Neutrinos
Making rapid obsolete

Preface
Training Material to
Neutrinos Product Training

- Basic Web Technologies
- Advanced Web Technologies
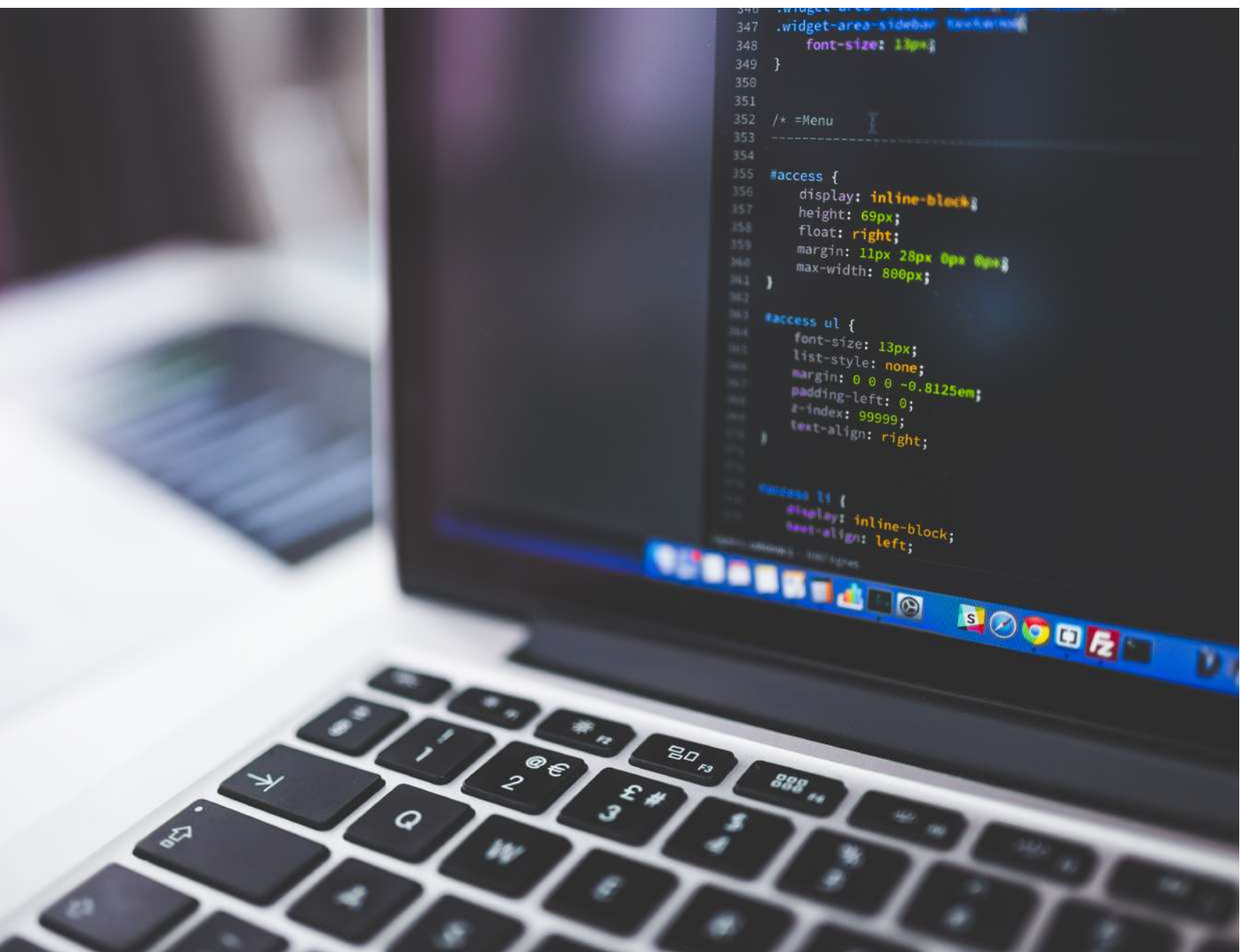- Angular
- UI Frameworks

Table of Contents

Overview

Digital revolution has transformed virtually every area of human activity and this program will enable you to be a part of it as a web development professional. The program aims at giving you the knowledge and skills to build dynamic end-to-end web applications and become a full stack web developer. The fast-paced program includes few of the best courses in the industry that covers both the theory and application of web development, specifically in a manner that will enable you to best utilize Neutrinos Platform.

Throughout various courses in this program, you will be challenged with assignments and quiz questions which will be accessed by the program instructors at the end of each course. This will help the instructor to fine-tune the program objectives based on individual needs.

Introduction

Neutrinos is a low-code application development platform that allows businesses to build rich enterprise applications quickly across multiple device platforms. The platform provides base-level codes, scripts, integration and UI widgets minimizing the needs to extensive coding experience and knowledge. Neutrinos studio is an Integrated Development Environment with a rich drag-n-drop interface to create complex application from scratch. These applications can be deployed as web applications or responsive mobile applications.

While Neutrinos requires minimal coding experience, it does require developers to have background in development. It also assumes that developers have some preliminary experience in programming, in any programming language. This course introduces all the technologies mandatory to be a Neutrinos developer, as well as all those technologies that are good to know. The ensuing sections in this document will explain the outline of the technologies covered, the training methodology, assessment criteria, program outlines etc.

Objectives

The objective of this course is to make you familiar with the terminology, tools and practices that are used in modern web development. By undertaking this course developers, can:

- Develop a strong foundation in web-programming fundamentals.

- Work with Application Programming Interfaces (APIs), esp. REST Interfaces.

- Understand Single Page Application Patterns and Model View Controller (MVC) Patterns.

- Learn JavaScript fundamentals.

- Basics of MEAN[1] stack.

- Execute application builds and deployments.

- Learn best practices with respect to each technology.

- Learn how code fits into Neutrinos, in the subsequent programs.

This course will enable you to understand and use Neutrinos Platform effectively. This program is followed in Neutrinos Developer training program, where tool usage and programming in Neutrinos is covered in greater detail.

[1] MEAN – Acronym for MongoDB, ExpressJS, Angular and Node.js: A new pattern for web application development

Program Outline

As stated earlier, the program is collection of various courses that would aid you to be an effective Neutrinos developer. These courses are outlined as follows into four major modules. Each module is explained below in brief:

Basics of web technologies

Web technologies is a general term referring to the many languages and multimedia packages that are used in conjunction with one another, to produce dynamic web sites.

Advanced web technologies

Often web applications built are highly dynamic, targeting more than one device and/or platform, and need to be rich and scalable. This requires advanced techniques and frameworks to be used. This section explains technologies and practices for such requirements.

Angular

Angular is one such framework, currently lead by a Google team, used for building client-side applications using HTML, JavaScript or Typescript.

UI Frameworks

Web applications have long been evaluated based on their enhanced usability and UI richness. This UI richness is brought forward by effective use of CSS and JS. Many frameworks have been created that package widgets into easily usable components which form the building blocks of modern web application. In this course, we will specifically use Angular Material.

It is recommended that each of the above courses be taken in the above-mentioned order. This section also recommends an average time taken to usually complete these courses.

Courses	Recommended Time
Basics of Web Technologies	5 days
Advanced Web Technologies	3 days
Angular Technologies	9 days
UI Frameworks	3 days

Needs Assessment

The following three vital questions must be answered before you commence this training:

- **Audience:** Who is the target audience for this program, i.e. their technical skills?

- **Current roles:** What do members of this target audience presently do in their roles?

- **Knowledge gaps:** What gaps exist between the members attending the training and skills requisite to be Neutrinos developers?

Depending on the current roles and experience of the developers in this program, they can skip the material courses of course 1 but all developers are required to complete the assignment before moving to the subsequent courses. Experienced developers who have earlier exposure to working in any of the courses sections can effectively take the assignments to complete the course work as this is mandatory for all.

Please Note:

Most of the prior takers of this program have been programmers skilled in Java or C++.
It may so happen that some analogies refer to these programming languages.

Pre-requisite Skills

This course assumes that the developers have the following skills:

- Basic programming skills, understand loops, variables, references etc. Have prior programming experience in any programming language

- Are adept at one of the following operating systems – Windows, Ubuntu, or iOS.

- Have a preferred text editor, we recommend using VSCode.

- Have prior experience using a GIT source code repository, ideally GitHub.

For developers have not used VS Code or GitHub, the section below provides a brief overview and reference video providing a crash course on using both.

Visual Studio Code

Visual Studio Code is a source code editor developed by Microsoft for Windows, Linux and macOS. It includes support for debugging, embedded Git control, syntax highlighting, intelligent code completion, snippets and code refactoring. It is also customizable, so users can change the editor's theme, keyboard shortcuts and preferences. It is free and open-source. If you have not used VSCode before we recommend that you go through the video below to understand the usage.

https://www.youtube.com/watch?v=4q1tD39Mk_A

Git and GitHub

Git is a version control system for tracking changes in files and coordinating work on those files among multiple people. It is primarily used for source code management in software development, but it can be used to track changes in any set of files.

GitHub is a Web-based Git version control repository hosting service. It offers the distributed version control and source code management (SCM) functionality of Git as well as adding its own features. It provides access control and several collaboration features such as bug tracking, feature requests, task management and wikis for every project. GitHub offers both plans for private and free repositories on the same account which are commonly used to host open-source software projects. Neutrinos extensively used GIT, hence it's imperative that adequate handle on the same is obtained before starting the program.

The section below provides some video tutorials to understand Git and GitHub and some reference documents.

https://www.youtube.com/watch?v=SWYqp7iY_Tc

Course Guidelines

Read the below guidelines before commencing the course.

- There are reading materials and list of videos you can view to learn for all courses.

- Each Course has a Quiz/Exercise/Assignment designed to evaluate your learning and retention

- It is optional to take Skill tests, it is provided for self-assessment only

- It is mandatory to complete the Assignment section at the end of each course to progress to the next course.

- The solutions for the assignment must be provided as stated below:

    - Source Code on GitHub

    - Readme file to how to execute the code on GitHub

- Standard code documentation needs to be followed

- If you have any questions/comments/concerns email ideas@neutrinos.co

Course 1:
Basic Web Technologies

Introduction

Course 1 is about learning basic web technologies to understand how websites function, and their structure; you can either read through the course or view the video material. The course is divided into 3 sections with having parts to outline key components to be learnt.

HTML Tutorial

Introduction to HTML Programming, Basic HTML structure and elements, Attributes, Lists, Form Elements, Tables, Frames, Media and HTML API's.
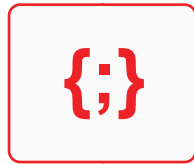
CSS Tutorial

Box Models, CSS positioning, Colors & Background, Selectors, Fonts, Text Color and Alignment, Pseudo Classes.

JavaScript Tutorial

JavaScript Fundamentals, JSON, DOM and AJAX

You can use optional skill tests for self-assessment. There is a mandatory assignment to be completed at the end of the course.

HTML Reference Outline

1

Reading Material

Part 1

○ Introduction
https://www.w3schools.com/html/html_intro.asp

○ General HTML structure
https://www.w3schools.com/html/default.asp

○ Basic HTML elements
https://www.w3schools.com/html/html_basic.asp

○ Attributes
https://www.w3schools.com/html/html_attributes.asp

Part 2

○ Lists
https://www.w3schools.com/html/html_lists.asp

○ Form Elements
https://www.w3schools.com/html/html_forms.asp

○ Tables
https://www.w3schools.com/html/html_tables.asp

Part 3

○ Frames
https://www.w3schools.com/html/html_iframe.asp

○ Media
https://www.w3schools.com/html/html_media.asp

○ HTML APIs
https://www.w3schools.com/html/html5_geolocation.asp

Video Material

2

Part 1

○ HTML tutorial for beginners
https://www.youtube.com/watch?v=hrZqiCUx6kg

○ Online Video Tutorial
https://www.youtube.com/watch?v=Y1BlT4_c_SU&list=PL

4cUxeGkcC9ibZ2TSBaGGNrgh4ZgYE6Cc

○ Introduction to HTML Programming
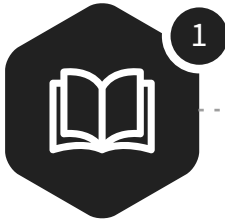https://www.youtube.com/watch?v=fS7w-TXinPE

Skill Test

3

Part 1

○ Take a Quiz
https://www.w3schools.com/quiztest/quiztest.asp?qtest=html

○ Exercise
https://www.webdev.slides.com/coltsteele/forms-excercise-52

CSS Reference Outline

1

Reading Material

Part 1

O Apply CSS
http://htmldog.com/guides/css/beginner/applyingcss/

O Colors & Backgrounds
http://webdev.slides.com/coltsteele/deck-7-10-11-54#/

O Selectors
http://webdev.slides.com/coltsteele/deck-7-10-11-12-55#/

O Fonts
https://www.w3schools.com/css/css_font.asp

Part 2

O Box Models
https://www.w3schools.com/css/css_boxmodel.asp

O Text Color & Alignment
https://www.w3schools.com/css/css_text.asp

O CSS Positioning
https://www.w3schools.com/css/css_positioning.asp

O Pseudo Classes
https://www.w3schools.com/css/css_pseudo_classes.asp

Video Material

2

Part 1

○ CSS Crash Course
https://www.youtube.com/watch?v=yfoY53QXEnI

○ Video-YouTube
https://www.youtube.com/watch?v=I9XRrlOOazo&list=PL4cUxe
GkcC9gQeDH6xYhmO-db2mhoTSrT

○ Udemy Course
https://www.udemy.com/html-and-css-for-beginners-crash-course-learn-fast-easy/

Skill Test

3

Part 1

○ Take a Quiz
https://www.w3schools.com/quiztest/quiztest.asp?qtest=css

○ Exercise
https://www.w3schools.com/css/exercise.asp

JavaScript Reference Outline

1

Reading Material

Part 1

○ Primitive
http://webdev.slides.com/coltsteele/javascript-basics-57#/

○ Logic
http://webdev.slides.com/coltsteele/deck-4-47#/

○ While Loop
http://webdev.slides.com/coltsteele/loops-58#/

○ For Loop
https://www.w3schools.com/js/js_loop_for.asp

○ Functions
http://webdev.slides.com/coltsteele/javascript-basics-20-21-22-23-64#/

○ Arrays
https://www.w3schools.com/js/js_arrays.asp

○ Objects
https://www.w3schools.com/js/js_objects.asp

Part 2

○ JSON
https://www.w3schools.com/js/js_json.asp

○ DOM
https://www.w3schools.com/js/js_htmldom.asp

○ AJAX
https://www.w3schools.com/js/js_ajax_intro.asp

Video Material

2

Part 1

○ JavaScript Fundamentals
https://www.youtube.com/watch?v=vEROU2XtPR8

○ JavaScript Tutorial
https://www.youtube.com/watch?v=fju9ii8YsGs

○ Video - Youtube
https://www.youtube.com/watch?v=qoSksQ4s_hg&list=PL4cUxe
GkcC9i9Ae2D9Ee1RvylH38dKuET

Skill Test

3

Part 1

○ Take a Quiz
https://www.w3schools.com/quiztest/quiztest.asp?qtest=javascript
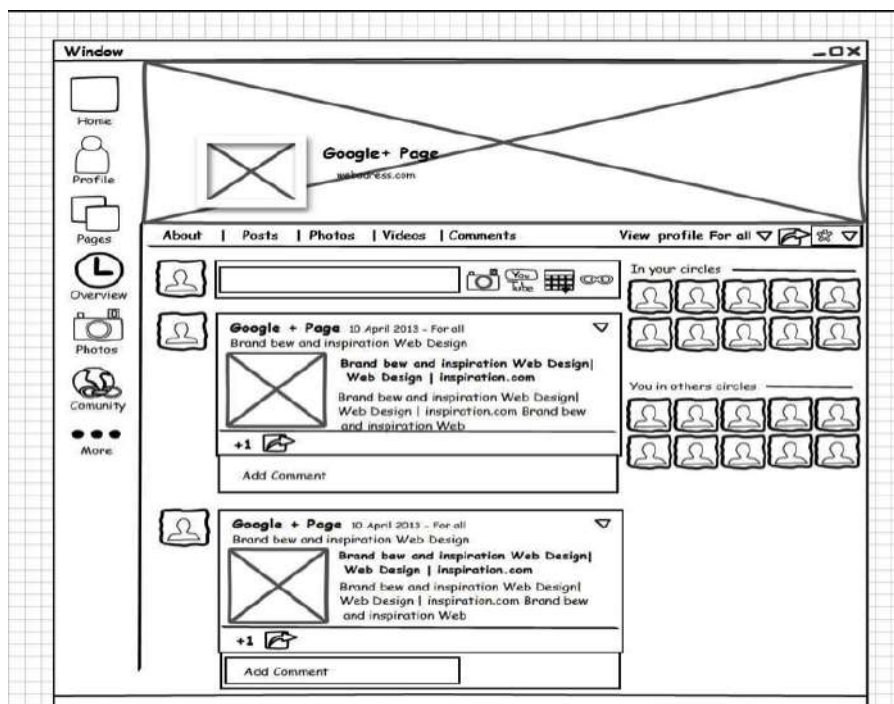
Assignment

Create a simple static web page that would require you to use the skills learned above. Consider the wireframe, this shows a sample social media profile landing page.

Your Task

- Create this page using just html, CSS and JavaScript.

- The leftmost panel has links to navigate to other parts of the application.

- The big and small X show cover and profile images respectively.

- The sections in the center show sample posts on the user's home page and some of the other people in the circle. You should be able to add comments to these posts and save these comments in local storage.

- Add the relevant validations. Use your imagination to the fullest.

For Reference

- Reference on Index DB

  https://developer.mozilla.org/en-US/docs/Web/API/IndexedDB_API/Using_IndexedDB

- Font awesome - http://fontawesome.io

- Placeholder Images

  Placeholder - http://placeholder.com   Place-hold.it - http://place-hold.it

Objectives

On successfully completing this course, you will,

- Understand the DOM (Document Object Model).

- Be able to use native HTML5 elements to create static webpages.

- Be able to define reusable CSS classes and style these webpages.

- Manipulate the DOM using JavaScript.

Course 2:
Advanced Web Technologies

Introduction

Responsive web design is the practice of building a website suitable to work on every device and every screen size, no matter how large or small, mobile or desktop. Responsive web design is focused around providing an intuitive and gratifying experience for everyone. Desktop computer and cell phone users alike all benefit from responsive websites.

Course 2 is about learning advanced web technologies. You can either read through the course or view the video material. The course is further divided into parts to outline key components to be learnt. This covers ViewPort, Grid Layout, Media Queries and responsive design.

There is a mandatory assignment to be completed at the end of the course to test and validate your learning.

Reading Material

Part 1

- ViewPort
  https://www.w3schools.com/css/css_rwd_viewport.asp

- Grid Layout
  https://www.w3schools.com/css/css_rwd_grid.asp

- Media queries
  https://www.w3schools.com/css/css_rwd_mediaqueries.asp
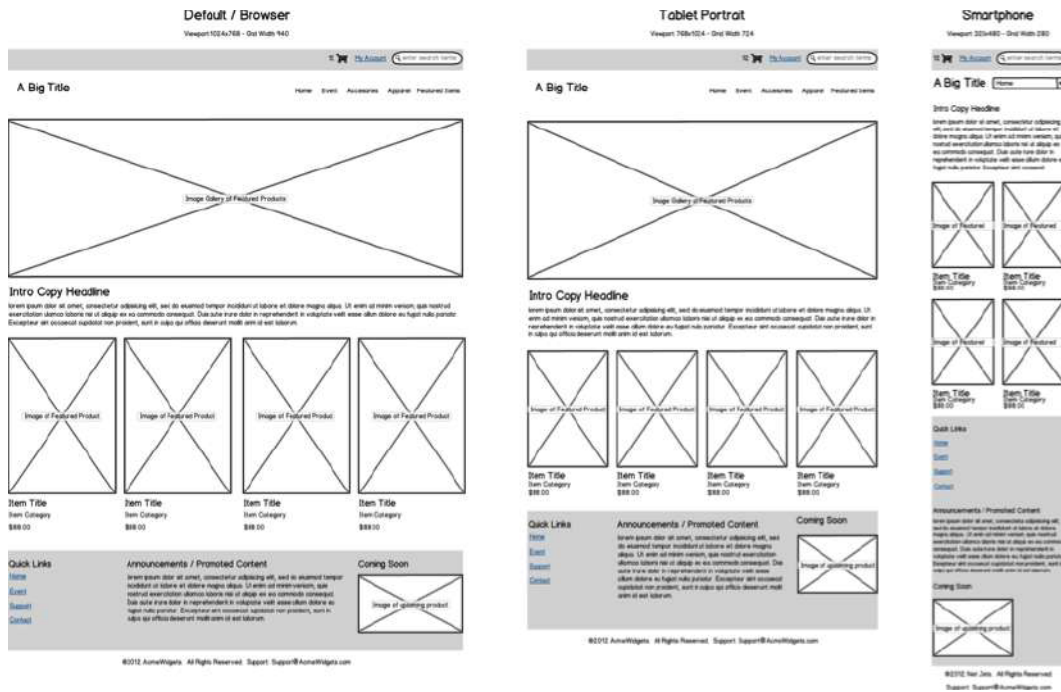
- Responsive Design
  https://learn.shayhowe.com/advanced-html-css/responsive-web-design/

Video Material

Part 1

- Video Link
  https://www.youtube.com/watch?v=3tLb3i7GB38&list=PL4cU
  xeGkcC9g9Vh9MAA-XKnfJsWZnPZFw

Assignment

Consider the following wireframe. This is the home page of an e-commerce portal. Note the three different views for browser, tablet and smartphone. Your task is to create this page and make sure it is responsive on all three form factors. Use your imagination to the fullest.

For Reference

- Reference for Color Palette - https://coolors.co

- Font awesome - http://fontawesome.io

- Placeholder Images

    Placeholder - http://placeholder.com   Place-hold.it - http://place-hold.it

Objectives

On successfully completing this course, you will,

- Understand how to use flexible layouts using CSS3

- Understand how to apply Media Queries.

- Be able to use CSS effectively to create web pages that are responsive to the current host.
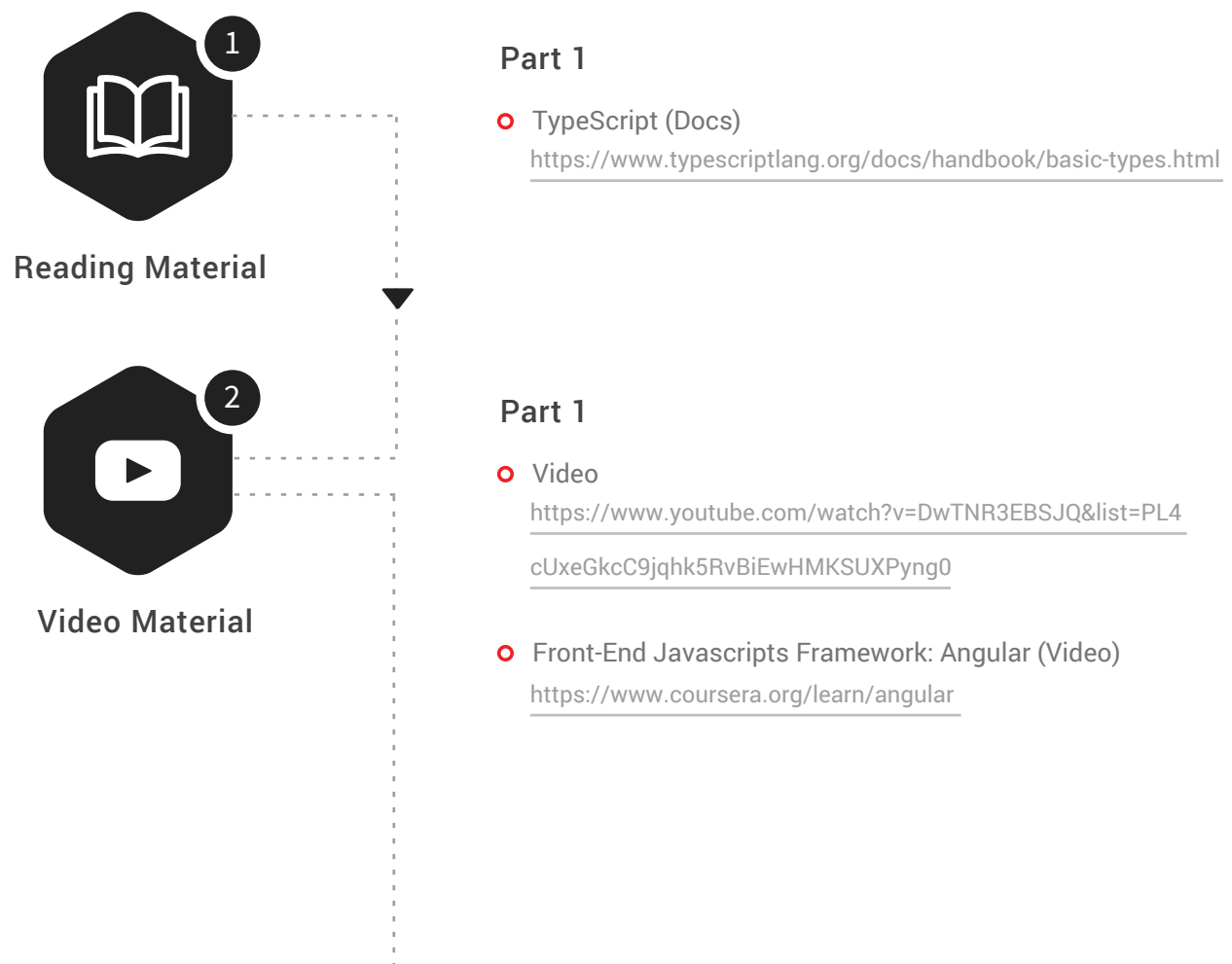
Course 3:
Angular

Introduction

Angular (commonly referred to as "Angular 2+" or "Angular 2") is a TypeScript-based open-source front-end web application platform led by the Angular Team at Google and by a community of individuals and corporations to address all the parts of the developer's workflow while building complex web applications.

Angular is a framework for building client applications in HTML and either JavaScript or a language like TypeScript that compiles to JavaScript. Course 3 is about learning Angular concepts. You can either read through the course or view the video material. The course is further divided into parts to outline Front-End JavaScript Frameworks and typescript as the key parts to be learnt.

At the end of course complete the Skill test and an assignment to test and validate your learning.

Reading Material

Part 1

O TypeScript (Docs)
https://www.typescriptlang.org/docs/handbook/basic-types.html

Video Material

Part 1

O Video
https://www.youtube.com/watch?v=DwTNR3EBSJQ&list=PL4
cUxeGkcC9jqhk5RvBiEwHMKSUXPyng0

O Front-End Javascripts Framework: Angular (Video)
https://www.coursera.org/learn/angular

3

Skill Test

Part 1

- Angular Test
  https://www.tutorialspoint.com/angular2/angular2_online_quiz.htm

Assignment

- **Angular Quickstart -** https://angular.io/guide/quickstart
  Note: the links in the assignments has a detailed guideline on what the task is and what needs to be done to achieve said task.

- **Angular Tour of Heroes tutorial -** https://angular.io/tutorial
  Use the link: https://angular.io/tutorial, to finish this assignment

Objectives

On successfully completing this course, you will,

- Understand how Single Page applications (SPA) work in Angular.

- Create basic Angular App using components, 2 way data binding and routing.

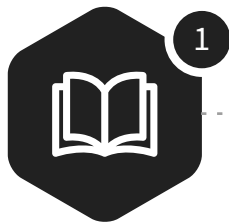- Understand how built-in Angular directives work.

Course 4:
UI Frameworks

Introduction

Neutrinos Applications are Angular 4 Single Page Apps. The user interface is built using several UI components extended from packages like Angular Material, D3 and NGX charts.

Course 4 is about learning UI Frameworks. You can either read through the course or view the video material. The course is further divided into key components to be learnt. This covers Angular Material, Flex Layout and Material Design. **It is important to understand this section to work on Neutrinos Studio.**

Reading Material

Part 1

○ Material Design
https://www.google.com/design/spec/material-design

○ Angular Material (Docs)
https://material.angular.io

○ Flex Layout (Docs)
https://github.com/angular/flex-layout/wiki/API-Documentation

Video Material

Part 1

○ Flex Layout (Video)
https://www.youtube.com/watch?v=BhHJexXUx1A&t=690s

○ Angular Material
https://www.youtube.com/watch?v=wPT3K3w6JtU

Assignment

Please note that this course does not require any assignments to be completed and is considered as complete when all the reading and video materials are finished.

Objectives

On successfully completing this course, you will,

- Understand how Angular Material and Angular Flex work.
- Be able to create rich web apps, using UI components from Angular Material UI that extend HTML5 elements.

Other Reading Materials

○ Node.js(Docs)
   https://www.javatpoint.com/nodejs-tutorial

○ Cordova (Docs)
   https://cordova.apache.org/docs/en/2.6.0

○ Mongo DB (Docs)
   https://www.tutorialspoint.com/mongodb/mongodb_overview.htm

Disclaimer

Throughout the course material, there are links to websites whose content is outside our control. The inclusion of links on these pages in no way constitutes a recommendation of the services or information provided. Please use your own judgment and be especially wary of any service which asks you to pay. No responsibility will be taken by "Neutrinos" for loss or damage, direct or consequential, resulting from the use of services or information provided by the maintainers of these links. Every effort is made to maintain the accuracy of the information in these pages. However, things change all the time. If you discover any

Incorrect links or you know of other links which should be included on this website, please let us know.