Homework - HTML Teaching Series

Perfect.
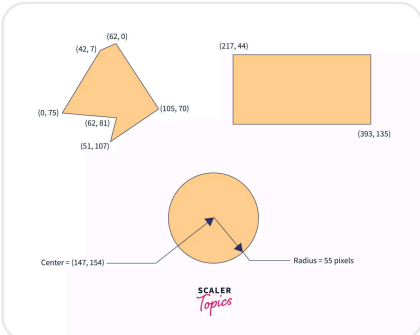
We will now cover **HTML Image Maps** properly — **what they are, why they exist, all important attributes, browser behavior, real-world usage, and production rules**.
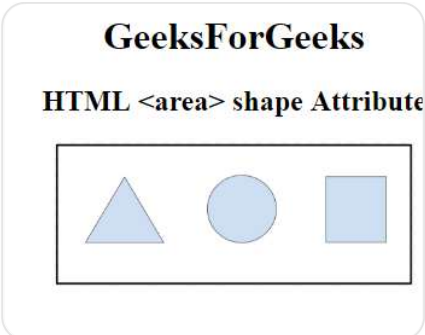
This is a **conceptual + attribute-heavy topic**, so clarity matters more than speed.

◆ HTML IMAGE MAPS

(`<map>` , `<area>` , `usemap` — **clickable regions inside images**)

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1 What an Image Map Is (Clear Mental Model)

An **image map** allows you to make **different parts of a single image clickable**, where **each region links to a different destination**.

Instead of:

- One image → one link

You get:

- One image → **multiple clickable zones**

Think of:

- World map (click countries)
- Floor plan (click rooms)
- Product diagram (click parts)
- Infographics

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2 When Image Maps Make Sense (And When They Don't)

✅ **Good use cases**

- Diagrams with labeled parts
- Educational graphics
- Static maps (not interactive apps)
- Simple visual navigation

❌ Bad use cases

- Responsive complex UIs
- Layout-based navigation
- Modern interactive maps (use JS + SVG instead)

Image maps are **HTML-native**, not dynamic.

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3 Core Components of an Image Map

Image maps always involve **three things**:

1. `<img>` — the image
2. `usemap` — connects image to map
3. `<map>` + `<area>` — define clickable regions

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4 Basic Image Map Structure

```html
<img src="diagram.png" alt="System diagram" usemap="#system-map" />

<map name="system-map">
  <area shape="rect" coords="34,44,270,350" href="cpu.html" alt="CPU" />
</map>
```

This is the **minimum valid image map**.

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5 `<img usemap>` — Connecting the Image

```html
<img src="world-map.jpg" alt="World map" usemap="#worldmap" />
```

Important rules

- `usemap` value **must start with** `#`
- It must match `<map name="...">`

- Image **must have** `alt` (still mandatory)

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6 `<map>` — The Image Map Container

```html
<map name="worldmap">
  ...
</map>
```

What it does

- Holds all clickable regions (`<area>`)
- Not visible on page
- Name is referenced by `usemap`

Important rule

`id` is **not enough** — `name` is required.

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7 `<area>` — Clickable Regions (MOST IMPORTANT)

Each `<area>` defines **one clickable region**.

Core `<area>` Attributes

```html
<area
  shape="rect"
  coords="50,50,200,150"
  href="page.html"
  alt="Clickable region"
/>
```

---

8 `shape` Attribute (Region Type)

A. `rect` — Rectangle

```html
```

```
shape="rect"
coords="x1,y1,x2,y2"
```

Example:

```html
html

<area shape="rect" coords="10,20,200,150" />
```

Used for:

- Buttons
- Panels
- Boxes

B. `circle` — Circular Region

```html
html

shape="circle"
coords="x,y,radius"
```

Example:

```html
html

<area shape="circle" coords="120,80,40" />
```

Used for:

- Icons
- Round buttons
- Points on maps

C. `poly` — Polygon (Most Flexible)

```html
html

shape="poly"
coords="x1,y1,x2,y2,x3,y3,..."
```

Example:

```html
html
```

```html
<area
  shape="poly"
  coords="25,33,90,10,150,80,120,140,60,120"
/>
```

Used for:

- Countries
- Irregular shapes
- Diagrams

D. `default` — Entire Image

html

```html
<area shape="default" href="home.html" />
```

Fallback when no other area matches.

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9 `coords` — Coordinates System (CRITICAL)

Coordinates are based on:

- **Top-left corner = (0,0)**
- X increases → right
- Y increases → down

Units are **pixels**, relative to the image's original size.

⚠️ This makes image maps **not responsive by default**.

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10 `href` — Destination Link

html

```html
<area href="details.html" />
```

Behaves exactly like `<a href="">`.

You can also use:

- `mailto:`
- `tel:`

- `#anchors`
- External URLs

1️⃣ 1️⃣ `alt` — Accessibility (MANDATORY)

```html
<area alt="Click to view CPU details" />
```

Why this matters

- `<area>` has **no visible text**
- Screen readers rely entirely on `alt`
- Without `alt` → inaccessible region

This is **non-negotiable**.

1️⃣ 2️⃣ Other Important `<area>` Attributes

`target`

```html
<area href="page.html" target="_blank" />
```

`rel`

```html
<area href="https://external.com" rel="noopener noreferrer" />
```

`download`

```html
<area href="file.pdf" download />
```

All work the same as `<a>`.

1️⃣ 3️⃣ Full Real-World Example

```html
```

```html
<img
  src="laptop-parts.png"
  alt="Laptop internal components"
  usemap="#laptopmap"
  width="600"
  height="400"
/>

<map name="laptopmap">
  <area
    shape="rect"
    coords="50,50,250,150"
    href="cpu.html"
    alt="CPU section"
  />

  <area
    shape="circle"
    coords="400,120,40"
    href="fan.html"
    alt="Cooling fan"
  />

  <area
    shape="poly"
    coords="300,250,350,200,420,240,380,300"
    href="battery.html"
    alt="Battery area"
  />
</map>
```

This is **correct, accessible, production-safe HTML image map usage**.

1️⃣4️⃣ Common Beginner Mistakes

❌ Missing `alt` on `<area>`

Accessibility failure.

❌ Wrong coordinates

Clickable area does not match image.

❌ Forgetting `#` in `usemap`

Image map does not work at all.

❌ Using image maps for layout

Not their purpose.

1️⃣5️⃣ Production Rules (Very Important)

- Always provide `alt` for `<area>`
- Always define image dimensions
- Use image maps only for **static graphics**
- Avoid for responsive/mobile-heavy layouts
- Prefer SVG for modern interactive graphics

Senior developers **rarely use image maps**, but **must understand them**.

1️⃣6️⃣ Interview Questions (High Value)

1. What is an image map?
2. Difference between `<a>` and `<area>` ?
3. Why are image maps not responsive by default?
4. What does `coords` represent?
5. How is accessibility handled in image maps?

🗯 Mental Model to Lock In

> **Image maps split one image into multiple links.**
> `<map>` **defines logic.**
> `<area>` **defines interaction.**
> **Coordinates define space.`**

➡️ NEXT TOPIC

🔹 HTML AUDIO & VIDEO

Attributes, controls, formats, accessibility, real-world usage.

Say "**Next**" when ready.