HTML-CSS-JS: The Language of Web Pages

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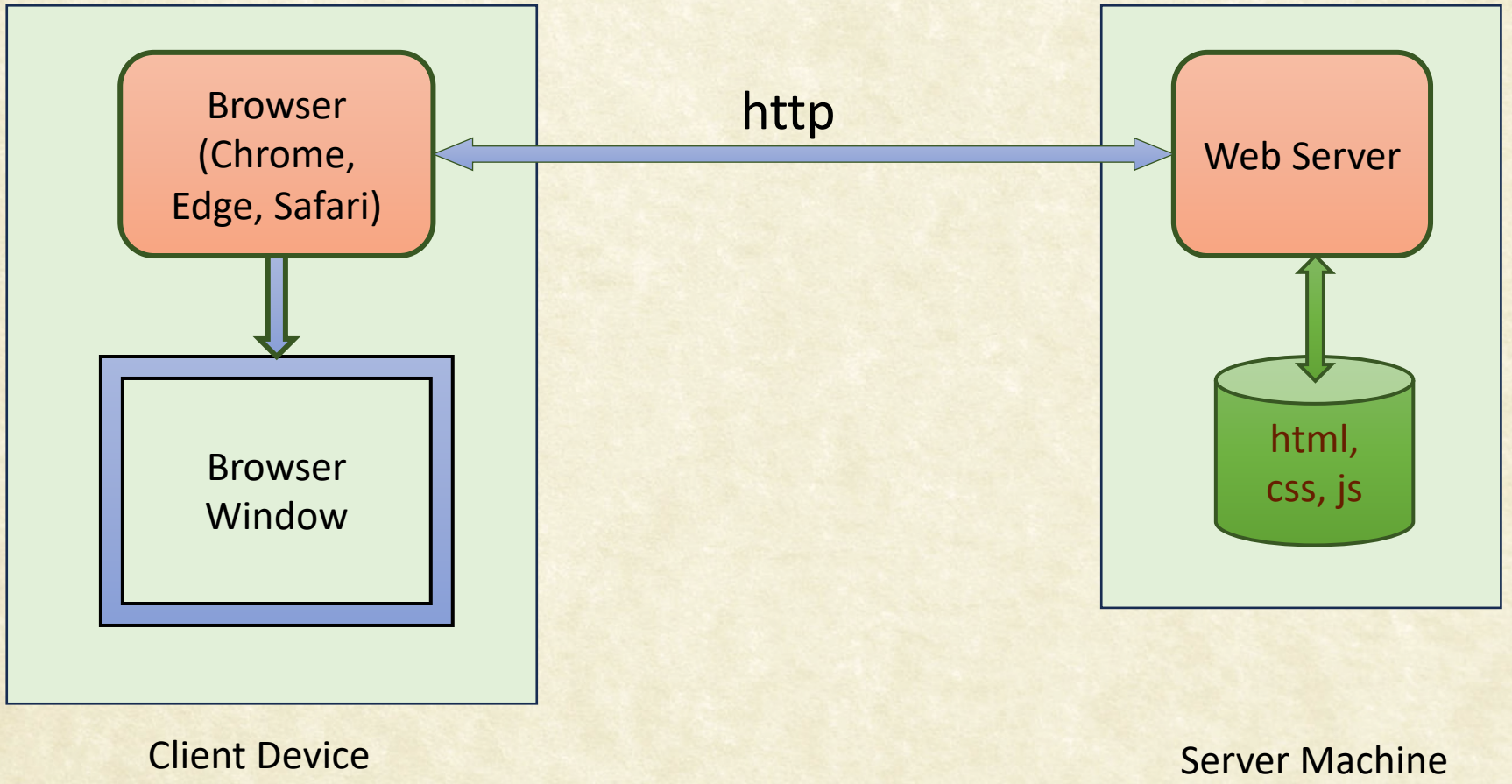
Markup Languages

- ASCII for text
  - A: 65, B: 66, .. Z: 90, [: 91, .. a: 97, … , z: 122.
- Unicode text
  - α: U+03B1, अ: U+0905, অ: U+0985, அ: U+0B85, అ: U+0C05
- How to represent information beyond characters?
  - Font, Style (bold, italics), Color, Semantics, Layout
- Solution: Markup Language
  - To represent a style such as bold, use tags
    - Hyderabad
    - Hindi

Examples of Markup Languages

- LaTeX
- HTML: HyperText Markup Language
- XML: eXtensible Markup Language
- docx: Microsoft XML document format
- Markdown

Accessing a Webpage



HTML

```
<!DOCTYPE html>
<html>
  <head>
    <title>My Webpage </title>
  </head>
  <body>
    <h1> Welcome to ABC</h1>
      <p> Text goes here </p>
  </body>
</html>
```

- Lists
  - or <ol> and
- Links
  - Link Text
- Images
  - <img src="img_url">
- Tables
  - <table> … </table>
  - <tr> row </tr> …
  - <td> data </td> …
- Container:
- Forms

CSS: Adding Style to WebPages

- HTML: Structure and Content; CSS: Style
- Inline Style

```
<p style="color:red; background:cyan"> Text.. </p>
```

- Internal Style: in header

```
<style>
    .classname{
        color:red;                    # property:value
        background:cyan;
    }
</style>
<div class="classname"> Content </div>
```

- External Style: CSS

```
<link rel="stylesheet" href="./colorful.css">
```

- CSS Properties
  - color:red;
  - background:blue;
  - font-size:100px;
  - font-style:italic;
  - width:640px;
  - height:480px;
  - margin:20px;
  - padding: 10px;
  - border:3px;
  - float: left;

- More at: w3schools.com

Javascript: Adding Intelligence

- <script src="location"></script>

```
var count = 10;
var name = "IIIT";
var cols=['Red', 'Green','Blue'];

for(var i=0; i<cols.length; i++){
    console.log(cols[i]);
}
```

- Functions
- Event Listeners

Questions?

Programming Python

“Python is an experiment in how much freedom programmers need. Too much freedom and nobody can read another's code; too little and expressiveness is endangered.”

- Guido van Rossum
Benevolent Dictator for Life

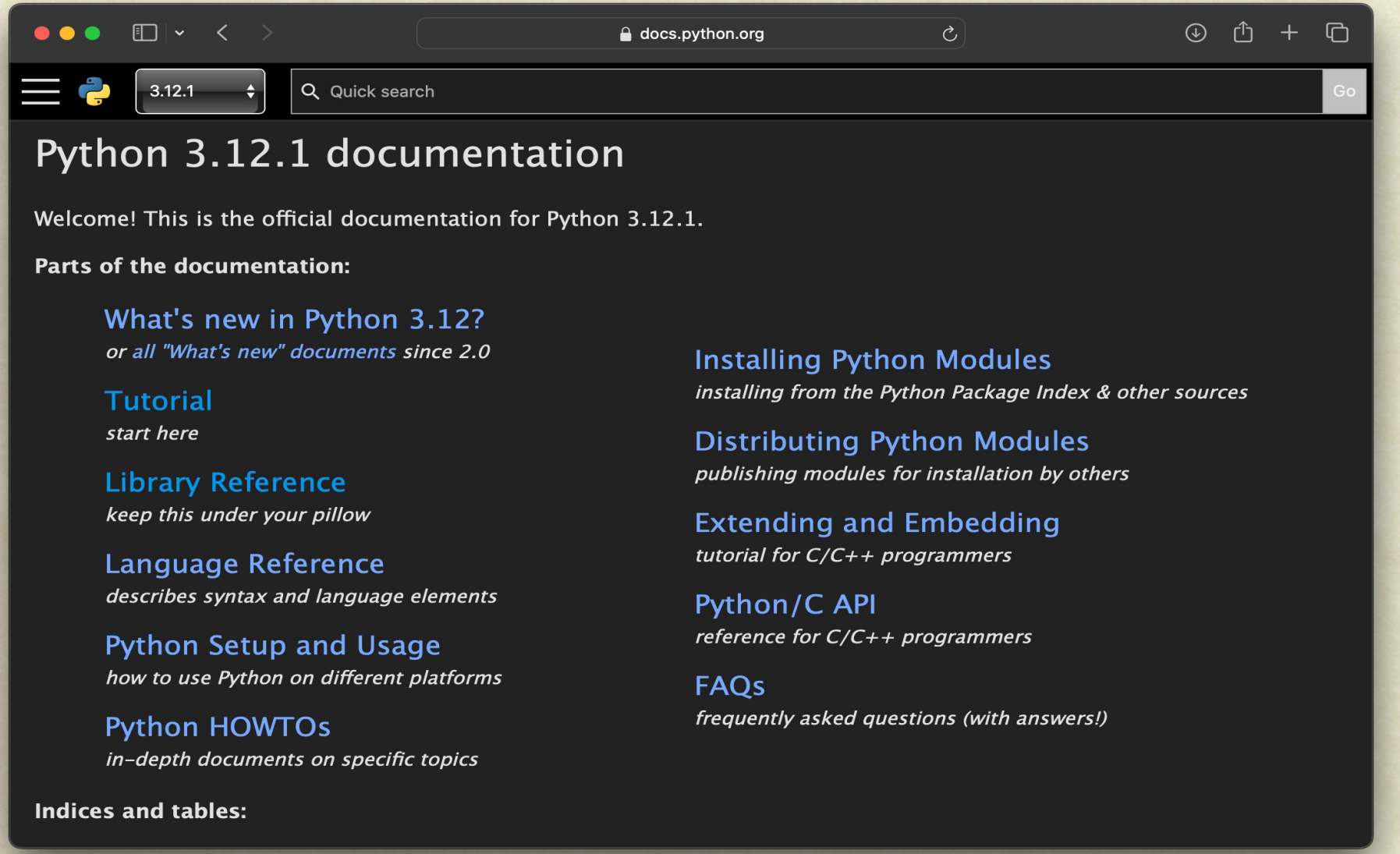
Why Python?

- Scripting Language
- Versatile
- Popular
- Simplicity
- Modules and Frameworks
- Data Visualization, Machine Learning, Cyber Security, Web Servers,
- Extensive Online Documentation
- Community Support

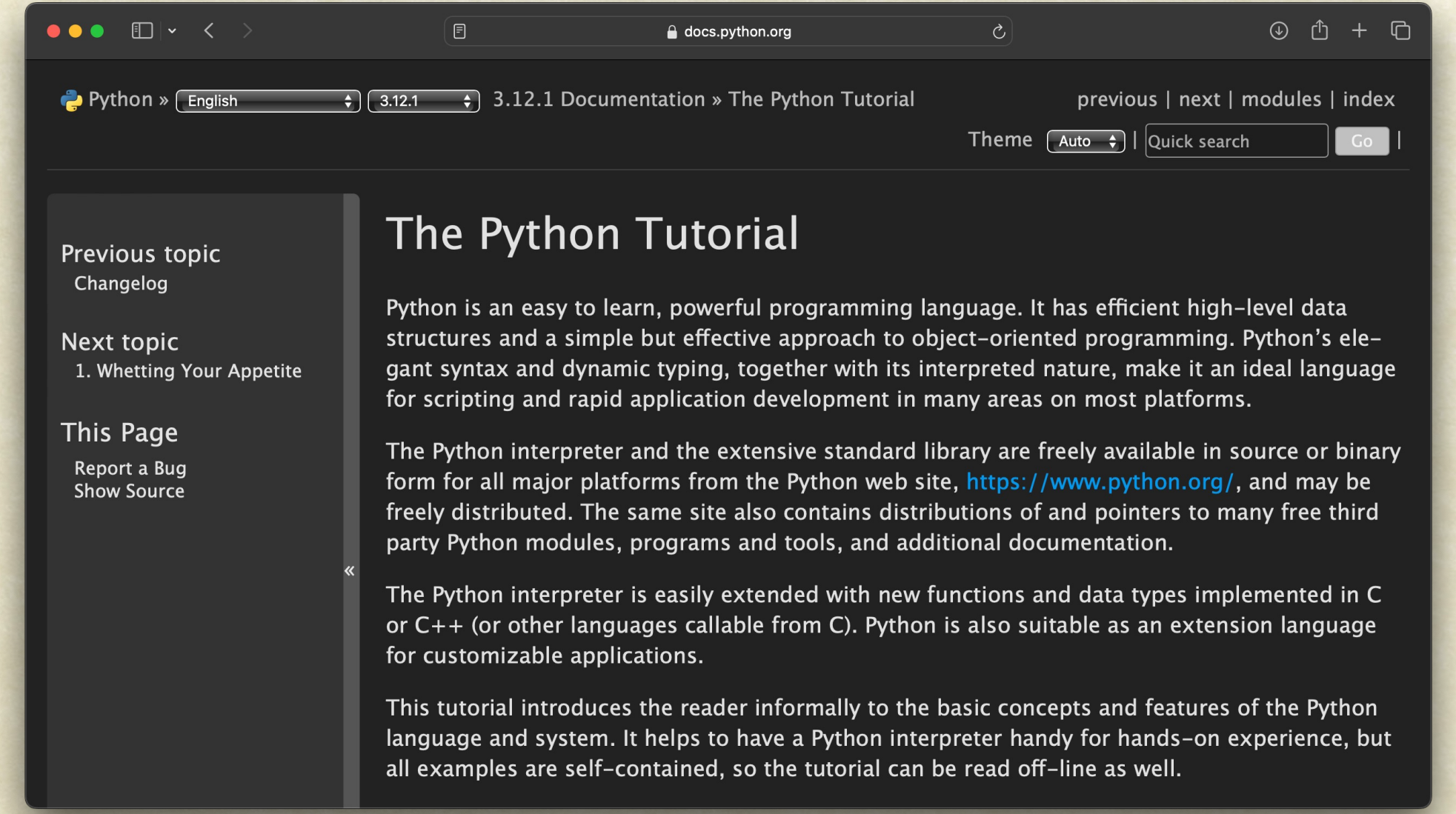
Brief History of Python

- Invented in early 90s by Guido van Rossum
- Named after Monty Python (not the snake)
- Open sourced from the beginning
- A scripting language, but is much more
- Scalable, object oriented and functional from the beginning
- Used by Google from the beginning
- Increasingly popular

https://docs.python.org/3/



https://docs.python.org/3/tutorial/



Advantages of Python

- Easy to Learn and write error-free code
  - You can start coding today
- Encourages and Insists Coherence (clean/readable code)
  - Limited ways to do a specific task (unlike perl)
  - Forces you to indent
  - Language avoid unnecessary steps (declaration, semicolons)
- Powerful (batteries included)
  - Provides an ever-growing number of powerful modules
- Provides flexibility
  - You can extend the language with additional modules
  - Can make hybrid systems
- Provides Speed
  - Can compile to portable byte code
- Widely used / growing fast

Uses of Python

- Shell tools
  - System admin tools, Command line programs
- Text processing
- Rapid prototyping and development
- Integration of modules from different languages
- Graphical user interfaces
- Database access
- Distributed programming
- Internet scripting

What Gives?

- Slower than C; like any other scripting language
  - Although efficient built-in algorithms and Data structures might offset this
- Delayed error notification
- Lack of profiling tools

Installing Python

- Pre-installed on Unix systems (Linux, Mac OSX).
- Binaries available for Windows
- Latest stable versions are 3.11.7 and 3.12.1
  - We will stick with 3.10 as it works with 3.11 and 3.12
- Several editors and IDEs
  - VIM / Emacs
  - IDLE
  - PyCharm
  - VS Code