

UNEARTHING THE ENVIRONMENTAL IMPACT OF HUMAN ACTIVITY: A GLOBAL CO₂ EMISSION ANALYSIS

SUBMITTED BY

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1. INTRODUCTION

1.1 OVERVIEW:

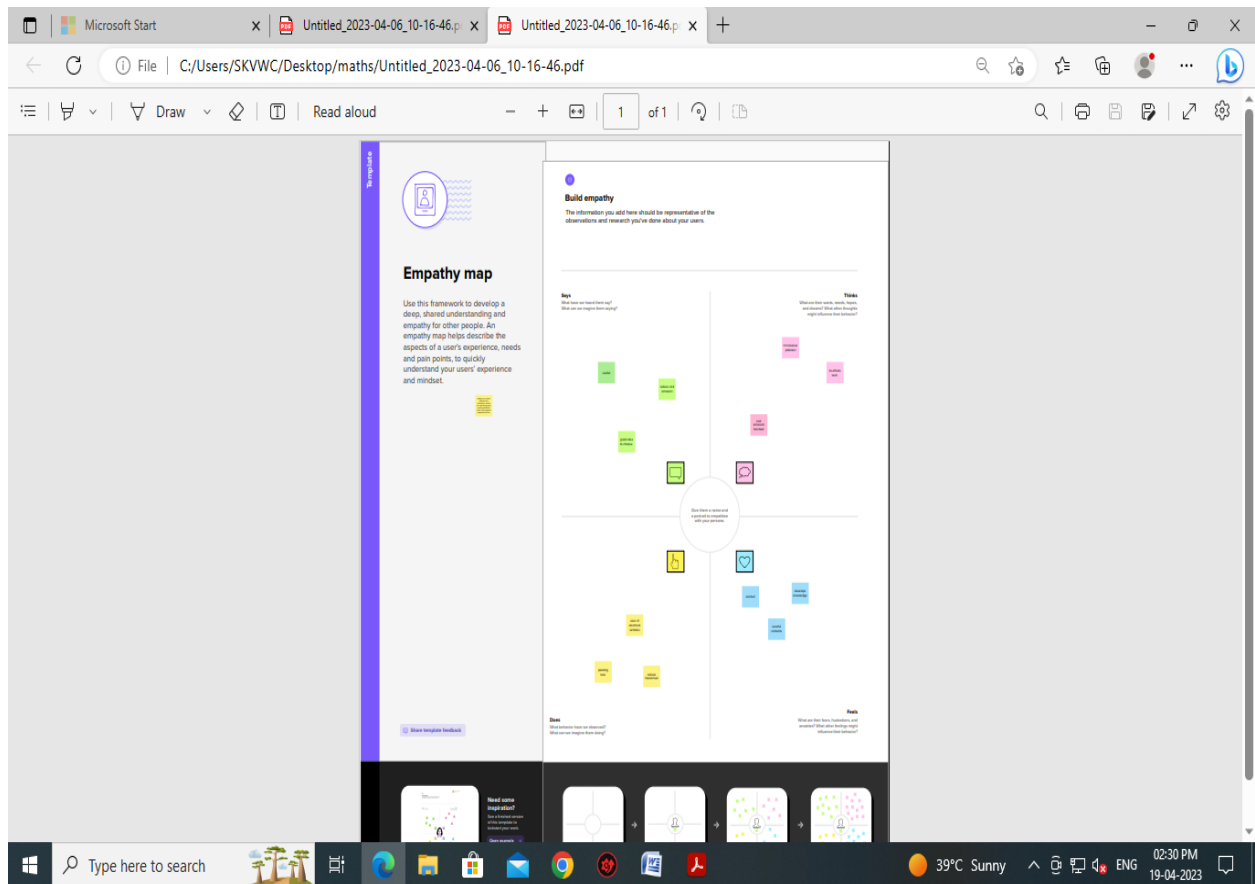
Global warming is one of the biggest challenges currently being faced By the human race, although correlation is not causation, a likely Cause of global warming is due to increased atmospheric carbon dioxide from human activities. **CO2** Emission refers to the Carbon Dioxide emitted throughout the world. For this analysis we will be focusing on CO2 Emissions and its effect on the world we live in as well as some key factors and stats that may play a role in the emission of CO2 globally. Fossil fuel use is the primary source of CO2. The data throws light onto how much fossil fuels are burnt, per year per nation, which amounts to an increase in CO2 every year. This will help researchers and environment experts to predict global warming. So countries should set a goal to decrease this amount yearly. Analyzing Global Co2 Emission across countries from 1975 to 2020. This dataset contains a record of Co2 Emission by each Country and Region of Earth, here we are going to analyze and visualize Country wise, Region wise and Overall Co2 Emission on Earth.

1.2 PURPOSE:

New opportunities to use carbon dioxide (CO₂) in the development of products and services are capturing the attention of governments, industry and the investment community interested in mitigating climate change as well as in other factors, including technology leadership & supporting a circular economy. This analysis considers the near-term market potential for five key categories of CO₂ derived products and services: fuels, chemicals, building materials from minerals, building materials from waste, and CO₂ use to enhance the yields of biological processes. Five categories could individually be scaled-up to a market size of at least almost as the current CO₂ demand for food and beverages but most face commercial and regulatory barriers. CO₂ use can support climate goals where the application is scalable, uses low carbon energy and displaces a product with higher life-cycle emissions. Some CO₂-derived products also involve permanent carbon retention, in particular building materials.

2. PROBLEM DEFINITION & DESIGN THINKING

2.1 EMPATHY MAP :



2.2 IDEATION AND BRAINSTORMING MAP:

iea Putting CO2 to Use - Analysis - I: x (5) WhatsApp x Untitled_2023-04-08_07-25-09 (2) x +

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Gmail YouTube Maps Translate

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Brainstorm & idea prioritization

Use this template in your own brainstorming sessions or your team can choose their imagination and start shaping concepts even if you're not sitting in the same room.

- Brainstorming session
- Idea prioritization
- Map your ideas

Before you collaborate

It's best if everyone gets a big sheet with the canvas. Think about what you want to be going.

- Brainstorming

Define your problem statement

What problem are you trying to solve? From your problem or the right the solution. You will use this to define your problem statement.

How to prevent global warming from CO2 emission?

Brainstorming session

- Brainstorming session
- Brainstorming session
- Brainstorming session
- Brainstorming session

Brainstorm

Write down any ideas that come to mind that address your problem statement.

Initial	Round 1	Round 2	Round 3
1	2	3	4
5	6	7	8
9	10	11	12
13	14	15	16
17	18	19	20
21	22	23	24
25	26	27	28
29	30	31	32
33	34	35	36
37	38	39	40
41	42	43	44
45	46	47	48
49	50	51	52
53	54	55	56
57	58	59	60
61	62	63	64
65	66	67	68
69	70	71	72
73	74	75	76
77	78	79	80
81	82	83	84
85	86	87	88
89	90	91	92
93	94	95	96
97	98	99	100

Group ideas

Now you should group ideas into clusters or related ideas as you go. Don't worry about how many ideas you have. The goal is to have a few ideas that are related to the problem statement. You can use the ideas to create a map of the problem statement.

Prioritize

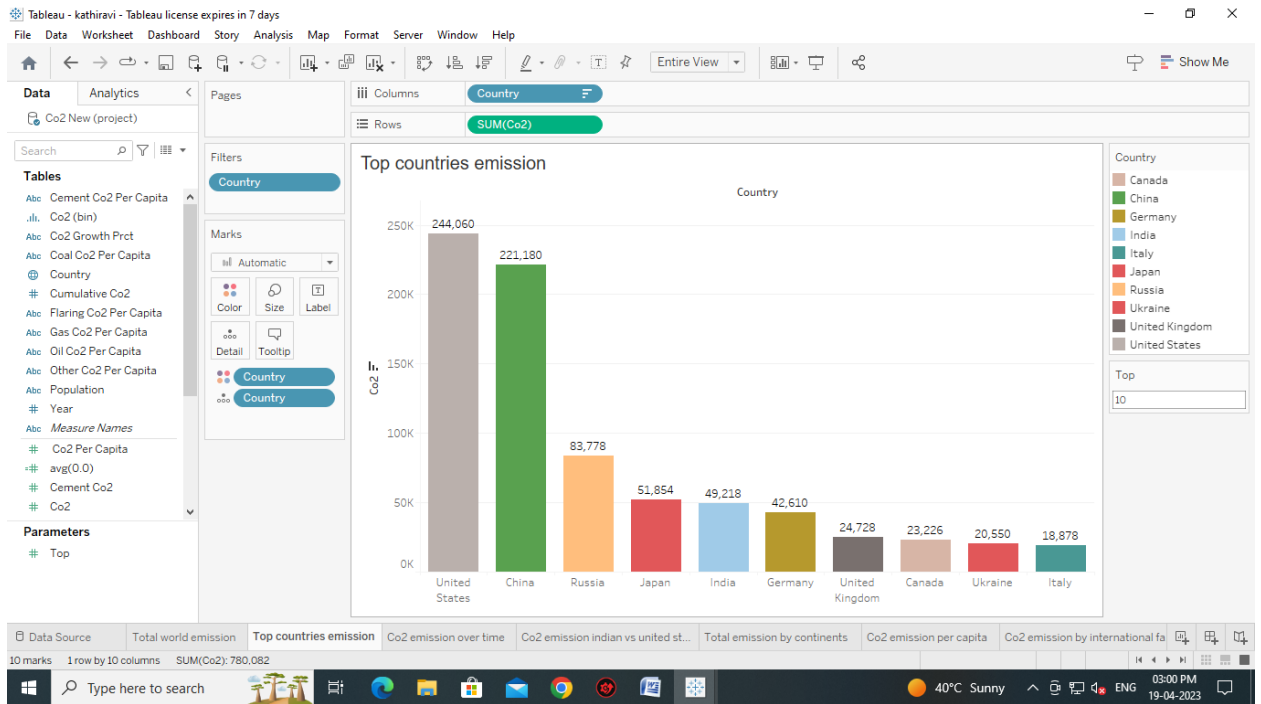
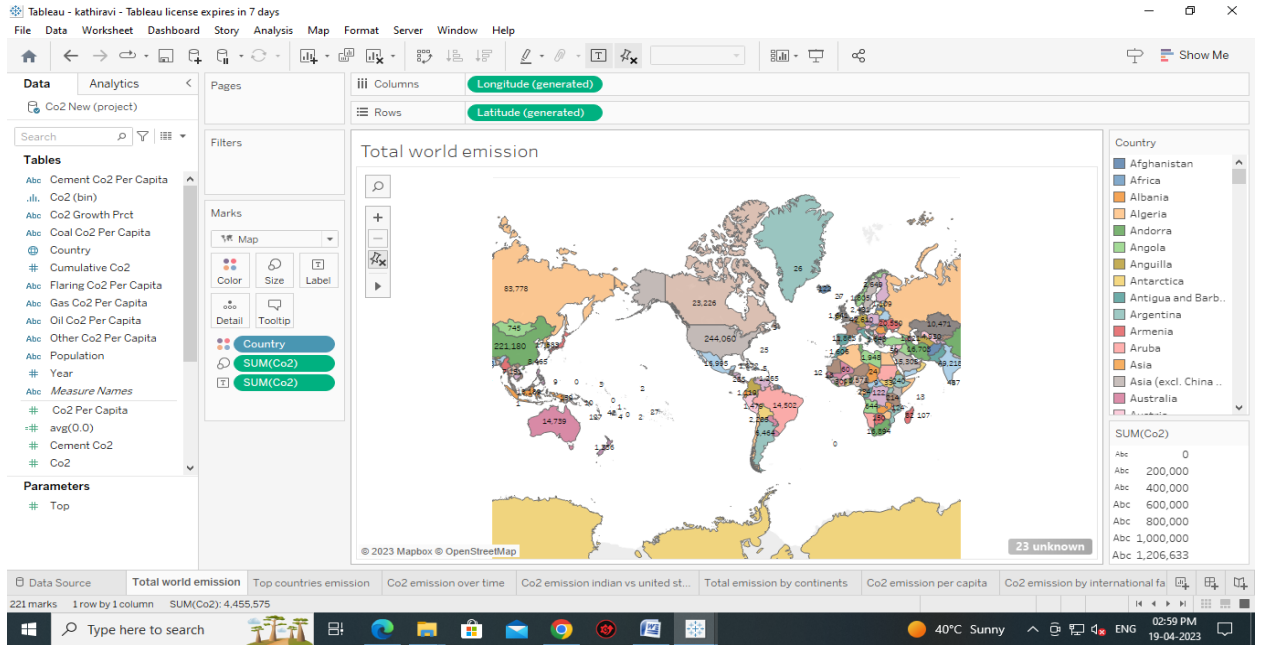
Now you should group ideas into clusters or related ideas as you go. Don't worry about how many ideas you have. The goal is to have a few ideas that are related to the problem statement. You can use the ideas to create a map of the problem statement.

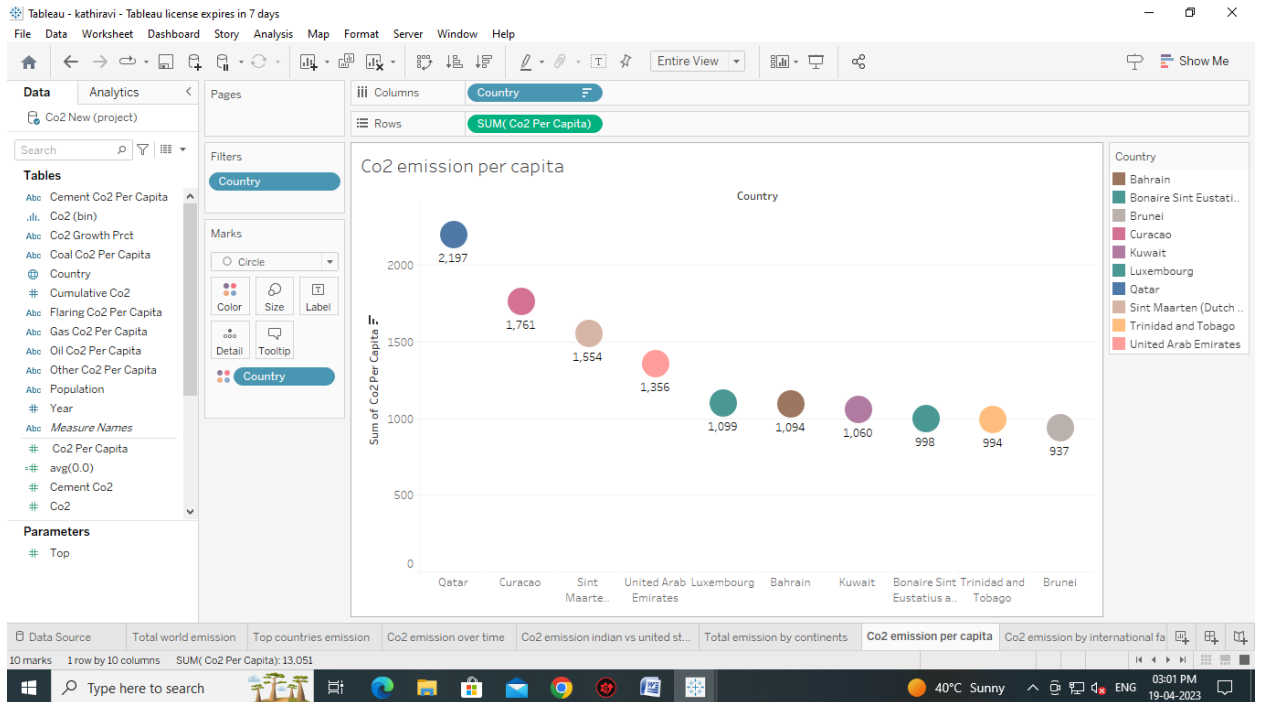
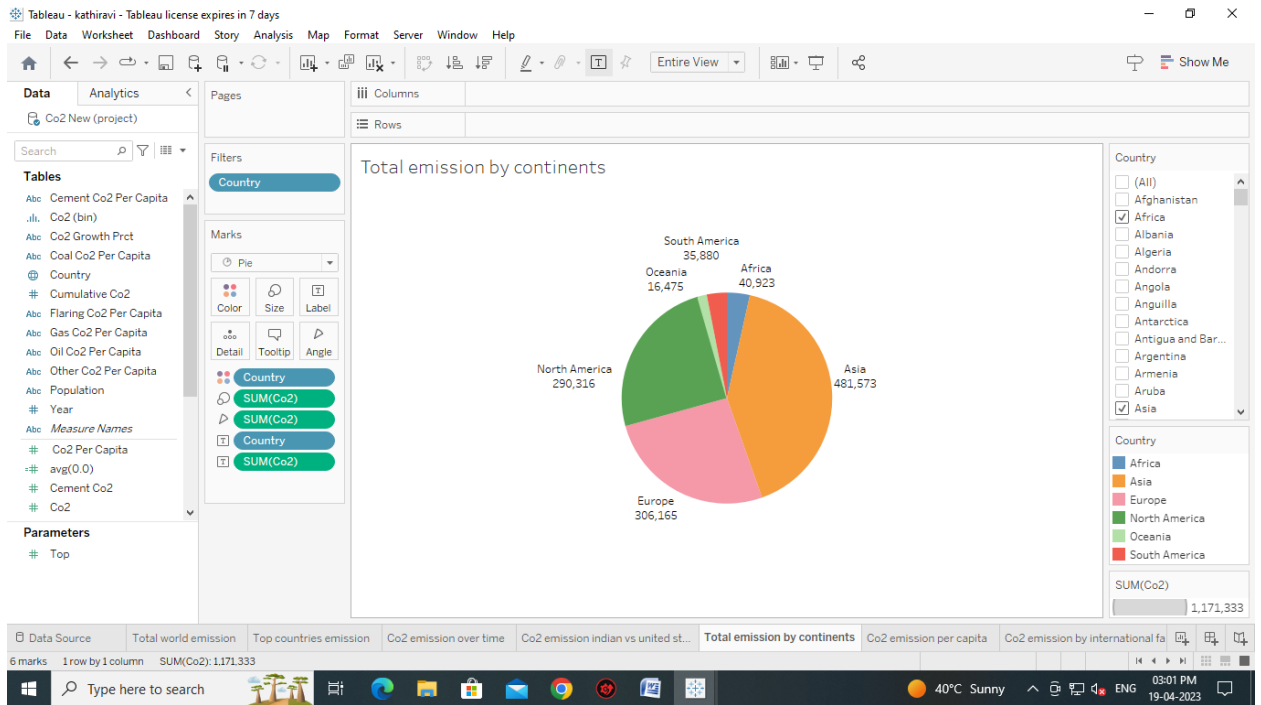
After you collaborate

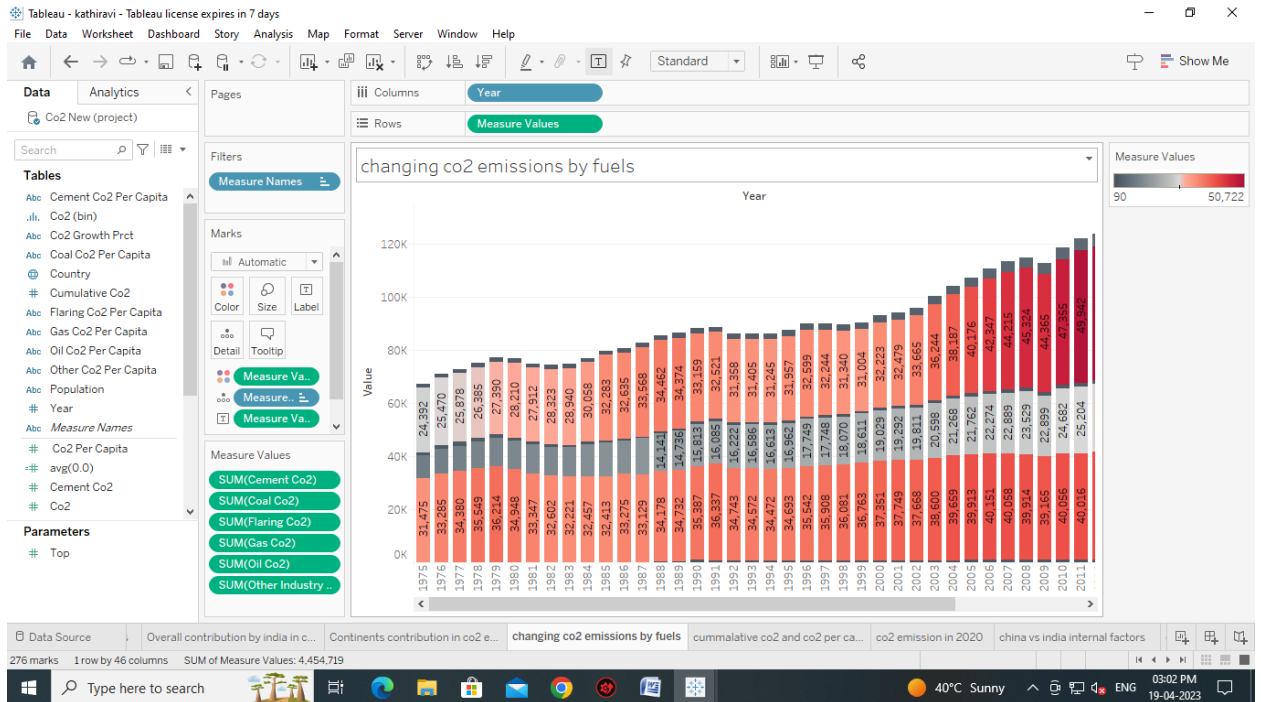
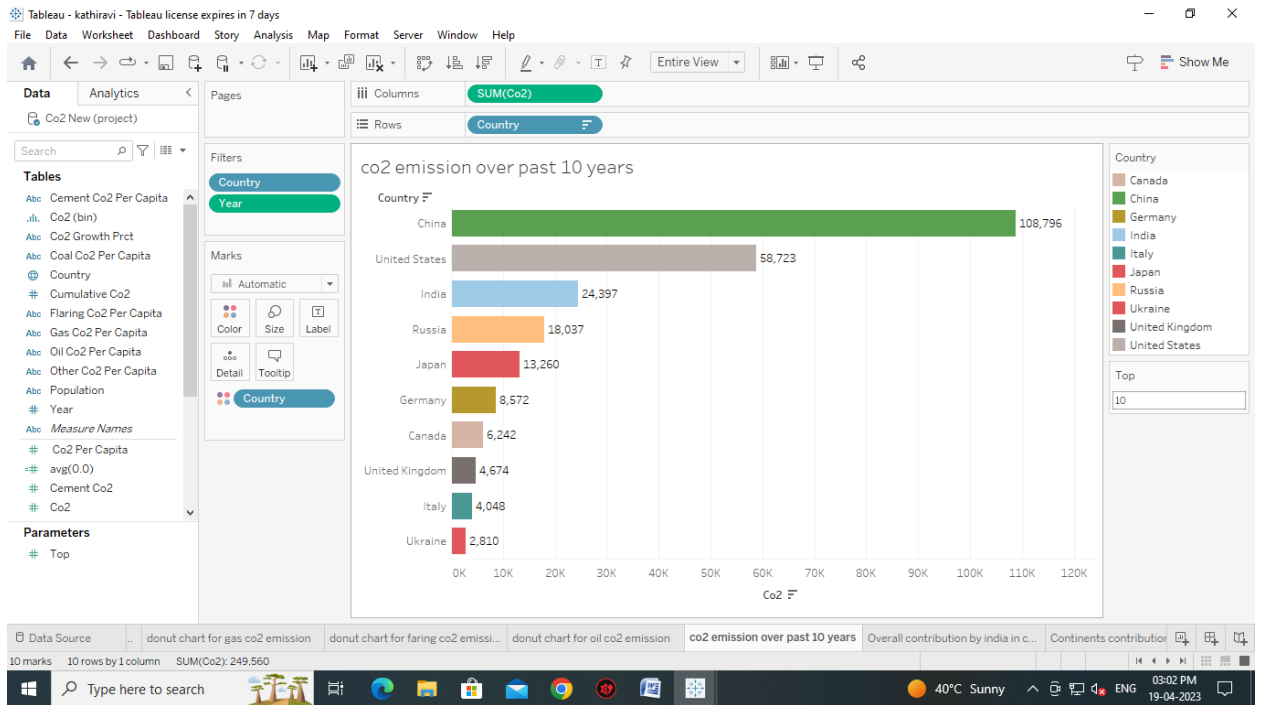
Now you should group ideas into clusters or related ideas as you go. Don't worry about how many ideas you have. The goal is to have a few ideas that are related to the problem statement. You can use the ideas to create a map of the problem statement.

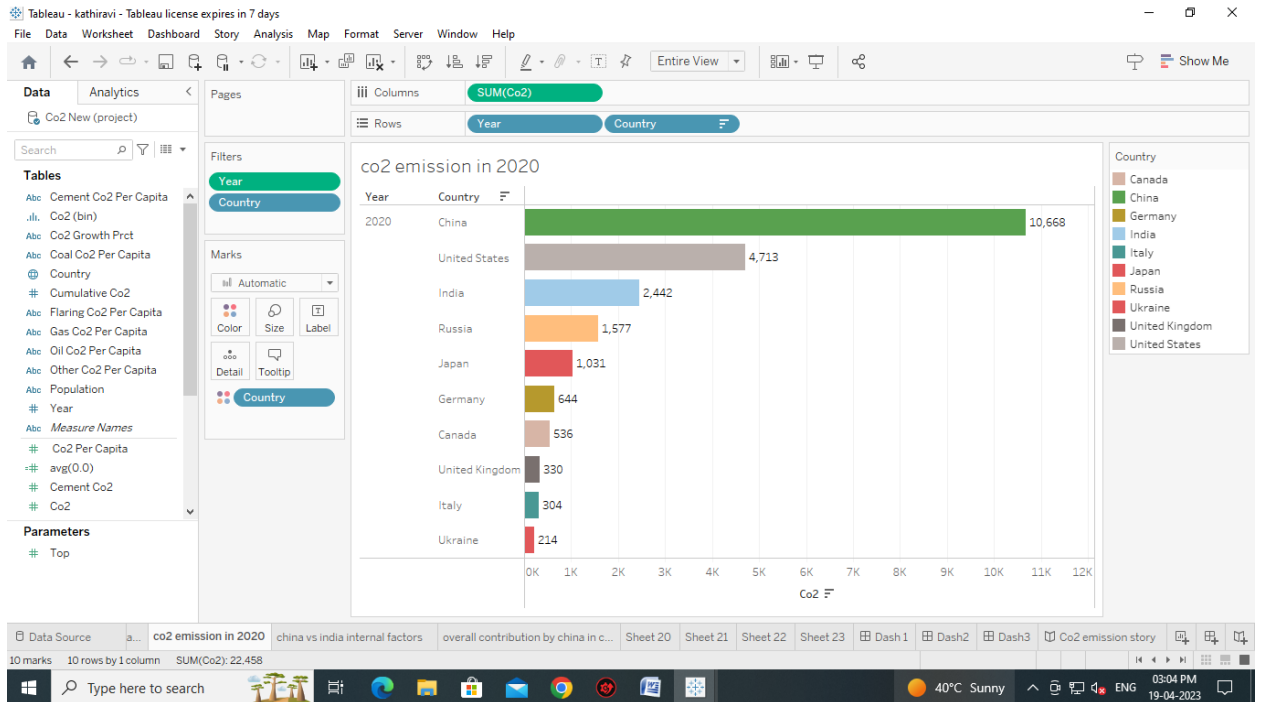
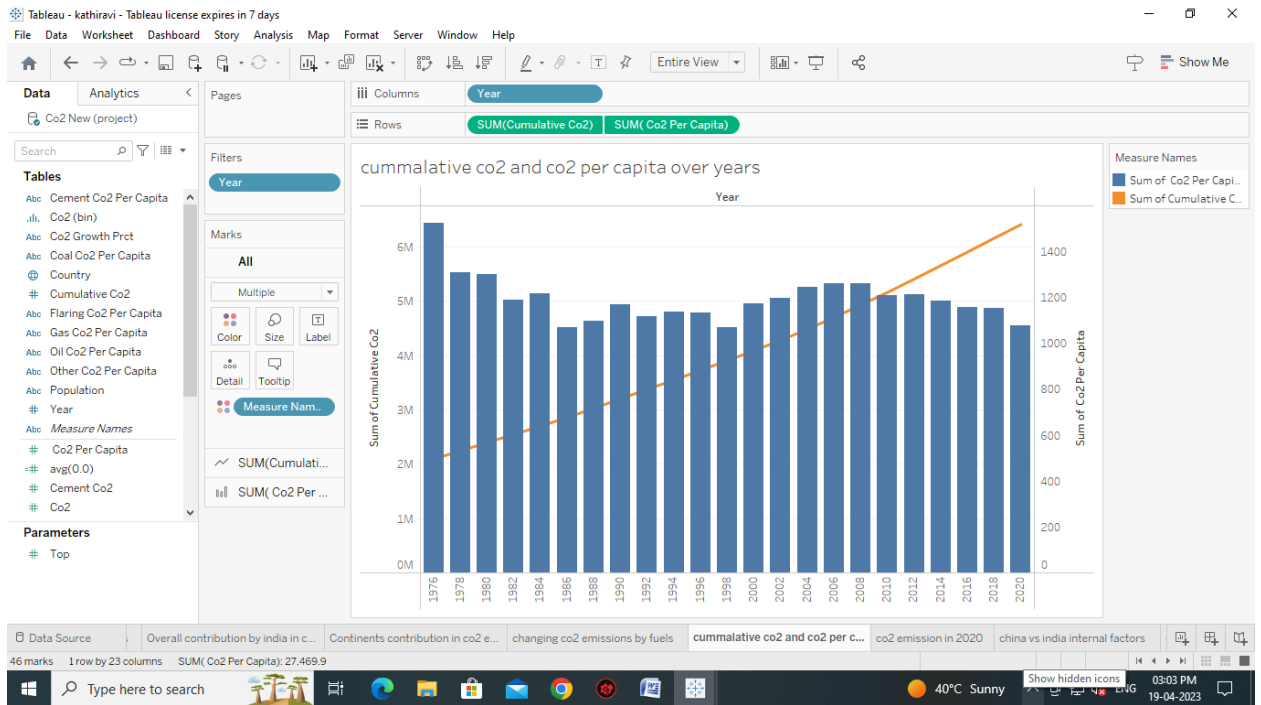
40°C Sunny 02:55 PM 19-04-2023

3. RESULTS

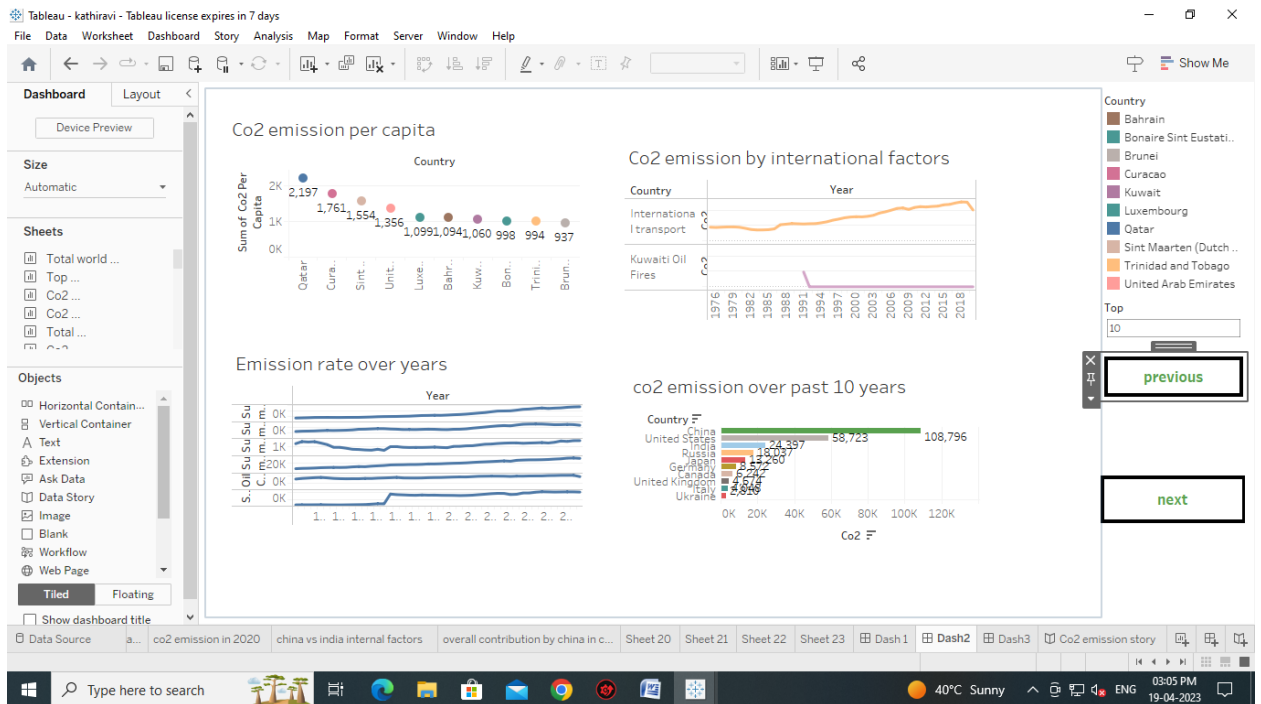
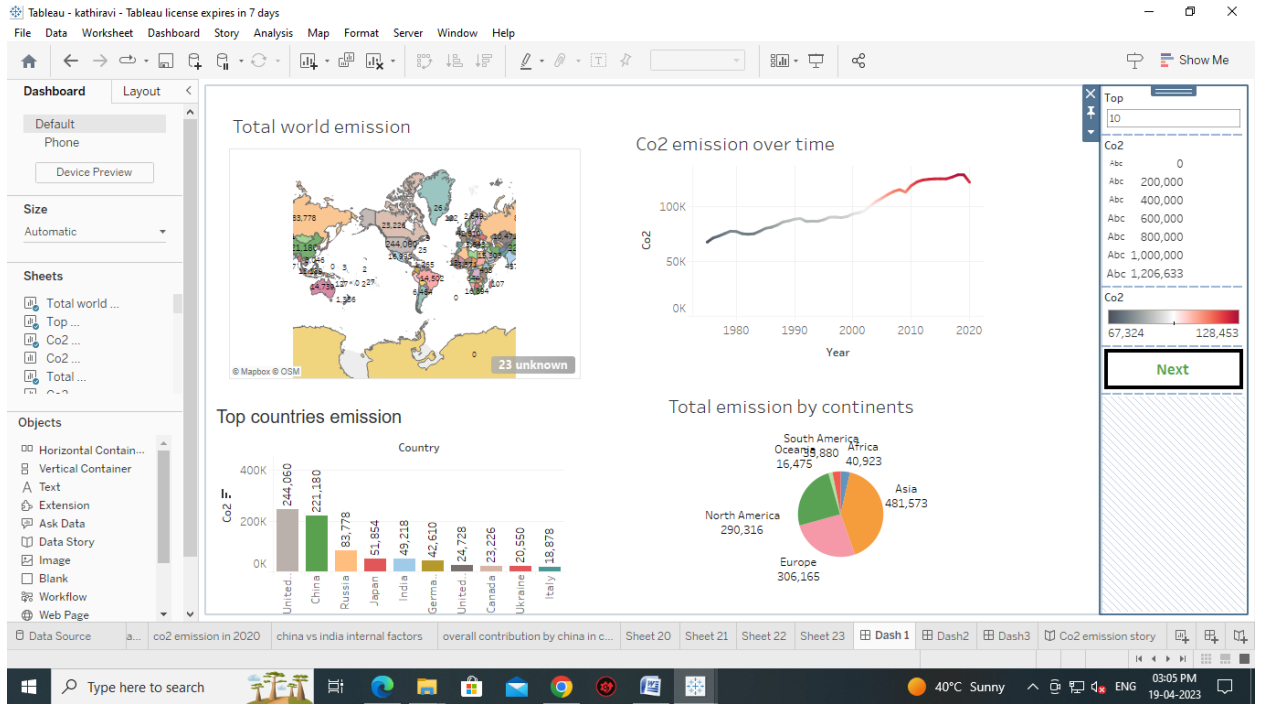


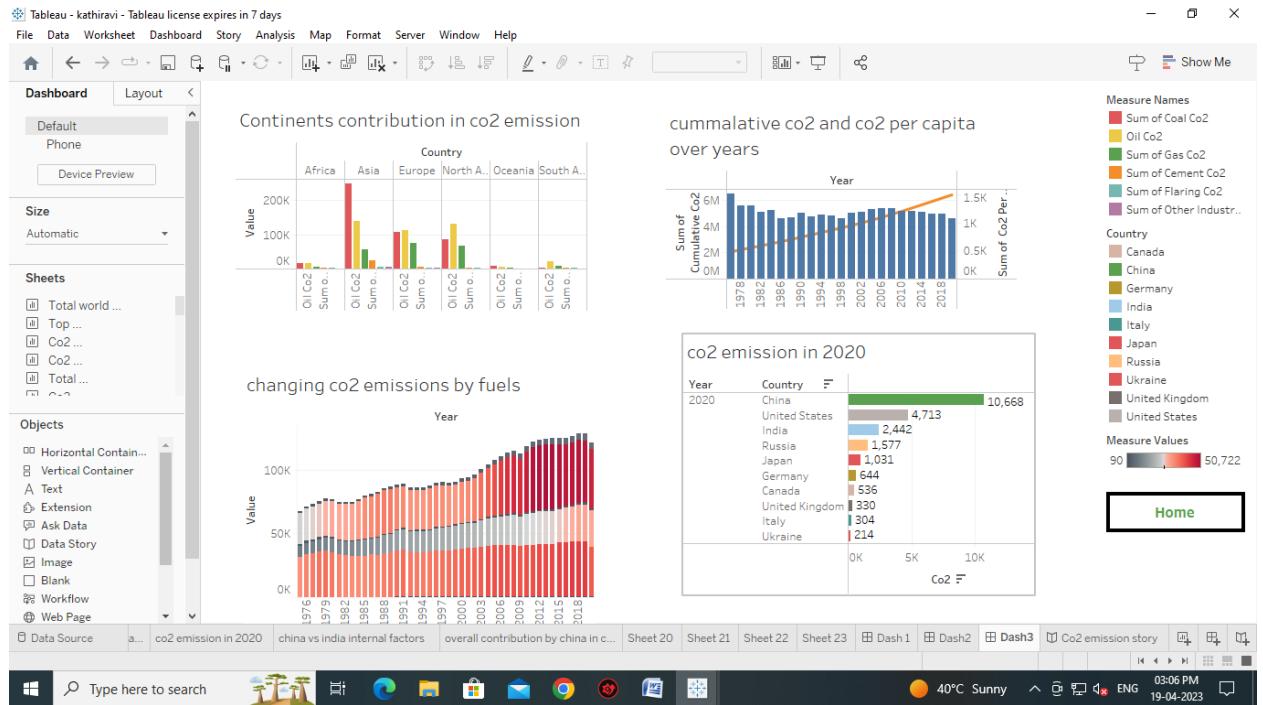




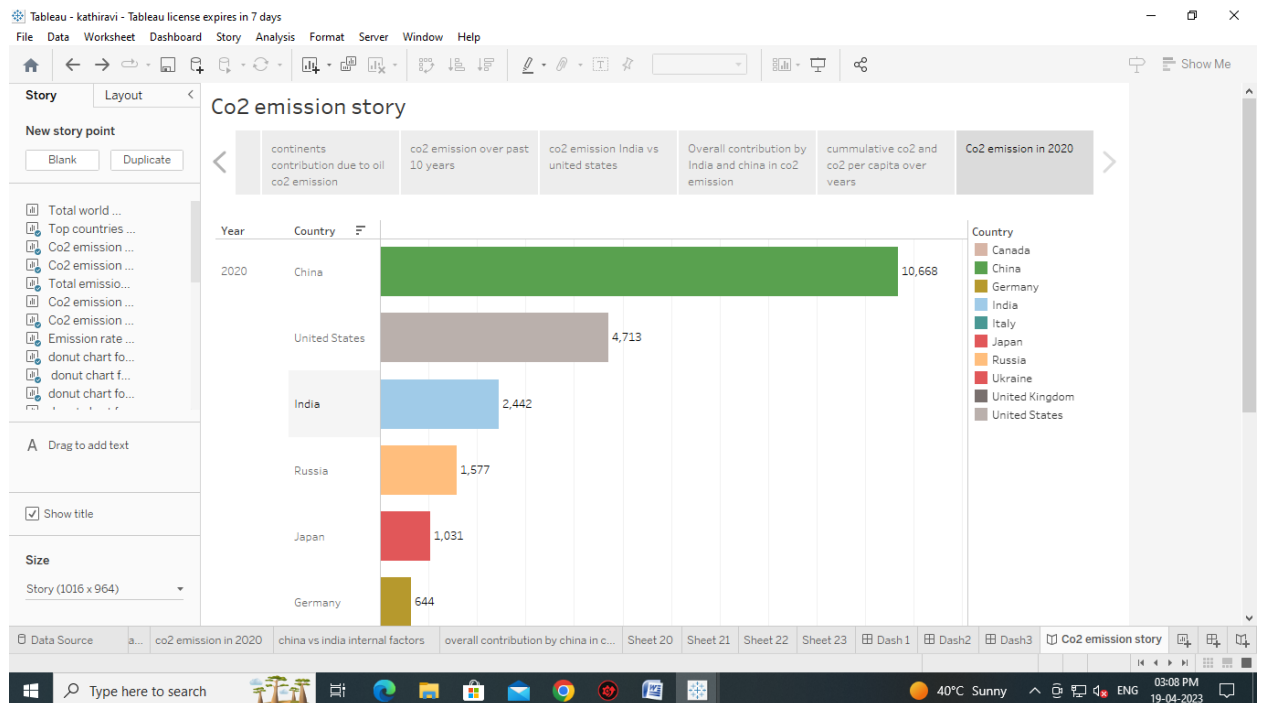


DASHBOARD:





STORY:



4. ADVANTAGES AND DISADVANTAGES:

ADVANTAGES:

Green plants grow faster with more CO₂. Many also become more drought-resistant because higher CO₂ levels allow plants to use water more efficiently. More abundant vegetation from increased CO₂ is already apparent.

Carbon is in carbon dioxide, which is a greenhouse gas that traps heat close to Earth. It helps Earth hold some of the heat it receives from the Sun so it doesn't all escape back into space.

But CO₂ is only good up to a point – beyond that point, Earth's temperature warms up too much. NASA research satellites such as OCO-2 and OCO-3 are studying how carbon moves around the planet

DISADVANTAGES:

As CO₂ levels rise, the Earth's temperatures rise with it, causing the melting of the polar ice caps directly into the oceans.

High carbon dioxide levels can cause poor air quality and can even extinguish pilot lights on gas-powered appliances.

When greenhouse gases release into the atmosphere — these include carbon dioxide, methane, nitrous oxide, ozone, and water vapor — and trap the sun's heat, they warm the average global temperature, causing it to rise. This is known as global warming.

5. APPLICATIONS:

Multi-Industry Uses For Carbon Dioxide (CO₂):

Carbon dioxide in solid and in liquid form is used for refrigeration and cooling. It is used as an inert gas in \chemical processes, in the storage of carbon powder and in fire extinguishers.

Metals Industry:

Carbon dioxide is used in the manufacture of casting molds to enhance their hardness.

Manufacturing And Construction Uses:

Carbon dioxide is used on a large scale as a shield gas in MIG/MAG welding, where the gas protects the weld puddle against oxidation by the surrounding air. A

mixture of argon and carbon dioxide is commonly used today to achieve a higher welding rate and reduce the need for post weld treatment. .

Chemicals, Pharmaceuticals and Petroleum Industry Uses:

Large quantities are used as a raw material in the chemical process industry, especially for methanol and urea production .Carbon dioxide is used in oil wells for oil extraction and to maintain pressure within a formation.. When CO₂ is pumped into an oil well, it is partially dissolved into the oil, rendering it less viscous, allowing the oil to be extracted more easily from the bedrock Considerably more oil can be extracted from through this process.

Rubber and Plastics Industry Uses:

Flash is removed from rubber objects by tumbling them with crushed dry ice in a rotating drum.

6. CONCLUSION:

"The rising level of atmospheric CO₂ could be the one global natural resource that is progressively increasing food production and total biological output, in a world of otherwise diminishing natural resources of land, water, energy, minerals, and fertilizer. It is a means of inadvertently increasing the productivity of farming

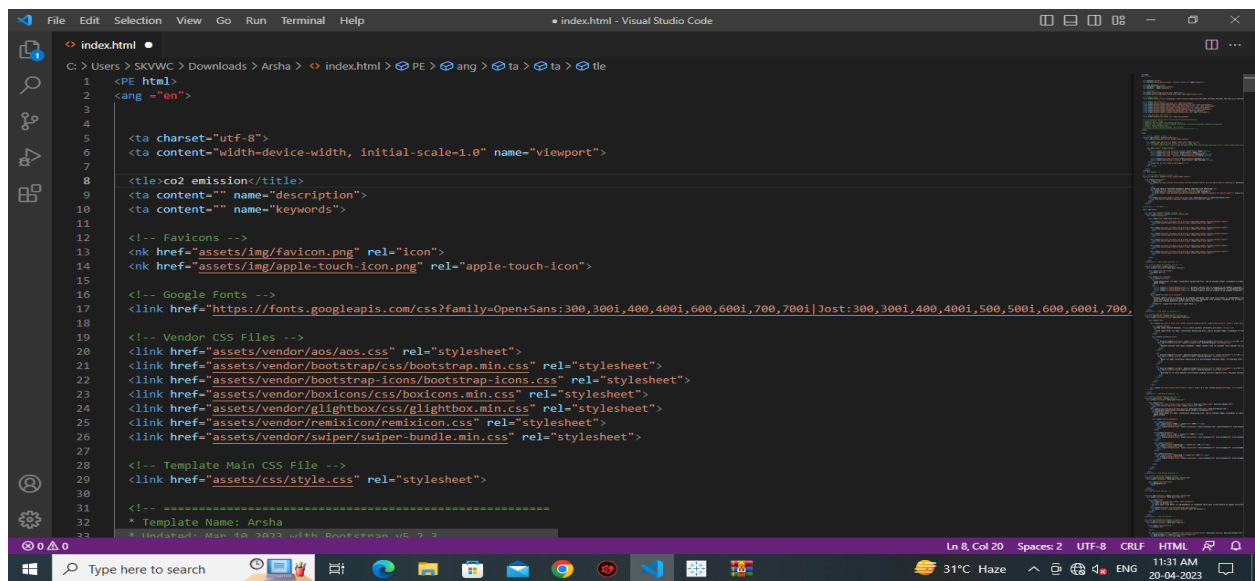
systems and other photo synthetically active ecosystems. The effects know no boundaries and both developing and developed countries are, and will be, sharing equally," for "the rising level of atmospheric CO₂ is a universally free premium, gaining in magnitude with time, on which we all can reckon for the foreseeable future"

7. FUTURE SCOPE OF CO₂ EMISSION:

CO₂ emissions from natural gas combustion are expected to increase by more than 215 Mt CO₂ in 2021 to reach an all-time high of 7.35 G t CO₂, 22% of global CO₂ emissions . Gas use in buildings and industry accounts for much of the trend, with demand in public and commercial buildings seeing the greatest drop in demand in 2020 but the biggest anticipated recovery in 2021.

8. APPENDIX:

A. SOURCE CODE:



```
1 <!DOCTYPE html>
2 <html lang="en">
3
4 <head>
5 <meta charset="utf-8">
6 <meta content="width=device-width, initial-scale=1.0" name="viewport">
7
8 <title>co2 emission</title>
9 <meta content="" name="description">
10 <meta content="" name="keywords">
11
12 <!-- Favicons -->
13 <link href="assets/img/favicon.png" rel="icon">
14 <link href="assets/img/apple-touch-icon.png" rel="apple-touch-icon">
15
16 <!-- Google Fonts -->
17 <link href="https://fonts.googleapis.com/css?family=Open+Sans:300,300i,400,400i,600,600i,700,700i|Jost:300,300i,400,400i,500,500i,600,600i,700,700i" rel="stylesheet">
18
19 <!-- Vendor CSS Files -->
20 <link href="assets/vendor/aos/aos.css" rel="stylesheet">
21 <link href="assets/vendor/bootstrap/css/bootstrap.min.css" rel="stylesheet">
22 <link href="assets/vendor/bootstrap-icons/bootstrap-icons.css" rel="stylesheet">
23 <link href="assets/vendor/boxicons/css/boxicons.min.css" rel="stylesheet">
24 <link href="assets/vendor/glightbox/css/glightbox.min.css" rel="stylesheet">
25 <link href="assets/vendor/remixicon/remixicon.css" rel="stylesheet">
26 <link href="assets/vendor/swiper/swiper-bundle.min.css" rel="stylesheet">
27
28 <!-- Template Main CSS File -->
29 <link href="assets/css/style.css" rel="stylesheet">
30
31 <!-- =====>
32 * Template Name: Arsha
33 * Designed: Man 10 2022 with Bootstrap 5.2.3
```

```
File Edit Selection View Go Run Terminal Help
index.html - Visual Studio Code

C:\Users> SKVWC > Downloads > Arsha > index.html > PE > ang > ta > ta > lle > ta > ta > nk > nk > body > header#header.fixed-top, > div.container.d-flex.align-items-center

34 * Template URL: https://bootstrapmade.com/arsha-free-bootstrap-html-template-corporate/
35 * Author: BootstrapMade.com
36 * License: https://bootstrapmade.com/license/
37 ===== -->
38 </head>
39
40 <body>
41
42 <!-- ===== Header ===== -->
43 <header id="header" class="fixed-top">
44   <div class="container d-flex align-items-center">
45
46     <h1 class="logo me-auto"><a href="index.html">Co2</a></h1>
47     <!-- Uncomment below if you prefer to use an image logo -->
48     <!-- <a href="index.html" class="logo me-auto"></a>-->
49
50     <nav id="navban" class="navban">
51       <ul>
52         <li><a class="nav-link scrollto active" href="#hero">Home</a></li>
53         <li><a class="nav-link scrollto" href="#about">About</a></li>
54         <li><a class="nav-link scrollto" href="#services">Dashboard</a></li>
55         <li><a class="nav-link scrollto" href="#portfolio">story</a></li>
56
57         <li><a class="nav-link scrollto" href="#contact">Contact</a></li>
58         <li><a class="getstarted scrollto" href="#about">Get Started</a></li>
59       </ul>
60       <i class="bi bi-list mobile-nav-toggle"></i>
61     </nav>
62     <!-- .navban -->
63
64   </div>
65 </header>
```

```
File Edit Selection View Go Run Terminal Help
index.html - Visual Studio Code

C:\Users> SKVWC > Downloads > Arsha > index.html > PE > ang > ta > ta > lle > ta > ta > nk > nk > body > header#header.fixed-top.

65 </header>
66 <!-- End Header -->
67
68 <!-- ===== Hero Section ===== -->
69 <section id="hero" class="d-flex align-items-center">
70
71   <div class="container">
72     <div class="row">
73       <div class="col-lg-6 d-flex flex-column justify-content-center pt-4 pt-lg-0 order-2 order-lg-1 data-aos="fade-up" data-aos-delay="200">
74         <h1>
75
76         </h1>
77         <h2>We are team of talented designers making websites with Bootstrap</h2>
78         <div class="d-flex justify-content-center justify-content-lg-start">
79           <a href="#about" class="btn-get-started scrollto">Get Started</a>
80           <a href="https://www.youtube.com/watch?v=JDaplaO27Q" class="glightbox btn-watch-video"><i class="bi bi-play-circle"></i><span>Watch
81         </div>
82       </div>
83       <div class="col-lg-6 order-1 order-lg-2 hero-img" data-aos="zoom-in" data-aos-delay="200">
84         
85       </div>
86     </div>
87   </div>
88 </section><!-- End Hero -->
89
90 <main id="main">
91
92 <!-- ===== Clients Section ===== -->
93 <section id="clients" class="clients section-bg">
94   <div class="container">
95
96     <div class="row" data-aos="zoom-in">
```

```
File Edit Selection View Go Run Terminal Help • index.html - Visual Studio Code
ers > SKVWC > Downloads > Arsha > index.html > PE > ang > ta > ta > tle > ta > ta > nk > nk > body > main#main > section#clients.clients.section-bg > div.container > div.row
97 <div class="row" data-aos="zoom-in">
98
99 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
100 | 
101 </div>
102
103 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
104 | 
105 </div>
106
107 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
108 | 
109 </div>
110
111 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
112 | 
113 </div>
114
115 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
116 | 
117 </div>
118
119 <div class="col-lg-2 col-md-4 col-6 d-flex align-items-center justify-content-center">
120 | 
121 </div>
122
123 </div>
124
125 </div>
126 </section><!-- End Clients Section -->
127
128 <!-- ===== About Us Section ===== -->
129 <section id="about" class="about">
130 <div class="container" data-aos="fade-up">
131
132 <div class="section-title">
133 | <h2>About Us</h2>
134 </div>
135
136 <div class="row content">
137 <div class="col-lg-6">
138 <p>
139 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore
140 magna aliqua.
141 </p>
142 <ul>
143 <li><i class="ri-check-double-line"></i> Ullamco laboris nisi ut aliquip ex ea commodo consequat</li>
144 <li><i class="ri-check-double-line"></i> Duis aute irure dolor in reprehenderit in voluptate velit</li>
145 <li><i class="ri-check-double-line"></i> Ullamco laboris nisi ut aliquip ex ea commodo consequat</li>
146 </ul>
147 </div>
148 <div class="col-lg-6 pt-4 pt-lg-0">
149 <p>
150 Ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate
151 velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
152 culpa qui officia deserunt mollit anim id est laborum.
153 </p>
154 <a href="#" class="btn-learn-more">Learn More</a>
155 </div>
156 </div>
157 </div>
158 </section><!-- End About Us Section -->
159
160
```

```
File Edit Selection View Go Run Terminal Help • index.html - Visual Studio Code
C: > Users > SKVWC > Downloads > Arsha > index.html > PE > ang > ta > ta > tle > ta > ta > nk > nk > body > main#main
128 <!-- ===== About Us Section ===== -->
129 <section id="about" class="about">
130 <div class="container" data-aos="fade-up">
131
132 <div class="section-title">
133 | <h2>About Us</h2>
134 </div>
135
136 <div class="row content">
137 <div class="col-lg-6">
138 <p>
139 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore
140 magna aliqua.
141 </p>
142 <ul>
143 <li><i class="ri-check-double-line"></i> Ullamco laboris nisi ut aliquip ex ea commodo consequat</li>
144 <li><i class="ri-check-double-line"></i> Duis aute irure dolor in reprehenderit in voluptate velit</li>
145 <li><i class="ri-check-double-line"></i> Ullamco laboris nisi ut aliquip ex ea commodo consequat</li>
146 </ul>
147 </div>
148 <div class="col-lg-6 pt-4 pt-lg-0">
149 <p>
150 Ullamco laboris nisi ut aliquip ex ea commodo consequat. Duis aute irure dolor in reprehenderit in voluptate
151 velit esse cillum dolore eu fugiat nulla pariatur. Excepteur sint occaecat cupidatat non proident, sunt in
152 culpa qui officia deserunt mollit anim id est laborum.
153 </p>
154 <a href="#" class="btn-learn-more">Learn More</a>
155 </div>
156 </div>
157 </div>
158 </section><!-- End About Us Section -->
159
160
```

```
File Edit Selection View Go Run Terminal Help • index.html - Visual Studio Code
C:\Users> SKVWC > Downloads > Arsha > index.html > PE > ang > ta > ta > tile > ta > ta > nk > nk > body > main#main
157
158 </div>
159 </section><!-- End About Us Section -->
160
161 <!-- ===== Why Us Section ===== -->
162 <section id="why-us" class="why-us section-bg">
163 <div class="container-fluid" data-aos="fade-up">
164
165 <div class="row">
166
167 <div class="col-lg-7 d-flex flex-column justify-content-center align-items-stretch order-2 order-lg-1">
168
169 <div class="content">
170 <h3>Eum ipsam laborum deleniti <strong>velit pariatur architecto aut nihil</strong></h3>
171 <p>
172 Lorem ipsum dolor sit amet, consectetur adipiscing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Duis
173 </p>
174 </div>
175
176 <div class="accordion-list">
177 <ul>
178 <li>
179 <a data-bs-toggle="collapse" class="collapse" data-bs-target="#accordion-list-1"><span>01</span> Non consectetur a erat nam at
180 <div id="accordion-list-1" class="collapse show" data-bs-parent=".accordion-list">
181 <p>
182 Feugiat pretium nibh ipsum consequat. Tempus iaculis urna id volutpat lacus laoreet non curabitur gravida. Venenatis lectus
183 </p>
184 </div>
185 </li>
186
187 <li>
188 <a data-bs-toggle="collapse" data-bs-target="#accordion-list-2" class="collapsed"><span>02</span> Feugiat scelerisque varius mo
189 <div id="accordion-list-2" class="collapse" data-bs-parent=".accordion-list">
190
```

```
File Edit Selection View Go Run Terminal Help • index.html - Visual Studio Code
us-why-us.section-bg > div.container-fluid > div.row > div.col-lg-7.d-flex.flex-column.justify-content-center.align-items-stretch.order-2.order-lg-1 > div.accordion-list > ul > li > div#accordion-list-2.collapse
190 <p>
191 Dolor sit amet consectetur adipiscing elit pellentesque habitant morbi. Id interdum velit laoreet id donec ultrices. Fring
192 </p>
193 </div>
194 </li>
195
196 <li>
197 <a data-bs-toggle="collapse" data-bs-target="#accordion-list-3" class="collapsed"><span>03</span> Dolor sit amet consectetur ad
198 <div id="accordion-list-3" class="collapse" data-bs-parent=".accordion-list">
199 <p>
200 Eleifend mi in nulla posuere sollicitudin aliquam ultrices sagittis orci. Faucibus pulvinar elementum integer enim. Sem nul
201 </p>
202 </div>
203 </li>
204
205 </ul>
206 </div>
207
208 </div>
209
210 <div class="col-lg-5 align-items-stretch order-1 order-lg-2 img" style="background-image: url('assets/img/why-us.png');" data-aos="zoom
211 </div>
212
213 </div>
214 </section><!-- End Why Us Section -->
215
216 <!-- ===== Skills Section ===== -->
217 <section id="skills" class="skills">
218 <div class="container" data-aos="fade-up">
219
220 <div class="row">
221 <div class="col-lg-6 d-flex align-items-center" data-aos="fade-right" data-aos-delay="100">
222 
223
```


The image shows a Visual Studio Code editor window with a file named `index.html` open. The editor is displaying HTML code for a portfolio section. The code includes a navigation bar, a hero section, and a portfolio section. The portfolio section features a title, a story, a list of filters, and a grid of portfolio items. The code is as follows:

```
<!-- Navigation Bar -->
<div class="nav" data-aos="fade-down" data-aos-delay="100">
  <div class="container">
    <div class="row">
      <div class="col-md-4">
        <div class="nav-item">
          <a href="#">Home</a>
        </div>
      </div>
      <div class="col-md-4">
        <div class="nav-item">
          <a href="#">About</a>
        </div>
      </div>
      <div class="col-md-4">
        <div class="nav-item">
          <a href="#">Services</a>
        </div>
      </div>
      <div class="col-md-4">
        <div class="nav-item">
          <a href="#">Portfolio</a>
        </div>
      </div>
      <div class="col-md-4">
        <div class="nav-item">
          <a href="#">Contact</a>
        </div>
      </div>
    </div>
  </div>
</div>

<!-- End Cta Section -->

<!-- Portfolio Section -->
<section id="portfolio" class="portfolio">
  <div class="container" data-aos="fade-up">
    <div class="section-title">
      <h2>Story</h2>
    </div>

    <ul id="portfolio-filters" class="d-flex justify-content-center" data-aos="fade-up" data-aos-delay="100">
      <li data-filter="*" class="filter-active">All</li>
      <li data-filter=".filter-app">App</li>
      <li data-filter=".filter-card">Card</li>
      <li data-filter=".filter-web">Web</li>
    </ul>

    <div class="row portfolio-container" data-aos="fade-up" data-aos-delay="200">
      <div class="col-lg-4 col-md-6 portfolio-item filter-app">
        <div class="portfolio-img"></div>
        <div class="portfolio-info">
          <h4>App 1</h4>
          <p>App 1</p>
          <a href="assets/img/portfolio/portfolio-1.jpg" data-gallery="portfolioGallery" class="portfolio-lightbox preview-link" title="App 1"></a>
          <a href="portfolio-details.html" class="details-link" title="More Details"><i class="bx bx-link"></i></a>
        </div>
      </div>
    </div>
```

The bottom status bar shows the following information: `Ln 323, Col 19`, `Spaces: 2`, `UTF-8`, `CRLF`, `HTML`, and the system clock showing `11:44 AM` on `20-04-2023`.