

## **Labo 10 – Verslag Responsive design**

Opleidingsonderdeel: **Web Development 1**

Bachelor in de: **Toegepaste informatica**

Afstudeerrichting: **Applicatieontwikkeling**

Specialisatie: **Cybersecurity & infrastructure**

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Academiejaar: **2025-2026**

## 2.1 Viewport

### Altijd toevoegen:

```
<meta name="viewport" content="width=device-width, initial-scale=1.0">
```

**width=device-width:** stelt de breedte van de pagina in op de **breedte** van het **device**

**initial-scale=1.0:** stelt het initial zoom level in bij het laden van de pagina.

Dit betekent dat de **browser niet mag in- of uitzoomen** om de pagina weer te geven.

## 2.2 Mobile First



Site **responsive** maken:

- Media queries
- Bootstrap (Framework)

## 2.3 Afbeeldingen aanpassen aan de viewport

```
img {  
  
/* laat image opschalen,  
maar nooit groter dan zijn origineel formaat */  
  
    max-width: 100%;  
    height: auto;  
    display: block;  
}
```

Technieken om site **responsive** te maken:

**Media queries & Bootstrap** (Framework)

Class	Device Width	Container Max Width
<i>.col-xs-*</i>	<576px	None (auto)
<i>.col-sm-*</i>	≥576px	540px
<i>.col-md-*</i>	≥768px	720px
<i>.col-lg-*</i>	≥992px	960px
<i>.col-xl-*</i>	≥1200px	1140px
<i>.col-xxl-*</i>	≥1400px	1320px

### 3 Media queries

Media Type

Expression To Test

```
@media screen and (max-width:525px) {
  img[class="hide"] {
    display: none !important;
  }
}
```

Conditional CSS To Display

breedte van scherm = **breakpoint**

## 3.1 Syntax

```
@media not|only mediatype and (mediafeature and|or|not mediafeature) {  
    CSS-Code;  
}
```

## 3.2 Syntax

- achtergrondkleur **lichtgroen** als de viewport 480 pixels breed of breder is;
- OF als de viewport minder dan 480 pixels is, is de achtergrondkleur **roze**

```
body { background-color: pink; }  
  
@media screen and (min-width: 480px) {  
    body {  
        background-color: lightgreen;  
    }  
}
```

## 3.3 Oefeningen

```
body {
    font: 1.2em/1.2 Helvetica, arial, sans-serif;
    margin: 0 3%;
}

h1 {
    font-size: 1.8em;
    margin: .9em 0 0 0;
}

h2 {
    font-size: 1.5em;
    margin: 1.5em 0 0 0;
}

img {
    max-width: 100%;
}

figure {
    background: black;
    border-radius: 5px;
    color: red;
    margin: 0 0 25px 0;
    padding: 10px;
    text-align: center;
}

figcaption {
    font-size: .8em;
}

@media screen and (min-width:768px) {
    body {
        background-color: #ccccfe;
    }

    figure {
        width: calc(50% - 3%);
        box-sizing: border-box;
        display: inline-block;
    }
}

@media screen and (min-width:992px) {
    body {
        background-color: #cdfdec;
    }

    figure {
        width: calc(33% - 3%);
        box-sizing: border-box;
        display: inline-block;
    }
}
```

Resultaat:

### 1. Smartphones (<786px)

Alle foto's komen onder elkaar te staan.

#### Media Query Demo

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#### Box Columns



### 2. Tablets (>=768px)

Er worden telkens twee foto's naast elkaar geplaatst en de achtergrond moet veranderen.

**Media Query Demo**

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**Box Columns**



### 3. Desktops (>=992px)

Er worden drie foto's naast elkaar geplaatst en de achtergrond verandert.

**Media Query Demo**

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Lorem ipsum dolor sit amet, consectetur adipisicing elit. Corrupti, ipsum quae veritatis in nihil laudantium labore beatae nulla laborum rem. Error, molestiae eaque quod placeat at. Labore architecto minus accusantium.

**Box Columns**



## 4.1 Wat is Bootstrap?

- CSS framework
- snel & efficiënt responsive websites bouwen
- bevat sjablonen → typografie, forms, knoppen, navigatie, JS-extensies
- responsive webdev vereenvoudigen

## 4.2 Hoe gebruiken?

- **linken** naar Bootstrap 5 via een **CDN**
- Bootstrap 5 **downloaden** via <https://getbootstrap.com> en zelf **hosten**

### 4.2.1 Bootstrap 5 CDN

**CDN** = Content Delivery Network:

```
<link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.8/dist/css/bootstrap.min.css"
rel="stylesheet" integrity="sha384-
sRI14kxILFvY47J16cr9ZwB07vP4J8+LH7qKQnuqukuIAvNWLzeN8tE5YBujZqJLB" crossorigin="anonymous">
```

### 4.2.2 Bootstrap 5 downloaden

URL: <https://getbootstrap.com/>

## 4.3.1 Oefening 1

HTML-code:

```
<!doctype html>
<html lang="nl">
<head>
  <meta charset="utf-8">
  <title>Grid layout</title>
  <meta name="viewport" content="width=device-width, initial-scale=1">
  <!-- Bootstrap 5 CSS -->
  <link href="https://cdn.jsdelivr.net/npm/bootstrap@5.3.3/dist/css/bootstrap.min.css" rel="stylesheet">
  <link rel="stylesheet" href="css/style.css">
</head>
<body>

<div class="container my-5">

  <!-- Rij 1 -->
  <div class="row g-3 align-items-stretch">
    <div class="col-4 col-md-4">
      <div class="block"></div>
    </div>
    <div class="col-4 col-md-4">
      <div class="block dark"></div>
    </div>
    <div class="col-4 col-md-4">
      <div class="block"></div>
    </div>
  </div>

  <!-- Rij 2 -->
  <div class="row g-3 align-items-stretch mt-3">
    <div class="col-4 col-md-2">
      <div class="block"></div>
    </div>
    <div class="col-4 col-md-8">
      <div class="block dark"></div>
    </div>
    <div class="col-4 col-md-2">
      <div class="block"></div>
    </div>
  </div>

  <!-- Rij 3 -->
  <div class="row g-3 align-items-stretch mt-3">
    <div class="col-4 col-md-3">
      <div class="block"></div>
    </div>
    <div class="col-4 col-md-7">
      <div class="block dark"></div>
    </div>
    <div class="col-4 col-md-2">

```

```
        <div class="block"></div>
    </div>
</div>

</body>
</html>
```

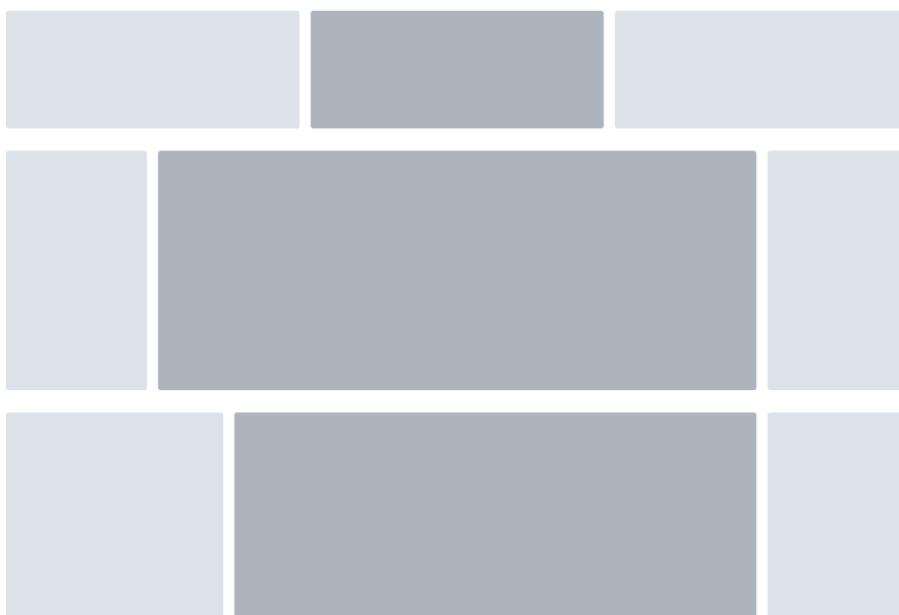
CSS-code:

```
.block {
    width: 100%;
    background-color: #dde1e8;
    border-radius: 4px;
    aspect-ratio: 5 / 2; /* Geeft altijd dezelfde verhouding, bijv. 2.5:1 */
    height: 100%;      /* Stretch om hoogte van kolom te vullen */
}

.block.dark {
    background-color: #aeb4be;
}

/* Optioneel: iets kleinere tussenruimte op heel kleine schermen */
@media (max-width: 575.98px) {
    .row.g-3 {
        --bs-gutter-x: 0.75rem;
        --bs-gutter-y: 0.75rem;
    }
}
```

Resultaat:



## 4.3.2 Oefening 2

HTML-code:

```
(...)  
<div class="container my-5">  
  
  <div class="row row-cols-1 row-cols-md-2 row-cols-lg-4 g-3">  
    <div class="col">  
      <div class="tile light"></div>  
    </div>  
    <div class="col">  
      <div class="tile dark"></div>  
    </div>  
    <div class="col">  
      <div class="tile light"></div>  
    </div>  
    <div class="col">  
      <div class="tile dark"></div>  
    </div>  
  </div>  
</div>  
(...)
```

- row-cols-1: **standaard** → **mobile** één kolom.
- row-cols-md-2: vanaf **tablet** twee kolommen.
- row-cols-lg-4: vanaf **desktop** vier kolommen.

^ via: <https://getbootstrap.com/docs/5.0/layout/grid/>:

	<b>xs</b> <576px	<b>sm</b> ≥576px	<b>md</b> ≥768px	<b>lg</b> ≥992px	<b>xl</b> ≥1200px	<b>xxl</b> ≥1400px
<b>Container</b> max-width	None (auto)	540px	720px	960px	1140px	1320px
<b>Class prefix</b>	.col-	.col-sm-	.col-md-	.col-lg-	.col-xl-	.col-xxl-
<b># of columns</b>	12					
<b>Gutter width</b>	1.5rem (.75rem on left and right)					
<b>Custom gutters</b>	<a href="#">Yes</a>					
<b>Nestable</b>	<a href="#">Yes</a>					
<b>Column ordering</b>	<a href="#">Yes</a>					

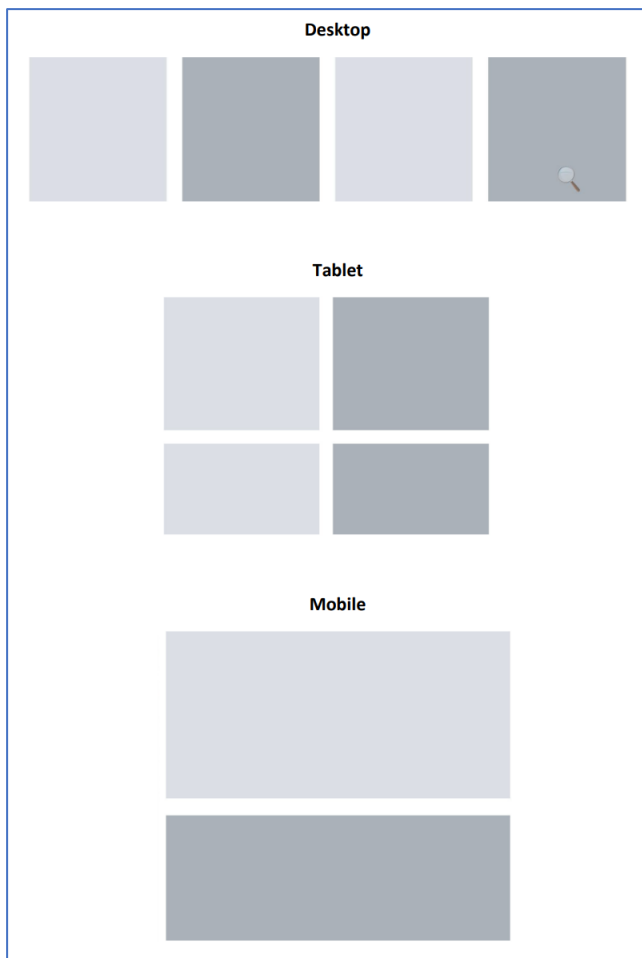
## CSS-code:

```
.tile {
  width: 100%;
  aspect-ratio: 1 / 1;      /* vierkant blok */
  border-radius: 4px;
}

/* Kleurvarianten */
.tile.light { background-color: #dde1e8; }
.tile.dark  { background-color: #aeb4be; }

/* Optioneel: extra spacing-tuning per breakpoint */
@media (max-width: 768px) { /* mobile */
  .row.g-3 {
    --bs-gutter-x: 1rem;
    --bs-gutter-y: 1rem;
  }
}
```

## Resultaat:



### 4.3.3 Composition A

HTML-code:

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title>Schilderij</title>
  <meta name="viewport" content="width=device-width, initial-
scale=1.0">

  <link rel="stylesheet" href="css/bootstrap-grid.css">
  <link rel="stylesheet" href="css/style.css">

</head>
<body>
<div class="container">
  <div class="row">
    <div class="col-3 p-0">
      <div id="a"></div>
      <div id="b"></div>
    </div>
    <div class="col p-0">
      <div id="c"></div>
    </div>
  </div>
  <div class="row">
    <div class="col-3 p-0">
      <div id="d"></div>
    </div>
    <div class="col-8 p-0">
      <div id="e"></div>
    </div>
    <div class="col p-0">
      <div id="f"></div>
      <div id="g"></div>
    </div>
  </div>
</div>
</body>
</html>
```

CSS-code:

```
#a {
  border: solid black;
  border-width: 0 7.5px 15px 0px;
  min-height: 165px;
  background: rgb(255, 255, 255);
}
#b {
  border: solid black;
  border-width: 15px 7.5px 7.5px 0;
  min-height: 190px;
  background: rgb(255, 255, 255);
}
#c {
  border: solid black;
  border-width: 0 0 7.5px 7.5px;
  min-height: 355px;
  background: rgb(220, 40, 26);
}
#d {
  border: solid black;
  border-width: 7.5px 7.5px 0 0;
  min-height: 150px;
  background: rgb(0, 93, 159);
}
#e {
  border: solid black;
  border-width: 7.5px 7.5px 0 7.5px;
  min-height: 150px;
  background: rgb(255, 255, 255);
}
#f {
  border: solid black;
  border-width: 7.5px 0 12.5px 7.5px;
  min-height: 75px;
  background: rgb(255, 255, 255);
}
#g{
```

```
border: solid black;
border-width: 12.5px 0 0 7.5px;
min-height: 75px;
background-color: rgb(242, 224, 122);
}
div{
  box-sizing: border-box;
}
```

Resultaat:



## 4.3.4 Personal Homepage

### Mobile first:



### Wijzigingen samenvatting:

Bootstrap 5.3.3 toegevoegd (**mobile-first grid**)

### Custom CSS

→ Card components + utilities

### Segoe UI

→ Helvetica overall (!important)

### Hobby's: lijst

→ kleurcodering + responsive grid

### Images: fixed width

→ img-fluid responsive

### Basic media query

→ volledige Bootstrap breakpoints