

IT645 Lab Assignment 2

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A. On-page SEO with structured data using JSON-LD

i. Identify the appropriate Schema.org type for the given content

= CafeOrCoffeeShop

ii. Create a JSON-LD script containing relevant business details from the page (name, description, address, contact, opening hours, etc.).

= <script type="application/ld+json">

```
{
  "@context": "https://schema.org",
  "@type": "CafeOrCoffeeShop",
  "name": "The Coffee Corner",
  "description": "A perfect spot for work, relaxation, or meeting friends. Fresh pastries, and a cozy atmosphere in Pune.",
  "address": {
    "@type": "PostalAddress",
    "streetAddress": "Address: 123 Brew Street",
    "addressLocality": "Pune",
    "addressRegion": "MH",
    "postalCode": "411001",
    "addressCountry": "India"
  },
  "telephone": "+91 9876543210",
  "openingHours": "Mo,Tu,We,Th,Fr,Sa 08:00AM - 08:00PM",
  "url": "http://www.thecoffeecorner.com",
}
```

</script>

iii. Insert the JSON-LD script inside the <head> section of index.html.

```
<!DOCTYPE html>
```

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

```
<head>
```

```
<meta charset="UTF-8">
```

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

```
<title>The Coffee Corner</title>
```

```
<meta name="description" content="The Coffee Corner is your go-to café for artisanal coffee, fresh pastries, and a cozy atmosphere in Pune.">
```

```
<script type="application/ld+json">
```

```
{  
  "@context": "https://schema.org",  
  "@type": "CafeOrCoffeeShop",  
  "name": "The Coffee Corner",  
  "description": "A perfect spot for work, relaxation, or meeting friends. Fresh pastries, and a cozy atmosphere in Pune.",  
  "address": {  
    "@type": "PostalAddress",  
    "streetAddress": "Address: 123 Brew Street",  
    "addressLocality": "Pune",  
    "addressRegion": "MH",  
    "postalCode": "411001",  
    "addressCountry": "India"  
  },  
  "telephone": "+91 9876543210",  
  "openingHours": "Mo,Tu,We,Th,Fr,Sa 08:00AM - 08:00PM",  
  "url": "http://www.thecoffeecorner.com",  
}
```

```
</script>
```

```
</head>
```

```
<body>
```

<header>

<h1>Welcome to The Coffee Corner</h1>

<p>Your daily dose of freshly brewed coffee and delicious snacks.</p>

</header>

<section>

<h2>Our Specialties</h2>

Espresso

Cappuccino

Latte

Freshly Baked Croissants

</section>

<section>

<h2>Visit Us</h2>

<p>Address: 123 Brew Street, Pune, India</p>

<p>Open: Mon–Sat, 8:00 AM – 8:00 PM</p>

</section>

<footer>

<p>Contact: info@coffeecorner.com | Phone: +91 9876543210</p>

</footer>

</body>

</html>

iv. Validate the structured data using following validator tools (insert the entire html file along with the script element):

The screenshot shows a web-based validator interface. On the left, a text area contains a JSON-LD snippet for a coffee shop. On the right, a green box displays the validation result: 'CafeOrCoffeeShop "The Coffee Corner"' with the status 'no error'. A 'Validate again' button is located at the bottom of the text area.

```
{
  "@context": "https://schema.org",
  "@type": "CafeOrCoffeeShop",
  "name": "The Coffee Corner",
  "description": "A perfect spot for work, relaxation, or meeting friends. Fresh",
  "address": {
    "@type": "PostalAddress",
    "streetAddress": "Address: 123 Brew Street",
    "addressLocality": "Pune",
    "addressRegion": "MH",
    "postalCode": "411001",
    "addressCountry": "India"
  },
  "telephone": "+91 9876543210",
  "openingHours": "Mo,Tu,We,Th,Fr,Sa 08:00AM - 08:00PM",
  "url": "http://www.thecoffeecorner.com",
}
```

CafeOrCoffeeShop "The Coffee Corner" no error

Validate again

B. Keyword Research using SemRush Tool

i. Explore the tool: Read about the Competitive Research and Keyword research

Semrush Competitive Research is a toolkit for analyzing competitors' digital strategies across SEO, PPC, content, social media, and advertising. Using data from 20B+ keywords and 140+ databases, it turns competitor metrics into actionable insights.

Core Objectives:

- **Uncover Opportunities** – Find gaps in competitors' keywords, content, and backlinks.
- **Benchmark Performance** – Compare authority, traffic, and engagement with industry leaders.
- **Track Movements** – Monitor changes in ads, content, and social strategies in real time.

Semrush Keyword Research Toolkit helps you find, analyze, and organize the best keywords for SEO and PPC.

It includes tools like:

- **Keyword Overview** – Key metrics (volume, difficulty, CPC, intent).
- **Keyword Magic Tool** – Discover topic ideas and long-tail keywords.

- **Keyword Gap** – Compare keywords with competitors.
- **Organic Research** – See competitors' top keywords and pages.

ii. Use the Keyword Magic Tool (available in free version)

a. Search for terms related to “coffee shop” and note down:

- Top 10 keyword suggestions
- Their search volume
- Keyword difficulty (KD) score
- Intent

Keyword	Intent	Volume	KD%
coffee shops near me	T	301.0K	37
coffee shops	C	135.0K	37
minvera coffee shop	C	22.2K	31
minvera coffee shop hyderabad	C	22.2K	31
best coffee shops in hyderabad	C	18.1K	35
coffee shops in chennai	C	9.9K	32
coffee shops nearby	T	9.9K	33
coffee shops names	I	8.1K	24
best coffee shops near me	T	6.6K	38
coffee shops near me open now	T	6.6K	51

The screenshot shows the Semrush Keyword Magic tool interface. The search query is 'coffee+shop&db=in'. The results are sorted by volume. The table below represents the data shown in the screenshot.

Keyword	Volume	Intent	KD %	CPC (USD)	SF	Updated
near	1,082					
best	767					
design	431					
open	335					
india	318					
business	289					
menu	286					
amsterdam	255					
name	251					
plan	242					

iii. Use Keyword Gap Tool to compare your keyword profile with competitors and include them on your page

a. Add competitor café's website domains.

stumptowncoffee.com

b. Analyze their:

- **Top organic keywords**

coffee, coffee bean, french press, aeropress, french press coffee, cascara, pour over coffee.

- **Opportunities (weak, missed, untapped keywords)**

Weak (coffee, coffee bean)

Missed (bean bag, coffee bag, coffee mug, coffee mugs, glass bottle)

Untapped (cascara, aeropress)

iv. Create a table listing chosen keywords, volume, intent and KD.

Keyword	Volume	Intent	KD%
coffee bean	40,500	Commercial	41
french press	18,100	Commercial	36
aeropress	4,400	Navigational	28

french press coffee	3,300	Informational	35
cascara	2,900	Informational	15
pour over coffee	2,400	Informational	30

v. Explain the strategy behind choosing specific keywords you would target and why.

- Choose keywords many people search but not too hard to rank.
- Keywords like *coffee bean*, *french press* bring people who want to buy now.
- Keywords like *aeropress*, *cascara* for coffee lovers, less competition.
- Keywords like *pour over coffee*, *french press coffee* bring people want to learn first, later maybe buy.
- Some keywords give traffic fast, some take time but bring many visitors.

C. Generate XML Sitemap

ii. For The Coffee Corner website, create:

a. XML Sitemap (sitemap.xml) manually

```
<?xml version="1.0" encoding="UTF-8"?>
<urlset
  xmlns="http://www.sitemaps.org/schemas/sitemap/0.9"
  xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
  xsi:schemaLocation="http://www.sitemaps.org/schemas/sitemap/0.9
    http://www.sitemaps.org/schemas/sitemap/0.9/sitemap.xsd">
  <url>
    <loc>https://kishan-thanki.github.io/thecoffeecorner/</loc>
    <lastmod>2025-08-13T18:02:31+00:00</lastmod>
    <priority>1.00</priority>
  </url>
  <url>
    <loc>https://kishan-thanki.github.io/thecoffeecorner/index.html</loc>
    <lastmod>2025-08-13T18:02:31+00:00</lastmod>
    <priority>0.80</priority>
  </url>
  <url>
    <loc>https://kishan-thanki.github.io/thecoffeecorner/menu.html</loc>
    <lastmod>2025-08-13T18:02:31+00:00</lastmod>
```

```

<priority>0.80</priority>
</url>
<url>
  <loc>https://kishan-thanki.github.io/thecoffeecorner/contact.html</loc>
  <lastmod>2025-08-13T18:02:31+00:00</lastmod>
  <priority>0.80</priority>
</url>
</urlset>

```

b. HTML Sitemap (sitemap.html)

```

<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Sitemap - The Coffee Corner</title>
</head>
<body>
  <h1>HTML Sitemap - The Coffee Corner</h1>
  <ul>
    <li><a href="https://kishan-thanki.github.io/thecoffeecorner/">Home</a></li>
    <li><a href="https://kishan-thanki.github.io/thecoffeecorner/index.html">Index</a></li>
    <li><a href="https://kishan-thanki.github.io/thecoffeecorner/menu.html">Menu</a></li>
    <li><a
href="https://kishan-thanki.github.io/thecoffeecorner/contact.html">Contact</a></li>
  </ul>
</body>
</html>

```

iv. Place sitemap.xml and sitemap.html in the root directory.


```

contact.html
discord_sitemap.xml
index.html
menu.html
robots.txt
sitemap.html
sitemap.xml


```


v. Validate XML sitemap using:

<https://www.xml-sitemaps.com/validate-xml-sitemap.html>



XML Validation Results

 No issues detected

Sitemap URL	https://kishan-thanki.github.io/thecoffeecorner/sitemap.xml
Character Set	UTF-8
Sitemap is valid	Yes
Warnings	-
Errors	-

D. Create robots.txt in the root directory.

i. Include the xml sitemap in robots.txt

ii. Allow search engines to crawl all pages except:

a. Admin pages (/admin/)

b. Test pages (/test/)

robots.txt

User-agent: *

Disallow: /admin/

Disallow: /test/

Sitemap: <https://kishan-thanki.github.io/thecoffeecorner/sitemap.xml>

E. Web page performance optimization.

i. Create an HTML page with coffee images using flexbox layout. Add a video about the brewing of coffee.

```
<!DOCTYPE html>
```

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

```
<head>
```

```
<meta charset="UTF-8">
```

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

```
<title>The Coffee Corner</title>
<script type="application/ld+json">
  {
    "@context": "https://schema.org",
    "@type": "CafeOrCoffeeShop",
    "name": "The Coffee Corner",
    "description": "A perfect spot for work, relaxation, or meeting friends. Fresh pastries, and a
cozy atmosphere in Pune.",
    "address": {
      "@type": "PostalAddress",
      "streetAddress": "Address: 123 Brew Street",
      "addressLocality": "Pune",
      "addressRegion": "MH",
      "postalCode": "411001",
      "addressCountry": "India"
    },
    "telephone": "+91 9876543210",
    "openingHours": "Mo,Tu,We,Th,Fr,Sa 08:00AM - 08:00PM",
    "url": "http://www.thecoffeecorner.com",
  }
</script>
<meta name="description"
  content="The Coffee Corner is your go-to café for artisanal coffee, fresh pastries, and a cozy
atmosphere in Pune.">
<style>
  body {
    font-family: Arial, sans-serif;
    margin: 0;
    padding: 0;
  }

  header,
  footer {
    background-color: #6b4f4f;
    color: white;
    text-align: center;
    padding: 1em;
```

```
}

nav ul {
  display: flex;
  justify-content: center;
  list-style: none;
  background-color: #c9a66b;
  padding: 0;
}

nav ul li {
  margin: 0 15px;
}

nav ul li a {
  text-decoration: none;
  color: white;
}

.gallery {
  display: flex;
  flex-wrap: wrap;
  justify-content: center;
  gap: 15px;
  padding: 20px;
}

.gallery img {
  width: 300px;
  height: auto;
  border-radius: 8px;
}

.video-section {
  text-align: center;
  margin: 20px;
}
```

```
    video {
      max-width: 90%;
      border-radius: 8px;
    }
  </style>
</head>
<body>
  <header>
    <h1>Welcome to The Coffee Corner</h1>
    <p>Your daily dose of freshly brewed coffee and delicious snacks.</p>
  </header>

  <nav>
    <ul>
      <li><a href="index.html">Home</a></li>
      <li><a href="menu.html">Menu</a></li>
      <li><a href="contact.html">Contact</a></li>
    </ul>
  </nav>

  <section>
    <h2 style="text-align:center;">Our Specialties</h2>
    <ul style="text-align:center; list-style:none;">
      <li>Espresso</li>
      <li>Cappuccino</li>
      <li>Latte</li>
      <li>Freshly Baked Croissants</li>
    </ul>
  </section>

  <section class="gallery">
    
    
    
    
  </section>
```

```

<section class="video-section">
  <h2>Watch How We Brew</h2>
  <video>
    <source src="assets/brewing.mp4" type="video/mp4">
    Your browser does not support the video tag.
  </video>
</section>

<section style="text-align:center;">
  <h2>Visit Us</h2>
  <p>Address: 123 Brew Street, Pune, India</p>
  <p>Open: Mon–Sat, 8:00 AM – 8:00 PM</p>
</section>

<footer>
  <p>Contact: info@coffeecorner.com | Phone: +91 9876543210</p>
</footer>
</body>
</html>

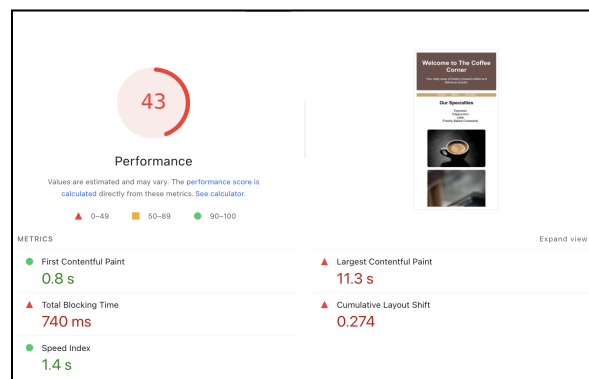
```

ii. Perform optimizations: Perform compression of images using online image compression tools such as compression.io, enable lazy loading of images and video.

- Run the optimized page through the Google PageSpeed Insight (pagespeed.web.dev) and Compare the core web vitals: LCP, INP and CLS before and after optimization.

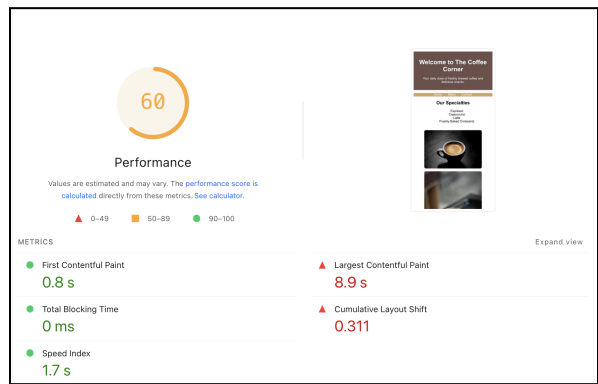
Before Optimization (Lab Emulated Mobile):

- **LCP: 11.3 s**
- **INP/TBT: 740 ms**
- **CLS: 0.274**



After Optimization (Lab Emulated Mobile):

- **LCP: 8.9 s**
- **INP/TBT: 0 ms**
- **CLS: 0.311**



Comparison of Core Web Vitals before and after optimization:

Metric	Before Optimization	After Optimization	Improvement
LCP (Largest Contentful Paint)	11.3 s	8.9 s	↓ 2.4 s (faster load)
INP/TBT (Interaction to Next Paint / Total Blocking Time)	740 ms	0 ms	↓ 740 ms (no blocking)
CLS (Cumulative Layout Shift)	0.274	0.311	↑ 0.037 (slightly worse)

Performance Optimization Report: [Performance optimization report](#).