Web Interaction

Internet navigation

Web Navigation

It's the action of navigation a network of information resources in the World Wide Web (WWW), which is organized as hypertext. The user interface that is used to do so is called a web browser.

Web browser

Is an application for accessing websites were the browser retrieves ir.s files from a web server and displays the page from a particular site and displays the page on the user screen.

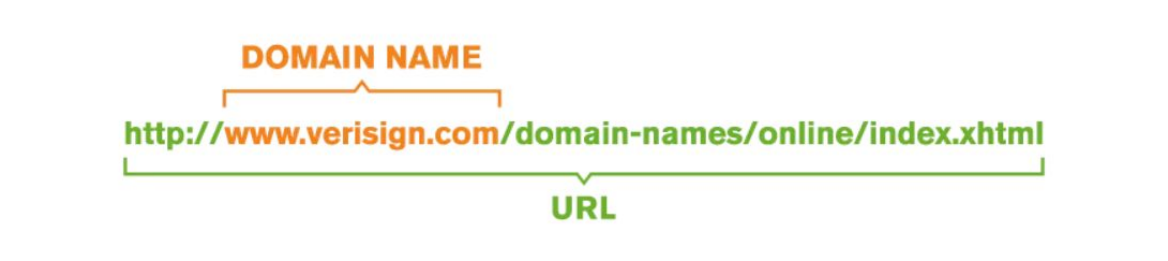
It’s purpose is to fetch content from the WWW or from local storage.

This process begins when all URLs are retrieved using a Hypertext Transfer Protocol (HTTP), a set of rules for transfer data.

URL

What is a URL:

URL stands for *Uniform Resource Locator*. A URL is nothing more than the address of a given unique resource on the Web. A domain name is part of a URL. You can see the visual difference in the following examples



URL

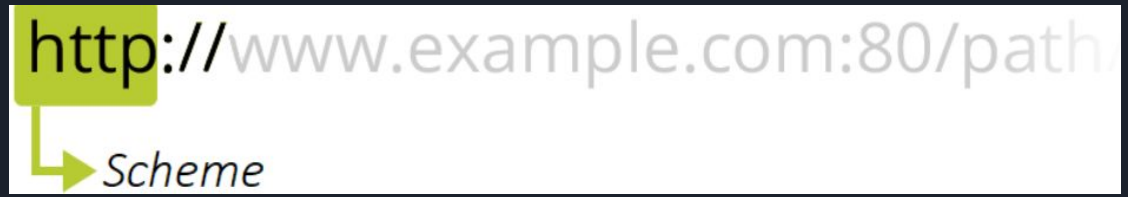
For computer networks and servers to “talk to one another,” on a language made up of numbers and letters called an IP address. Every device that connects to the internet has a unique IP address and looks like this:

22.231.113.64 or 3ffe:1900:4545:3:200:f8ff:fe21:67cf

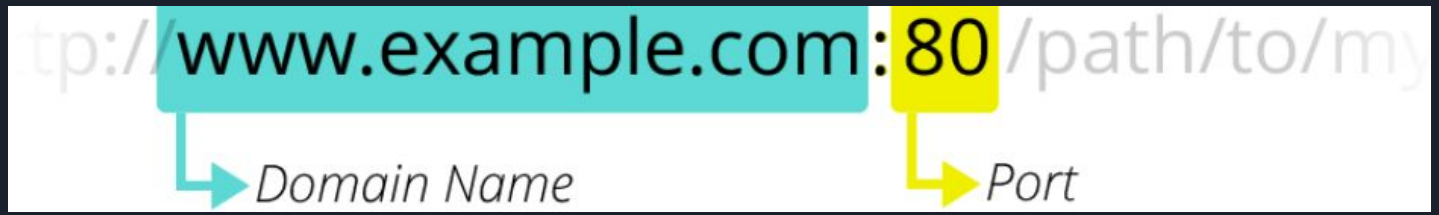
To navigate easily around the web, typing in a long IP address isn’t ideal, or realistic, for an online user. This is the reason why domain names were created. You could consider the domain name as a “nickname” for the IP address.

Anatomy of a URL

The first part of the URL is the *scheme*, which indicates the protocol that the browser must use to request the resource



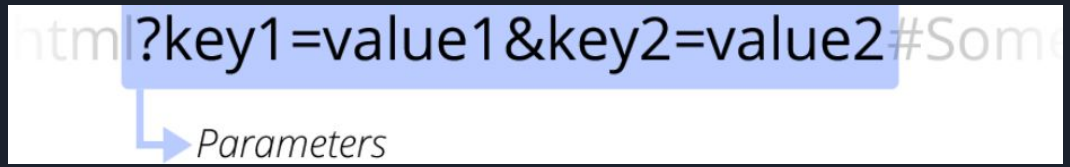
the *authority*, which is separated from the scheme by the character pattern ://. If present the authority includes both the *domain* (e.g. www.example.com) and the *port* (80), separated by a colon:



Anatomy of a URL

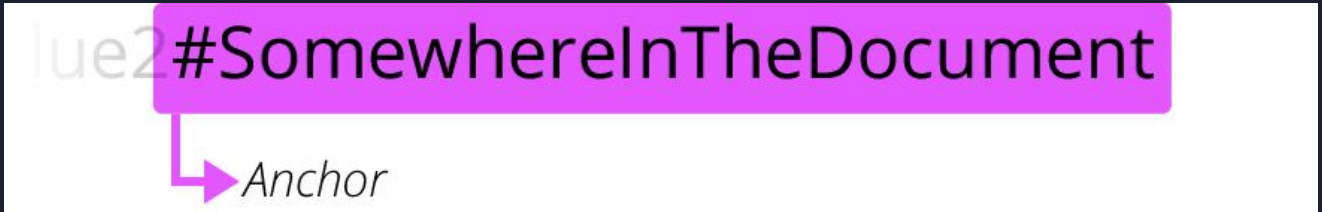
A path like this represented a physical file location on the Web server. Nowadays, it is mostly an abstraction handled by Web servers without any physical reality.

Those parameters are a list of key/value pairs separated with the & symbol. The Web server can use those parameters to do extra stuff before returning the resource.



Anatomy of a URL

An anchor represents a sort of "bookmark" inside the resource, giving the browser the directions to show the content located at that "bookmarked" spot. On an HTML document, for example, the browser will scroll to the point where the anchor is defined;



HTML

Hypertext Markup Language

HTML stands for **HyperText Markup Language**. It is a standard markup language for web page creation. It allows the creation and structure of sections, paragraphs, and links using HTML elements (the building blocks of a web page) such as tags and attributes.

HTML has a lot of use cases, namely:

- **Web development**. Developers use HTML code to design how a browser displays web page elements, such as text, hyperlinks, and media files.
- **Internet navigation**. Users can easily navigate and insert links between related pages and websites as HTML is heavily used to embed hyperlinks.
- **Web documentation**. HTML makes it possible to organize and format documents, similarly to Microsoft Word.

It’s also worth noting that HTML is not considered a programming language as it can’t create dynamic functionality. It is now considered an official web standard. The **World Wide Web Consortium (W3C)** maintains and develops HTML specifications, along with providing regular updates.

The average website includes several different HTML pages. For instance, a home page, an about page, and a contact page would all have separate HTML files.

HTML documents are files that end with a .html or .htm extension. A web browser reads the HTML file and renders its content so that internet users can view it.

All HTML pages have a series of HTML elements, consisting of a set of tags and attributes.

HTML elements are the building blocks of a web page. A tag tells the web browser where an element begins and ends, whereas an attribute describes the characteristics of an element.

The three main parts of an element are:

- Opening tag – used to state where an element starts to take effect. The tag is wrapped with opening and closing angle brackets. For example, use the start tag to create a paragraph.
- Content – this is the output that other users see.
- Closing tag – the same as the opening tag, but with a forward slash before the element name. For example, to end a paragraph.

The combination of these three parts will create an HTML element:

```
<p>This is how you add a paragraph in HTML.</p>
```

Another critical part of an HTML element is its attribute, which has two sections – a name and attribute value. The name identifies the additional information that a user wants to add, while the attribute value gives further specifications.

For example, a style element adding the color purple and the font-family verdana will look like this:

```
 <p style="color:purple;font-family:verdana">This is how you add a paragraph
in HTML.</p>
```

Another attribute, the HTML class, is most important for development and programming. The class attribute adds style information that can work on different elements with the same class value.

For example, we will use the same style for a heading <h1> and a paragraph <p>. The style includes background color, text color, border, margin, and padding, under the class .important. To achieve the same style between <h1> and <p>, add class=”important” after each start tag:

```
<html>
<head>
<style>
.important {
  background-color: blue;
  color: white;
  border: 2px solid black;
  margin: 2px;
  padding: 2px;
}
</style>
</head>
<body>

<h1 class="important">This is a heading</h1>
<p class="important">This is a paragraph.</p>

</body>
</html>
```

Most elements have an opening and a closing tag, but some elements do not need closing tags to work, such as empty elements. These elements do not use an end tag because they do not have content:

```
<img src="/" alt="Image">
```

This image tag has two attributes – an src attribute, the image path, and an alt attribute, the descriptive text. However, it does not have content nor an end tag.

Lastly, every HTML document must start with a <!DOCTYPE> declaration to inform the web browser about the document type. With HTML5, the doctype HTML public declaration will be:

```
<!DOCTYPE html>
```

Currently, there are 142 HTML tags available that allow for the creation of various elements. Even though modern browsers no longer support some of these tags, learning all the different elements available is still beneficial.

This section will discuss the most-used HTML tags and two main elements – block-level elements and inline elements.

Block-Level Elements

A block-level element takes up the entire width of a page. It always starts a new line in the document.

For example, a heading element will be in a separate line from a paragraph element.

Every HTML page uses these three tags:

- <html> tag is the root element that defines the whole HTML document.
- <head> tag holds meta information such as the page's title and charset.
- <body> tag encloses all the content that appears on the page.

```
<html>
  <head>
    <!-- META INFORMATION -->
  </head>
  <body>
    <!-- PAGE CONTENT -->
  </body>
</html>
```

Other popular block-level tags include:

- Heading tags – these range from <h1> to <h6>, where heading h1 is largest in size, getting smaller as they move up to h6.
- Paragraph tags – are all enclosed by using the <p> tag.
- List tags – have different variations. Use the <ol> tag for an ordered list, and use <ul> for an unordered list. Then, enclose individual list items using the <li> tag.

Inline Elements

An inline element formats the inner content of block-level elements, such as adding links and emphasized strings. Inline elements are most commonly used to format text without breaking the flow of the content.

For example, a tag would render an element in bold, whereas the tag would show it in italics. Hyperlinks are also inline elements that use an <a> tag and an href attribute to indicate the link's destination

```
<a href="https://example.com/">Click me!</a>
```

HTML is the primary markup language found on the internet. Every HTML page has a series of elements that create the content structure of a web page or application. HTML is a beginner-friendly language with plenty of support and is mainly used for static website pages. HTML works best together with CSS for the styling and JavaScript for the functionality.

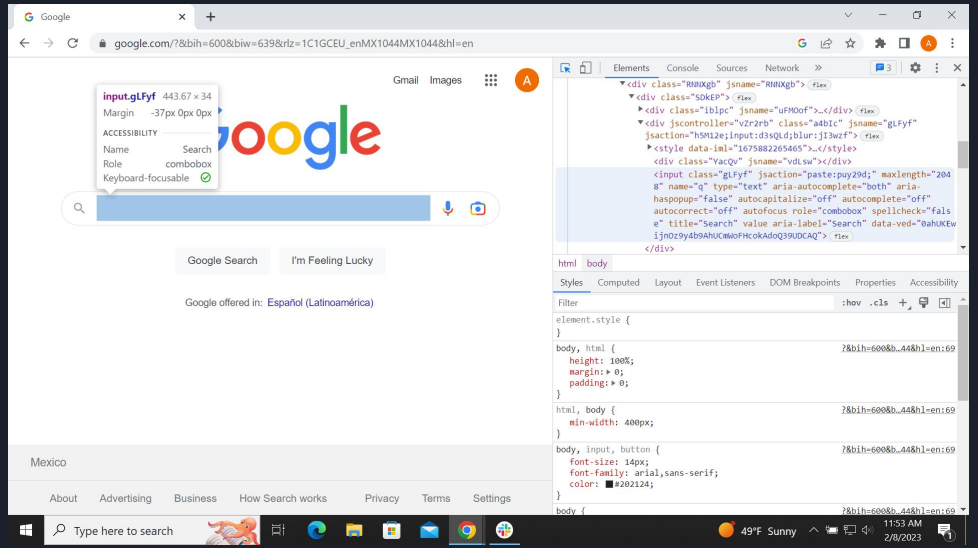
Reference guide to HTML

Page Inspection

Enables you to get details about a page, design, elements, and source behind data displays. It is ideal for learning the data model behind a page.

You can use Ctrl + Shift = I

And/Or F12

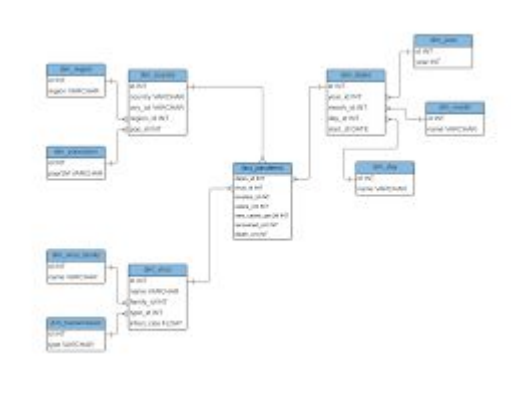


SQL

SQL is a standard language for storing, manipulating and retrieving data in databases by Data Definition Language (DDL) statements and Data Manipulation Statements (DML).

DDL modifies the schema of a database

DML Manipulate data from the table

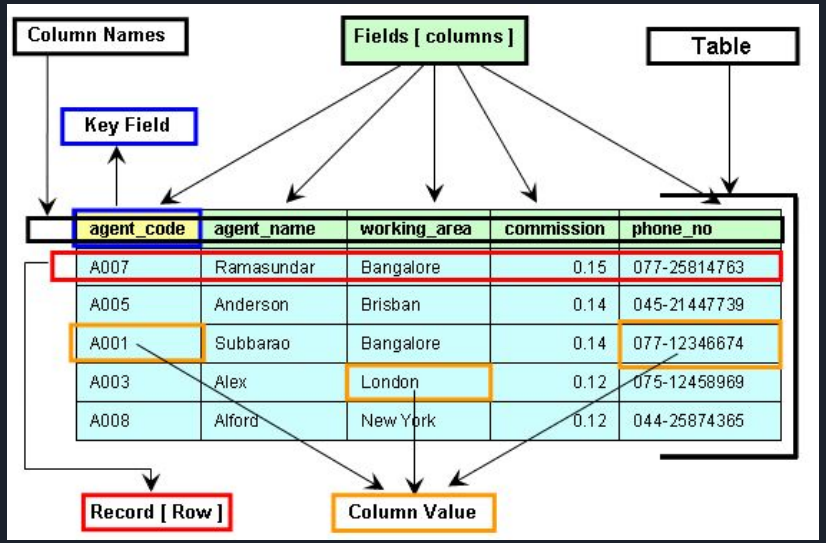


```
SELECT something FROM some table
   WHERE some conditions are satisfied

UPDATE some table SET something
   WHERE some conditions are satisfied
```

SQL Tables

Table is a database object which is comprised of rows and columns. Were data is logically organized in a row-and-column format similar to a spreadsheet. Each row represents a unique record and each column a field in the record.

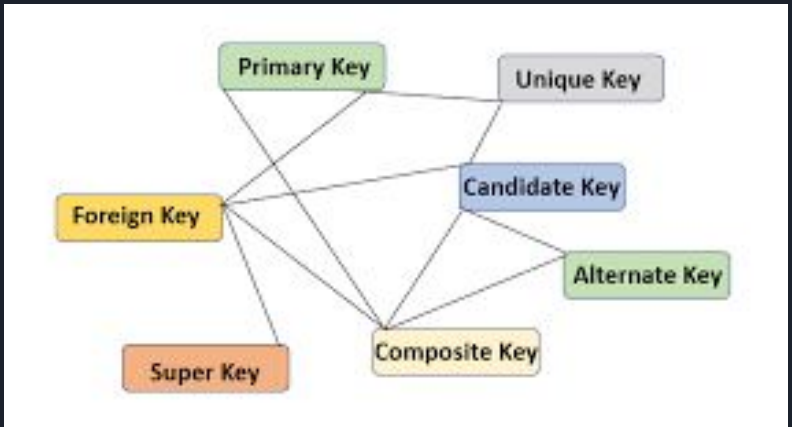


Elements of a table

- Fields
  - The information of a table store in some heads those are fields or columns shown vertically
- Columns
  - Each field or column has an individual name. A table cannot contain the same name of two different columns
- Record (Row)
  - All the columns in a table make a row> Each row contains all the information of individual topics
- Column value
  - The value of each field
- Key Field
  - Each table contain a field which can create a link with another one or more table is the key field

SQL key’s

An SQL key is either a single column or group of columns that can uniquely identify rows in a table. They ensure that there are no rows with duplicate information. They also help in establishing a relationship between multiple tables in the database.



Candidate Key

Candidate key is a single key or a group of multiple keys that uniquely identify **rows** in a table.

Id	Name	Gender	City	Email	Dep_Id
1	Ajay	M	Delhi	ajay@gmail.com	1
2	Vijay	M	Mumbai	vijay@gmail.com	2
3	Radhika	F	Bhopal	radhika@gmail.com	1
4	Shikha	F	Jaipur	shikha@gmail.com	2
5	Hritik	M	Jaipur	hritik@gmail.com	2

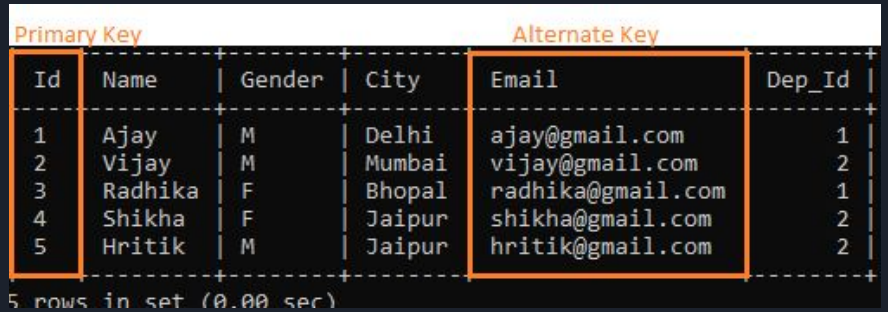
5 rows in set (0.00 sec)

Primary key

Primary key is the Candidate key selected by the database administrator to uniquely identify tuples in a table. There can only be one and non-null attribute(s).

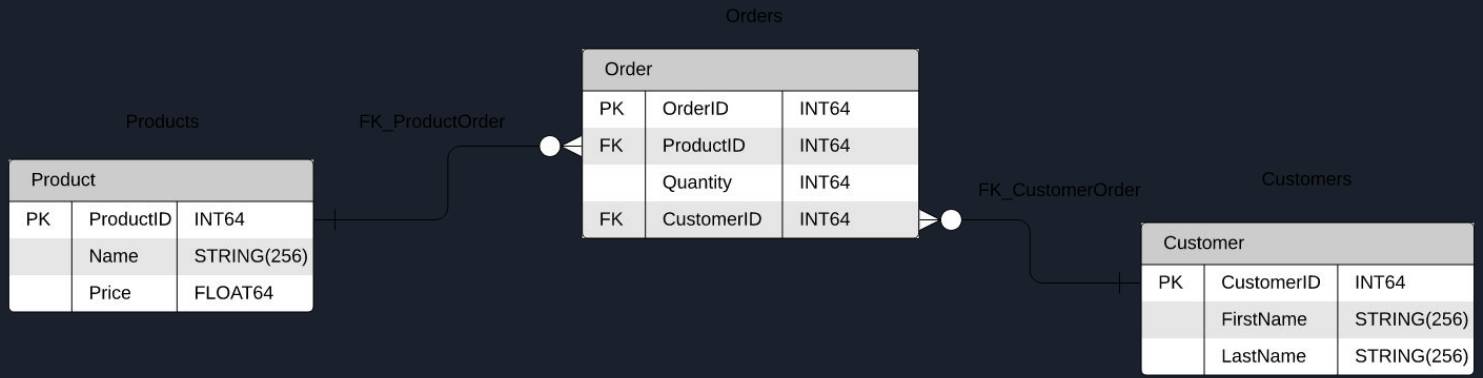
Alternate or Secondary Key

Alternate keys are those candidate keys which are not the Primary key.



Foreign key

Foreign key is an attribute which is a Primary key in a parent table, but is included as an attribute in another host table.



Super key

Super key is a single key or group of multiple keys that can uniquely identify **tuples** in a table.

ID	Name	Register_no
2026	Andrew	012917323
2025	John	123471904
2024	William	233490183

Composite Key

A Composite key is a candidate key or Primary key that consist of more than one attribute . Cases were no single attribute will have the property to uniquely identify tuples in a table.

```
mysql> select * from product;
+----------------+------------+-------------+--------------+----------+
| Transaction_Id | Product_Id | Customer_Id | Product      | Quantity |
+----------------+------------+-------------+--------------+----------+
| A1001          | P1005      | C9001       | Smartphone   |        1 |
| A1001          | P2010      | C9001       | Screen guard |        1 |
| A1002          | P2013      | C9003       | Smartwatch   |        1 |
| A1003          | P2010      | C9010       | Screen guard |        2 |
+----------------+------------+-------------+--------------+----------+
4 rows in set (0.00 sec)
```