Effektlar va animatsiya

O'tish effektlari (transitions)

O'tish effektlarini ishlatish:

- qaysi CSS xossa uchun o'tish effekti ta'sir etadi (**transition-property**) (*majburiy*)
- o'tish effektining vaqti (**transition-duration**) (*majburiy*)
- o'tish effektining tezlashish usuli (**transition-timing-function**)
- o'tish effekti boshlanishidan oldin kutish vaqti (**transition-delay**)

O'tish effektlarida boshlang'ich holat va effekt tugashi holati berilishi majburiy.

Boshlang'ich holat – brauzerda yuklangandan keyingi holati.

Tugash holati **:hover**, **:focus**, **:active** kabi holatlar bilan aniqlanadi.

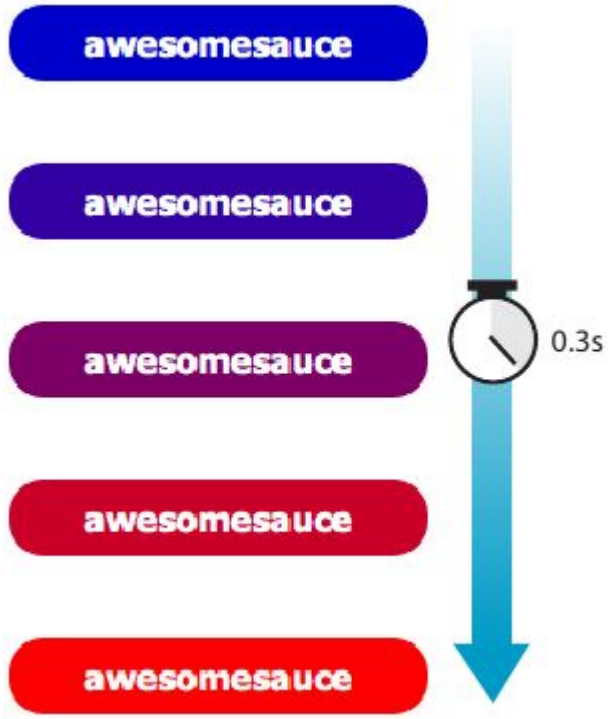
O'tish effektlari

transition-property – qaysi xossaga o'tish effekti ta'sir ettirilishi
Qiymatlari: *xossa nomi* | all | none

transition-duration – o'tish effekti vaqti
Qiymatlari: *vaqt* (*sekundda* (s) *yoki millisekundda* (ms))

```
.smooth {
    display: block;
    text-decoration: none;
    text-align: center;
    padding: 1em 2em;
    width: 10em;
    border-radius: 1.5em;
    color: #fff;
    background-color: mediumblue;
    transition-property: background-color;
    transition-duration: 0.3s;
}

.smooth:hover, .smooth:focus {
    background-color: red;
}
```



O'tish effektlari

Fonlar
background-color
background-position
Chegaralar
border-bottom-color
border-bottom-width
border-left-color
border-left-width
border-right-color
border-right-width
border-top-color
border-top-width
border-spacing
outline-color
outline-width
Rang va xiralik
color
opacity
visibility
Shrift va matn
font-size

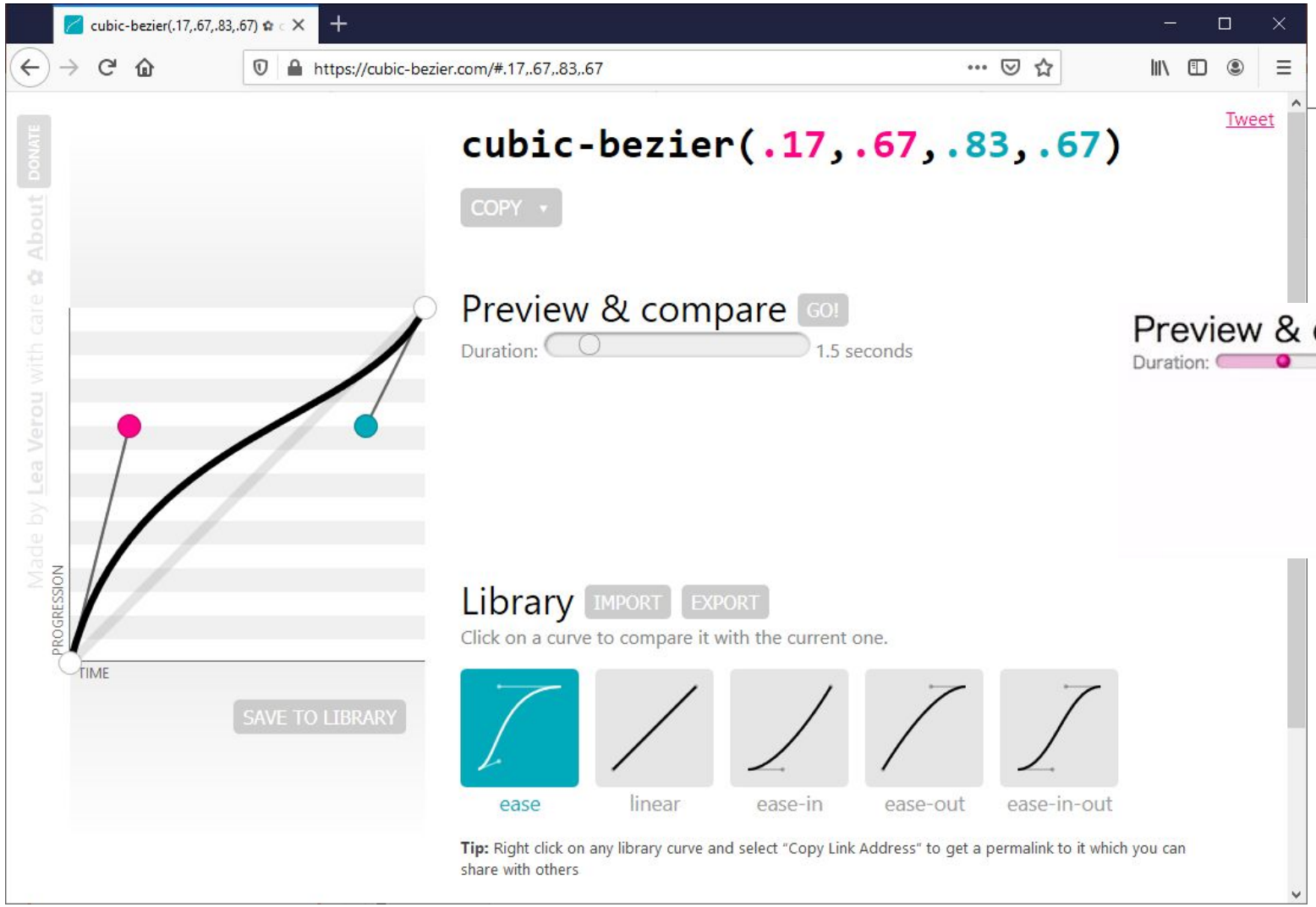
O'tish effektlari

transition-timing-function – o'tish effektining bajarilish vaqti funksiyalari

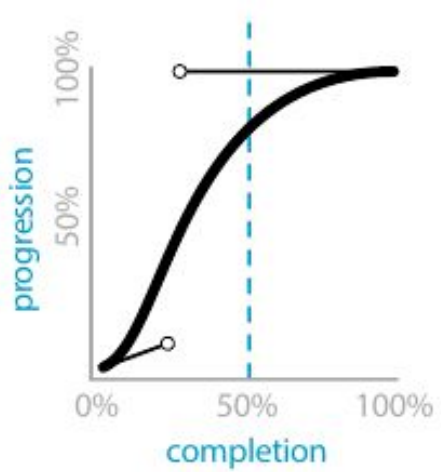
Qiymatlari: ease | linear | ease-in | ease-out | ease-in-out | step-start | step-end | steps | cubic-bezier(#,#,#,#)
ease – sekin-asta boshlanadi, tezlashadi va oxirida sekinlashadi.
linear – o'tishning boshidan oxirigacha bir xil tezlikda bo'ladi.
ease-in – sekin boshlanadi, keyin tezlashadi.
ease-out – tez boshlanadi, keyin sekinlashadi.
ease-in-out – sekin-asta boshlanadi, tezlashadi va oxirida yana sekinlashadi (boshlanishi ease dan sekinroq)
steps(X, start|end) – o'tish effektini X ta qadamga bo'ladi, start|end orqali o'tish effekti qadam holatiga o'rnatiladi.
step-start, step-end – mos ravishda steps(1, start) va steps(1, end) ga teng.
cubic-bezier(#,#,#,#) – o'tish effekti vaqti Bezye egri chizig'i orqali o'rnatiladi.

transition-delay – o'tish effekti boshlanishini kutib turish vaqti

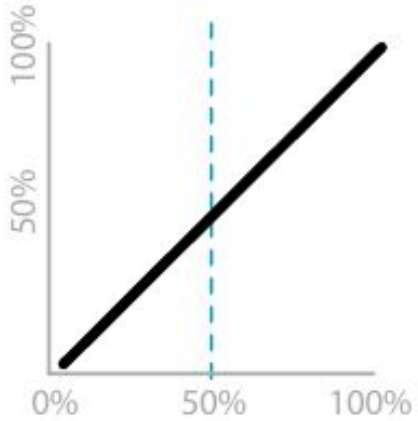
Qiymatlari: time


cubic-bezier(.17,.67,.83,.67)
https://cubic-bezier.com/#.17,.67,.83,.67
Tweet
cubic-bezier(.17,.67,.83,.67)
COPY
DONATE
About
Made by Lea Verou with care
Preview & compare
GO!
Duration:
1.5 seconds
PROGRESSION
TIME
SAVE TO LIBRARY
Library
IMPORT
EXPORT
Click on a curve to compare it with the current one.
ease
linear
ease-in
ease-out
ease-in-out
Tip: Right click on any library curve and select "Copy Link Address" to get a permalink to it which you can share with others

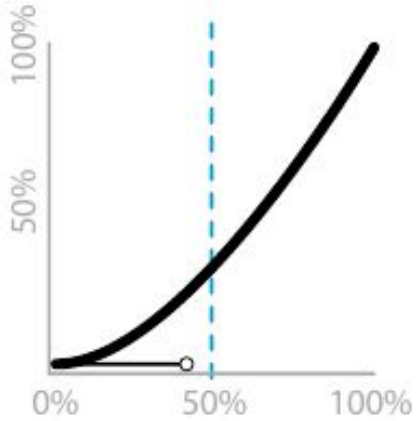

Preview & compare
GO!
Duration:
2.8 seconds



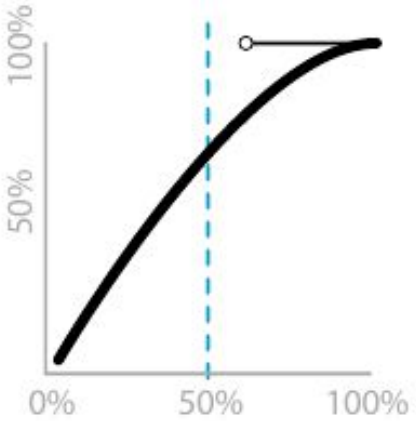
ease



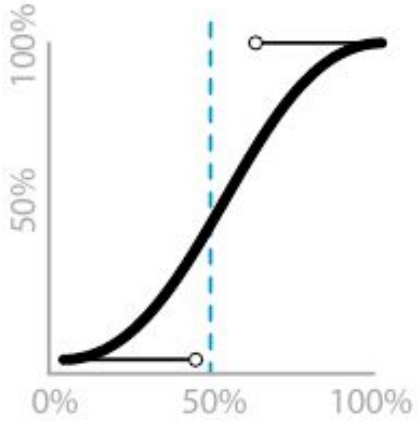
linear



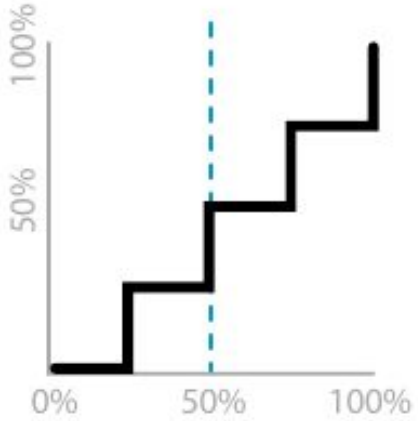
ease-in



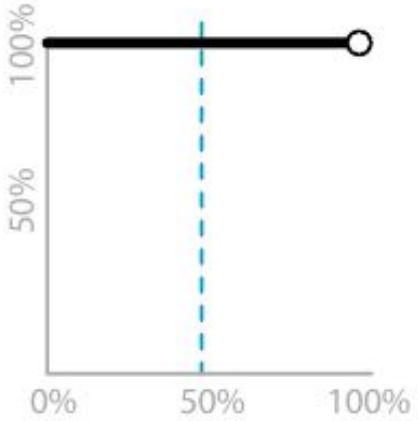
ease-out



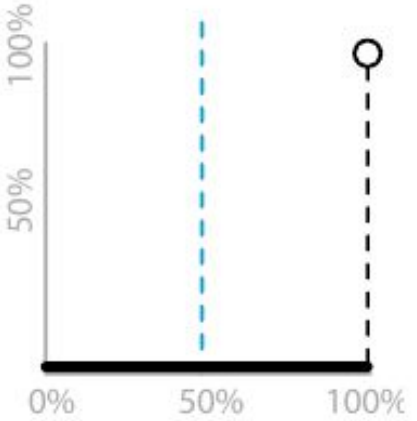
ease-in-out



step(4, end)



step-start



step-end

Qisqa transition xossasi

transition: *property duration timing-function delay*;

```
.smooth {
    ...
    transition: background-color 0.3s ease-in-out 0.2s;
}
```

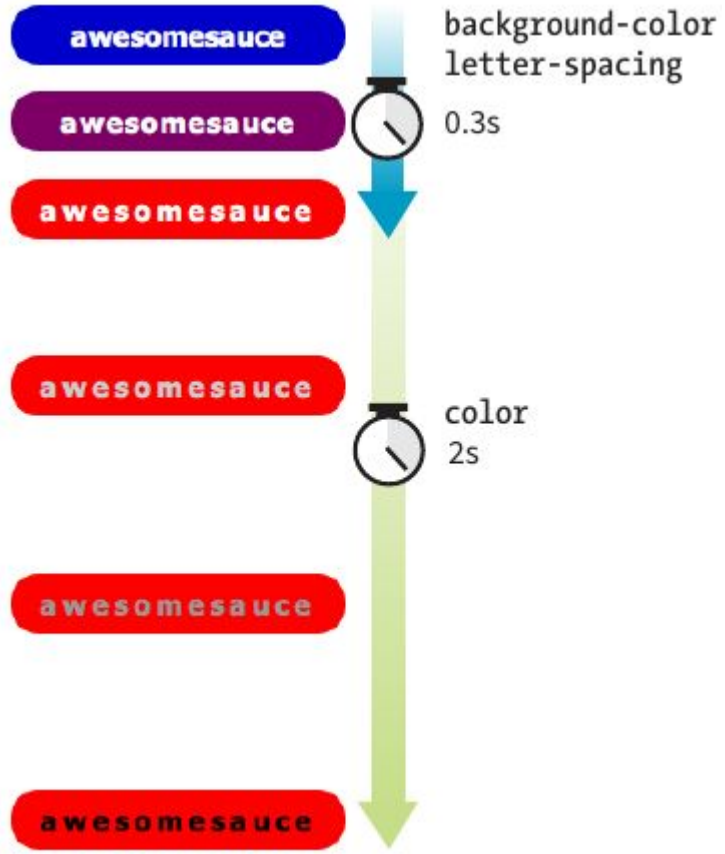
Bir nechta o'tish effektini tadbiq qilish

```
.smooth {
    ...
    transition-property: background-color, color, letter-spacing;
    transition-duration: 0.3s, 2s, 0.3s;
    transition-timing-function: ease-out, ease-in, ease-out;
}

.smooth:hover, .smooth:focus {
    background-color: red;
    letter-spacing: 3px;
    color: black;
}
```

Yoki

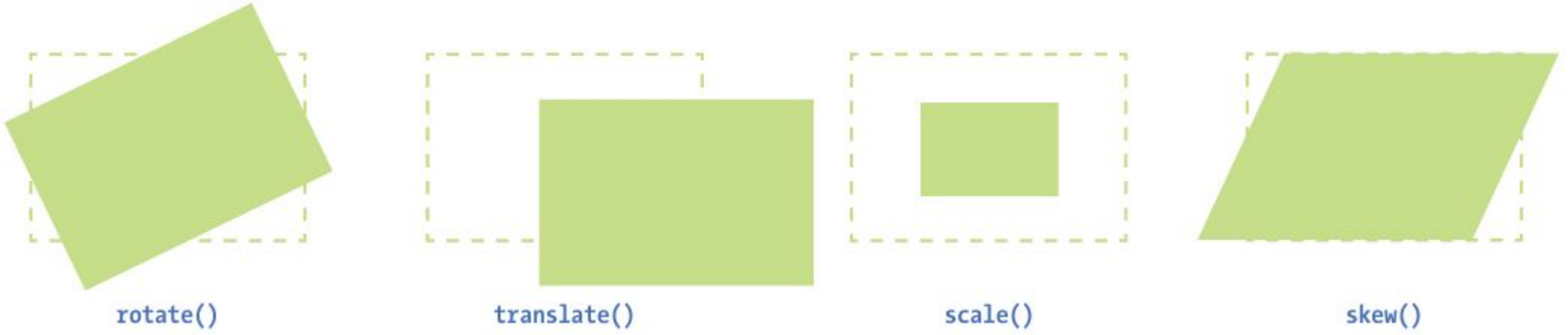
```
.smooth {
    ...
    transition: background-color 0.3s ease-out,
                color 2s ease-in,
                letter-spacing 0.3s ease-out;
}
```



Elementlarni o'zgartirish (transformatsiya)

transform (qatorli elementlarga va jadval ustunlariga qo'llanilmaydi)

Qiymatlari: rotate() | rotateX() | rotateY() | rotateZ() | rotate3d() | translate() | translateX() | translateY() | scale() | scaleX() | scaleY() | skew() | skewX() | skewY() | none



Elementni aylantirish

rotate() funksiyasi ishlatiladi, musbat (soat yo'nalishi bo'yicha) va manfiy (soat yo'nalishi teskari yo'nalish bo'yicha) burchak qiymatlarini qabul qilishi mumkin.

Odatda element markaziy nuqtasiga nisbatan aylantiriladi.

```
img {
    width: 400px;
    height: 300px;
    transform: rotate(-10deg);
}
```

transform: rotate(-10deg);

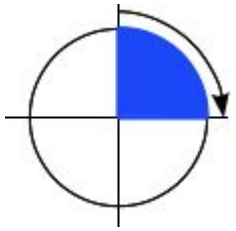
Burchak qiymatlari

deg – burchakni darajada aniqlaydi (degree, bir to'liq aylana – 360 degree)

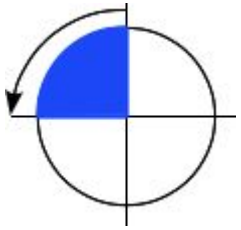
grad – burchakni gradianda aniqlaydi (gradian, bir to'liq aylana – 400 gradian)

rad – burchakni radianda aniqlaydi (gradian, bir to'liq aylana – 2π, 1rad = 180/π degree)

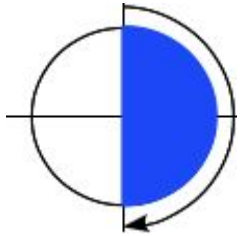
turn – burchakni burilishlar miqdorida aniqlaydi (bir to'liq aylana – 1 turn)



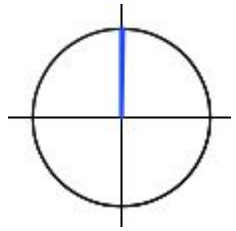
90deg = 100grad = 0.25turn ≈ 1.5708rad



-90deg = -100grad = -0.25turn ≈ -1.5708rad



180deg = 200grad = 0.5turn ≈ 3.1416rad



0 = 0deg = 0grad = 0turn = 0rad

Aylantirish markazini aniqlash

transform-origin (ikkita qiymat qabul qiladi)

Qiymatlari: percentage | length | left | center | right | top | bottom

```
transform-origin: center top;
```

```
transform-origin: 100% 100%;
```

```
transform-origin: 400px 0;
```

Joylashuvini o'zgartirish

translate(), translateX(), translateY() funksiyalari ishlatiladi. translate() funksiyasida 1ta qiymat berilsa X o'qi bo'yicha ta'sir qiladi. Qiymatlari uzunlik o'lchovlari berilishi kerak.

```
transform: translateX(50px);
transform: translateY(25px);
transform: translate(50px, 25px);  /* (translateX, translateY) */
```

transform: translate(90px, 60px);

transform: translate(-5%, -25%);

Shkalani o'zgartirish

scale(), scaleX(), scaleY() funksiyalari orqali shkala o'zgartiriladi. scale() funksiyasida 1ta qiymat berilsa X va Y o'qlari bo'yicha ta'sir qiladi. Qiymatida shkala miqdori (haqiqiy sonda) yoki foizi beriladi.

```
transform: scale(1.25);
```

```
transform: scale(.75);
```

```
transform: scale(1.5, .5);
```

Shkalani o'zgartirish

```css
div {
    border: 1px solid red;
    width: 200px;
    height: 200px;
    overflow: hidden;
    display: inline-block;
    margin: 5px;
}

.sc1 {
    width: 100%;
}
.sc2 {
    width: 100%;
    transform: scale(125%);
}
.sc3 {
    width: 100%;
    transform: scale(.5);
}
```

Elementni qiyshaytirish

skew(), skewX(), skewY() funksiyalari ishlatiladi. skew() funksiyasida 1ta qiymat berilsa X o'qi bo'yicha ta'sir qiladi. Qiymati sifatida burchak berilishi kerak.

```
transform: skewX(15deg);
```

```
transform: skewY(30deg);
```

```
transform: skew(15deg, 30deg);
```

Bir nechta o'zgartirish effektini qo'llash

transform: *function(value) function(value)*;

```
img:hover, img:focus {
    transform: scale(1.5) rotate(-5deg) translate(50px, 30px);
}
```

Normal state

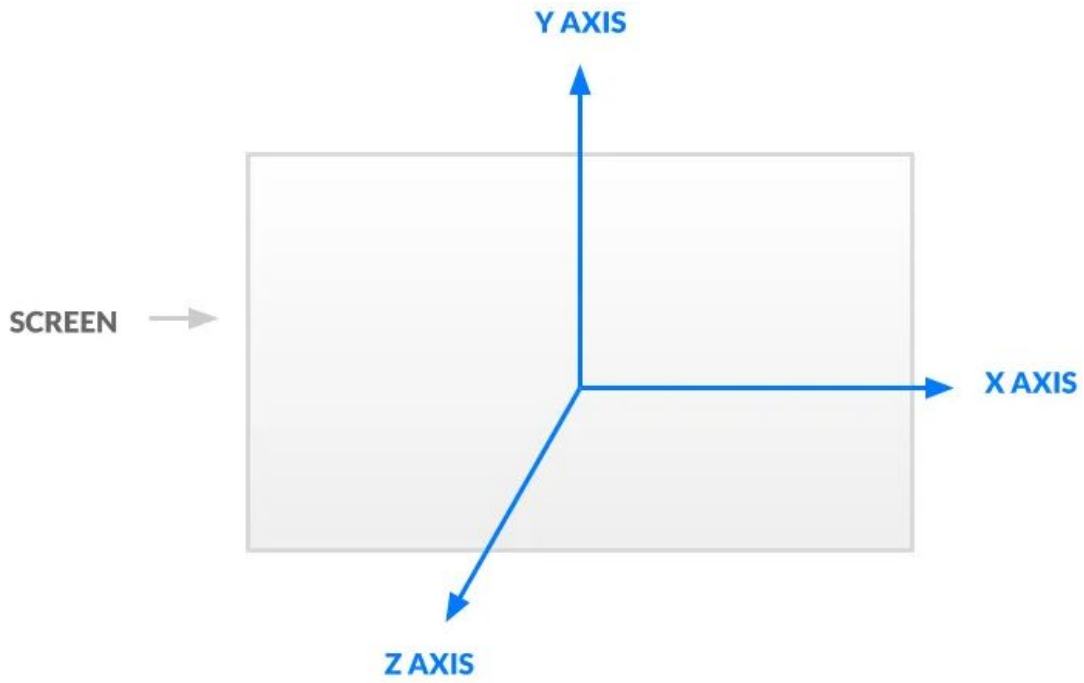
:hover, :focus
rotate(), translate(), and scale() applied

3D o'zgartirish effektlari

perspective – 3 o'lchovli soha uzunligini aniqlash

Qiymatlari: *uzunlik*

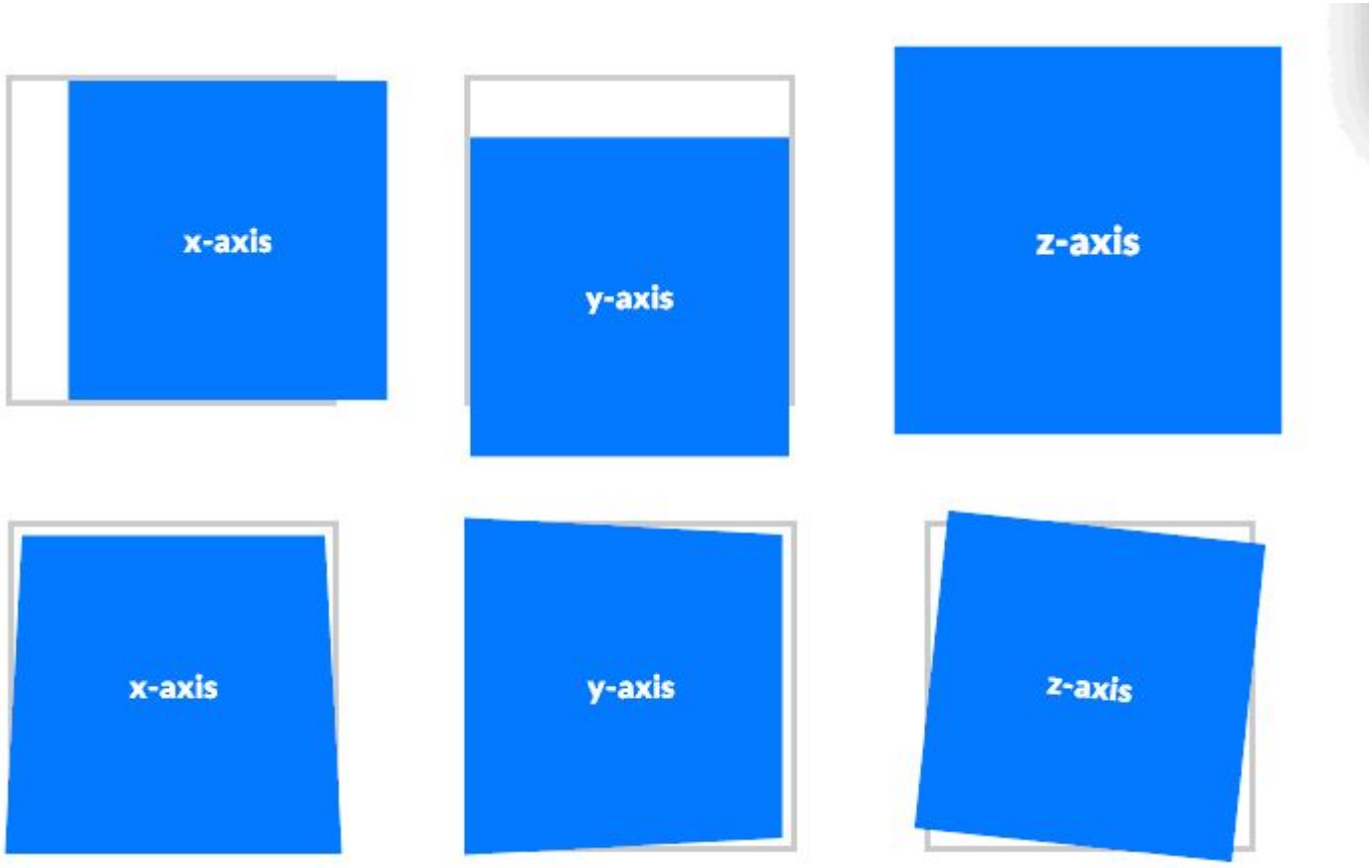
transform xossasining *translate3d, translateZ, scale3d, scaleZ, rotate3d, rotateX, rotateY, rotateZ* va *matrix3d* funksiyalari



3D o'zgartirish effektlari

transform

rotate



3D o'zgartirish effektlari

```
div {
    border: 1px solid red;
    width: 200px;
    height: 200px;
    overflow: hidden;
    display: inline-block;
    margin: 5px;
    perspective: 100px;
}

.ex {
    width: 100%;
    transform: rotateX(45deg);
}
.ey {
    width: 100%;
    transform: rotateY(45deg);
}
.ez {
    width: 100%;
    transform: rotateZ(45deg);
}
```

Animatsiya

Animatsiya jarayoni 2 qismdan tashkil topgan:

1. @keyframes qoidasi orqali animatsiya qoidalarini o'rnatish
2. Animatsiya xossalari orqali animatsiyani elementga ulash

```
@keyframes animation-name {
  keyframe { property: value; }
  /* additional keyframes */
}
```

Bu yerda: keyframe – 0-100% gacha bo'lgan animatsiya qismlari, shuningdek from (0%) va to (100%) kalit so'zlarini ham ishlatish mumkin.

Animatsiya

```
@keyframes colors {
    0% { background-color: red; }
    20% { background-color: orange; }
    40% { background-color: yellow; }
    60% { background-color: green; }
    80% { background-color: blue; }
    100% { background-color: purple; }
}

@keyframe slide {
    from { margin-left: 100% }
    to { margin-left: 0%; }
}
```

Animatsiya xossalari

animation-name – animatsiya nomi (@keyframes qoidasi orqali aniqlanadi, majburiy)

animation-duration – animatsiya vaqti (majburiy)

animation-timing-function – animatsiya tezlashish funksiyasi (o'tish effektlari bilan bir xil)

animation-delay – animatsiyadan oldin kutish kerak bo'lgan vaqt

animation-iteration-count – animatsiya qaytarilish miqdori (*son* | infinite)

animation-direction – animatsiya yo'nalishi (normal, reverse, alternate, alternate-reverse)

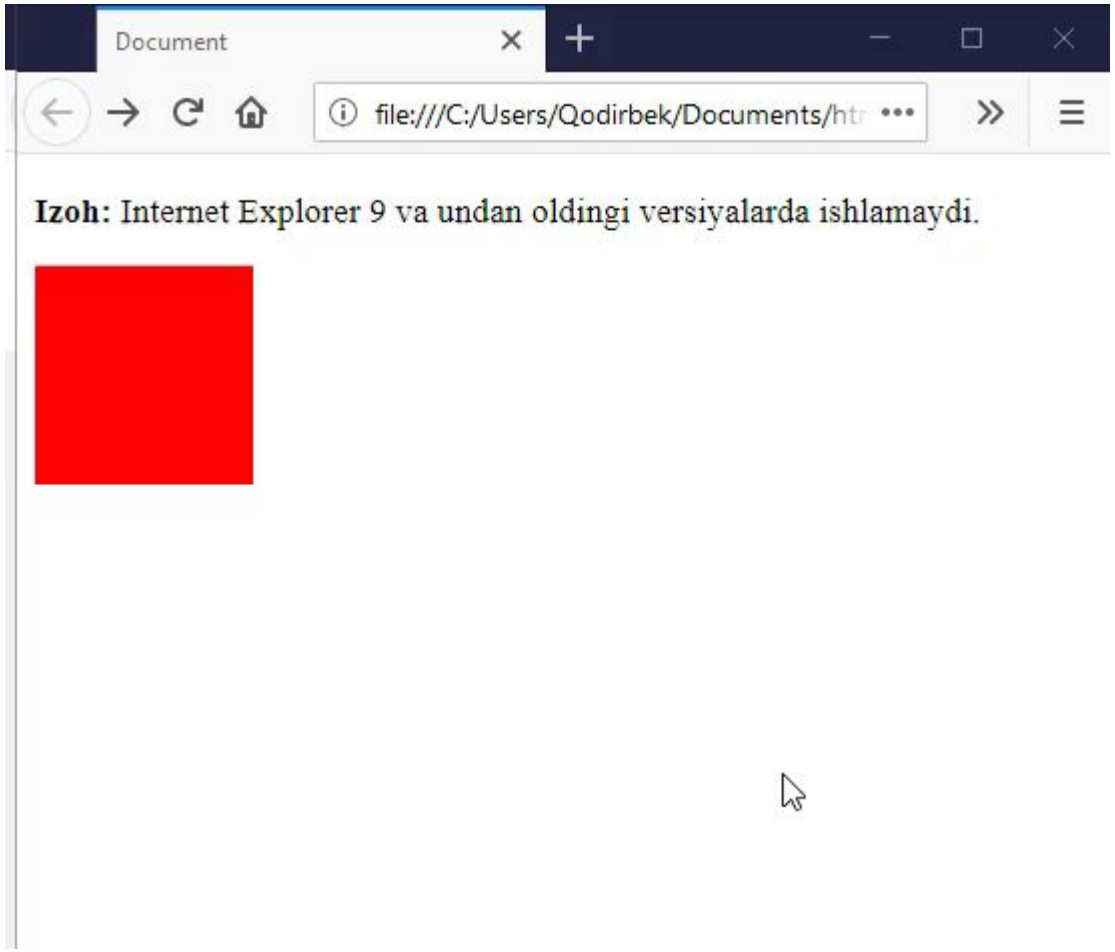
animation-fill-mode – animatsiyadan oldin va keyingi elementning holati (none, forwards – animatsiya tugaganidan keyin oxirgi keyframe qoladi, backwards – animatsiya boshlanishidan oldin birinchi keyframe qo'llaniladi (delay vaqtida), both – ikkala holat ham qo'llaniladi)

animation-play-state – animatsiyaning bajarilish holati (running – ishga tushgan holati, paused – pauza qilingan holati, JavaScript yordamida qayta ishlash uchun qulay)

Animatsiya

```
div {
    width: 100px;
    height: 100px;
    background-color: red;
    position: relative;
    animation-name: example;
    animation-duration: 4s;
    animation-iteration-count: 3;
}

@keyframes example {
    0% {
        background-color: red;
        left: 0px;
        top: 0px;
    }
    25% {
        background-color: yellow;
        left: 200px;
        top: 0px;
    }
    50% {
        background-color: blue;
        left: 200px;
        top: 200px;
```



```css
body {
    display: flex;
}

.scene {
    width: 100px;
    height: 100px;
    margin: 2em;
    border: 3px solid #ccc;
    /* 3D effekt berish uchun */
    perspective: 100px;
}

.square {
    width: 100%;
    height: 100%;
    background-color: #0379ff;
    line-height: 100px;
    text-align: center;
    color: #FFF;
}

.square.x-axis {
    animation: x-axis-animation 1s
       ease-in-out 0s infinite alternate;
}
.square.y-axis {
    animation: y-axis-animation 1s
       ease-in-out 0s infinite alternate;
}
.square.z-axis {
    animation: z-axis-animation 1s
       ease-in-out 0s infinite alternate;
}
```

Savollar?