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D3js Training : Data Visualization

3 days (21 hours)

Presentation

D3 (D3.js) is a JavaScript library for creating graphical representations of data.

In this course, you'll learn how to use D3.js to create your own graphs and offer your users a new way of displaying your data.

To do this, we'll first look at how to interpret the data, and choose which graphical representations to use.

Afterwards, we'll discover D3.js and create our first graphics, to use all the library's power to bring our creations to life by adding labels, colors, animations...

We'll finish with a look at how to integrate this library with React and Angular, and best practices.

Our training course will introduce the latest version of the tool, D3 v9.

Objectives

- Understanding the basics of data visualization
- Choosing the right graph to represent your data
- Designing graphics with D3.js
- Integrating the library into traditional frameworks

Target audience

Web developer, Lead developer, web designers, Designers (Further training

on the basics of web programming including svgs can be offered as a complementary module).

Prerequisites

- Knowledge of HTML5/CSS3, JavaScript

Technical requirements

- Javascript-compatible code editor

D3js for Data Visualization training program

[Day 1]

Introduction to data visualization

- Data science
  - Definitions
  - The process
  - Data visualization
- Data viz
  - Definitions
  - Explorative vs Explanatory
  - Why create graphics
  - Quiz
- Data types
  - Digital data
  - Data by category
  - Time series
  - Quiz: identifying data
- Representing your data
  - Chart types
  - Representation techniques
  - Choosing the right graphic for your story
- Practical: Based on a problem and a data set, create your first visualizations.

[Day 2]

Creating your first graphics with d3.js

- Introduction to d3.js
  - Background and objectives
  - What's new in v5
- Setup
  - Start your web server
  - Include d3.js
- Data
  - Creating elements on the page
  - Data Bindings
  - Choosing your data source
  - Selections
  - Practical work: Using d3.js to display a list of data
- Data display
  - Creating graphics with divs
  - Creating svg graphics
- Bar Chart
  - TP: Creating a Bar Chart
  - TP2: Add captions, colors and labels
- Scatterplot
  - Practical work: Creating a Scatterplot
- Scales
  - Domains & Ranges
  - Standardization
  - Different techniques for creating your own ladder
  - Create a ladder
  - TP: Adding a scale to a Plot
- Axes
  - Creating axes
  - Labeling and styling your axes
  - Practical work: Adding axes to the Plot

[Day 3]

Advanced techniques and integration with React / Angular

- Data update
  - Methods via Events Listeners
  - Update axes and scales
  - Practical work: Updating Bar Chart data
- Transitions & Animations
  - The duration(), delay() and ease() functions
  - Start and end of transitions
  - Practical work: updating Bar Chart data
- Interaction with users
  - Types of interaction
  - Attaching DOM Events to elements
  - Practical work: Making the Chart bar interactive
- Display data on a map
  - GeoJSON
  - Projection types
  - Practical work: Creating your first map with data

- Other types of graphical representation
  - Pie Chart
  - Bubble Chart
  - Mekko Chart
  - Line Graph
  - TP: Let's code one of the above examples
- Integration with React
  - React
  - Creating a reusable component
  - Practical work: Recreating the Bar Chart with React
- Integration with Angular
  - Angular
  - Creating a reusable component
  - Practical work: Recreating the Scatter Plot with Angular

Companies concerned

This course is aimed at both individuals and companies, large or small, wishing to train their teams in a new advanced computer technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.