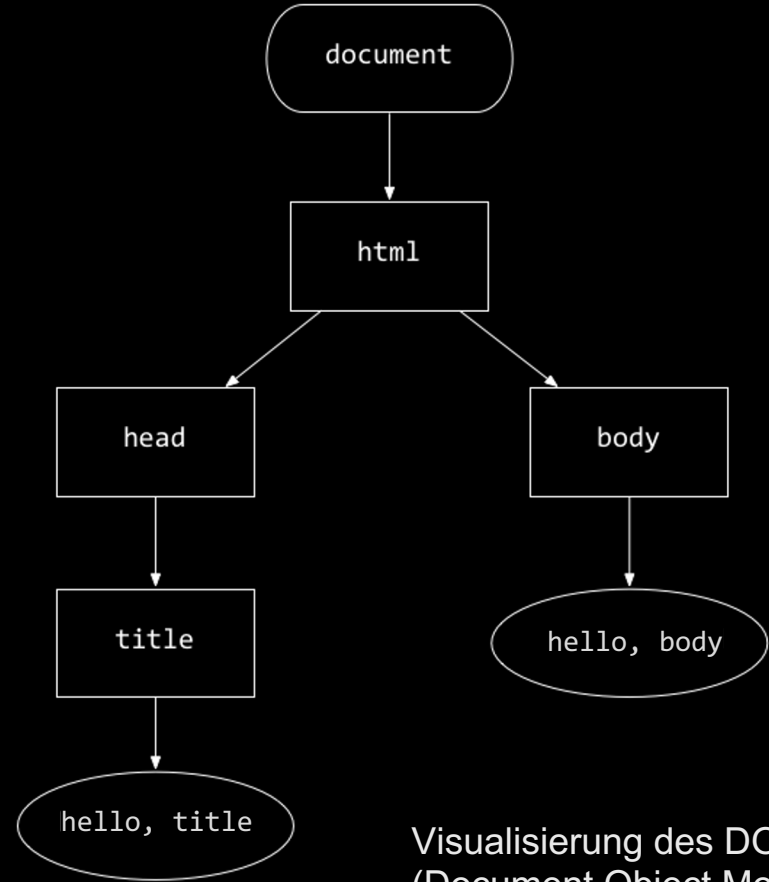
```
    hello, body
```

```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>

<html lang="en">
  <head>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```



Visualisierung des DOMs
(Document Object Models)

<https://www.example.com>

<https://www.example.com/path?key=value>

<https://www.example.com/path?key=value&key=value>

regular expressions

regexes

developer.mozilla.org/en-US/docs/Web/JavaScript/Guide/Regular_expressions

. any single character (except line terminators)

* zero or more times

+ one or more times

? 0 or 1 time

{n} n occurrences

{n,m} at least n occurrences, at most m occurrences

...

[0123456789] any one of the enclosed characters

[0-9] any one of the range of characters

\d any digit

\D any character that is not a digit

...

^[a-zA-Z0-9.!#\$%&'*\+\-/?^_`{|}~-]+@[a-zA-Z0-9](?:[a-zA-Z0-9-]{0,61}[a-zA-Z0-9])?(?:\.[a-zA-Z0-9](?:[a-zA-Z0-9-]{0,61}[a-zA-Z0-9])?)*\$

Zum Debuggen

developer tools

validator.w3.org

CSS

Cascading Style Sheets

properties

type selector

class selector

ID selector

attribute selector

...

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
```

```
  </body>
```

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</html>
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```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
```

```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>

<html lang="en">
  <head>
    <style>

    </style>
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <style>
```

```
  </style>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
```

```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
```

```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <link href="styles.css" rel="stylesheet">
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
```

```
  <body>
```

```
    hello, body
```

```
  </body>
```

```
</html>
```



```
<!DOCTYPE html>

<html lang="en">
  <head>
    <link href="styles.css" rel="stylesheet">
    <title>
      hello, title
    </title>
  </head>
  <body>
    hello, body
  </body>
</html>
```

Man kann Styles auch als Attribute in die HTML-Tags schreiben (gilt als schlechter Stil, geht aber schnell)

frameworks

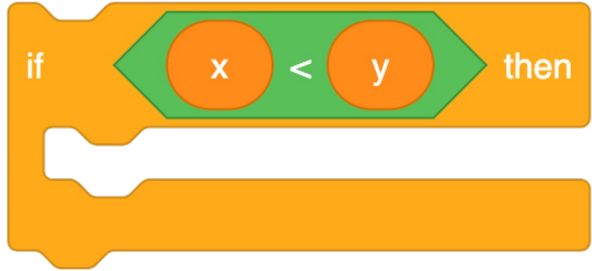
Bootstrap

getbootstrap.com

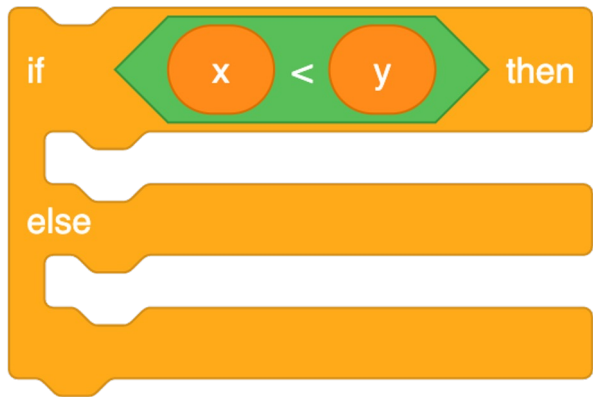
developer tools

JavaScript

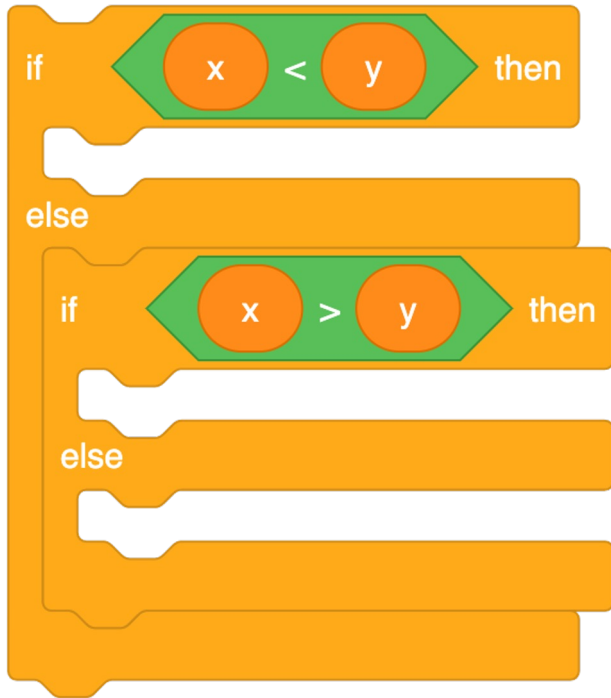
conditionals



```
if (x < y)
{
}
}
```

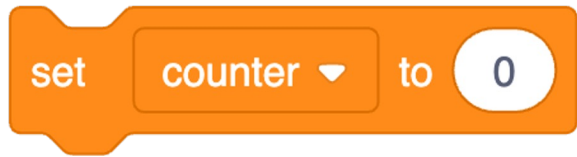



```
if (x < y)
{
}
else
{
}
```

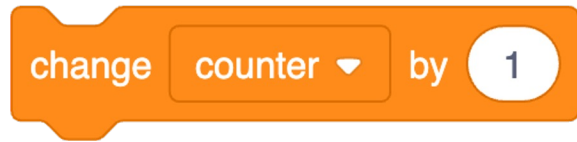


```
if (x < y)
{
}
else if (x > y)
{
}
else
{
}
```

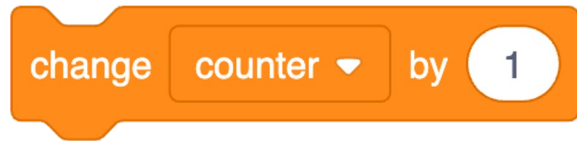
variables



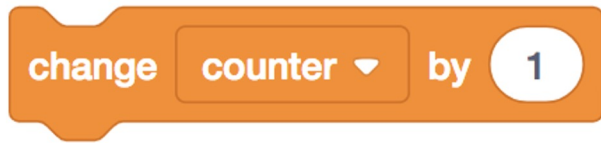
```
let counter = 0;
```



```
counter = counter + 1;
```



```
counter += 1;
```



```
counter++;
```

loops



```
for (let i = 0; i < 3; i++)  
{  
  
}  
}
```



```
while (true)
{
}
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
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  </head>
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  <body>
```

```
    hello, body
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```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <script>
```

```
    </script>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
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  <body>
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```
    hello, body
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```
  </body>
```

```
</html>
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
  <head>
```

```
    <script src="scripts.js"></script>
```

```
    <title>
```

```
      hello, title
```

```
    </title>
```

```
  </head>
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  <body>
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    hello, body
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  </body>
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<!DOCTYPE html>
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    </title>
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  </head>
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  <body>
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    hello, body
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    <script>
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    </script>
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  <body>
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    hello, body
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```
    <script src="scripts.js"></script>
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  </body>
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```
</html>
```

blur
change
click
drag
focus
keyup
load
mousedown
mouseover
mouseup
submit
touchmove
unload
...

Neues Paradigma:
Event-driven Programming

This is CS50

Dies war Inf-Einf-B.