Pre-Joining Learning Path for React & Node

Welcome to Zignuts Technolab. Thank you for joining us and we are hoping for a long-term association and a continuous journey of learning and growth.

At Zignuts, we continuously strive to improve and stay ahead of the technology trends concerning IT services. We are constantly upgrading our skills and readiness for new challenges and we have built a culture of learning and development of individuals and the organization as well.

In this program, you will learn from the very basics of Javascript & React, from beginner to advanced level. This program's objective is to prepare you to take on live projects and join the team on any project or work on a project assigned to you.

Important Notes - Read it carefully:

- You will need to create an account on Github. Git is our primary platform to store the source code of the project and version control. You will need to create git repositories in your account to save your code for any assignments that you will do during the training period.
- Make sure to take notes about the topics that you learn and revise them weekly.
- There will be periodic surprise tests and interviews to check your knowledge.
- Practice is very important during the training period and therefore you are open to working for extended working hours to enhance your skills. You are also allowed to practice during the weekends.
- You should do a periodic review of your progress to decide whether you need any extra hours for more practice.
- All the documents, training materials, videos, guides, code snippets and any code that you develop during the training period and even in your projects are PRIVATE and CONFIDENTIAL to

Zignuts and they are not to be shared with anyone outside your team or unauthorized persons. Stringent actions will be taken for disclosing any information.

- There will be certain assignments during this training program. You will need to perform those assignments, present a demo and submit the code to your assigned training coordinator and supervisor.
- The evaluation criteria will consider your assignment completion, coding skills, presentation skills, UX skills, attitude, behaviour with co-workers, behaviour with seniors, speed and quality of learning, accuracy, and usability.
- You are required to submit a daily progress report via email to your training coordinator and supervisor.

Learning Goals

In this training, you will learn the following topics.

The main objective of this learning path

- Proficient in HTML, CSS, JavaScript, and DOM manipulation.
- Strong understanding of Bootstrap or Tailwind frameworks.
- Experienced in converting Figma designs into pixel-perfect, responsive HTML.
- Familiar with Git, including best practices, branching strategies, and code review processes.
- Competent in database design, normalization principles, and creating database objects like tables, constraints, keys, and handling relationships, joins, and aggregate functions.
- Skilled in jQuery and React, capable of translating Figma designs into responsive React web applications.
- Experienced in building applications with Node.js, Express, and EJS, following MVC architecture, handling routing, JSON parsing, request/response processing, and implementing authentication, JWT, and authorisation.
- Capable of developing simple web applications using React and Node.js.

So let's deep dive into the learning path by covering all the above objectives…

Session 1 - Git and best practices

Estimated Time: 6-7 hours

Concepts/Points need to be learned

- Why use GIT with Install
- How it will work
- Creating a repository, Staging Files, Making Commits, Undoing Things (Basic Operations)
- Branch, Merging Branches
- Introduction & Collaborating on GitHub
- Forking

Reference Link: Complete Git and GitHub Tutorial for Beginners

Session 2 - HTML + XHTML Learning

Estimated Time: 2 - 2.5 days

- https://www.w3schools.com/html/ (**Recommended**)
- https://html.com/ (**Recommended**)
- XHTML Learning: https://www.javatpoint.com/xhtml-tutorial

Session 3 -CSS + SCSS + Bootstrap + Tailwind + Figma Learning

Estimated Time: 5 days

- https://www.w3schools.com/css/default.asp (**Recommended**)
- https://developer.mozilla.org/en-US/docs/Web/CSS

For SCSS: https://www.youtube.com/watch?v=_a5j7KoflTs (**Recommended**)

- Responsive Learning: https://web.dev/learn/design/
- Bootstrap Learning: https://getbootstrap.com/

For bootstrap: https://getbootstrap.com/docs/5.0/getting-started/introduction/

For Tailwind: https://tailwindcss.com/docs/installation

Understanding of Figma

- https://designlab.com/figma-101-course/introduction-to-figma
- https://seahawkmedia.com/design/convert-figma-to-website/
- https://www.youtube.com/watch?v=JkbSKtaWOeM (Recommended to understand learning HTML & CSS from Figma)

Assignment (HTML + CSS/SCSS + Bootstrap OR Tailwind)

Estimated Time: 1 day

https://www.figma.com/file/uRMGLqmD4QZVisRWO9XhHp/Home-Page-for-logistic-website?type=design&node-id=0-1&mode=design&t=4qGSY0n5hWLYfl6A-0

Open this URL in you will get the UX so you have to create the web design of this (with Responsive as well) (Use of Bootstrap OR Tailwind only)

Session 4 - Javascript Concepts

Estimated Time: 5 - 6 days

Tutorial (Each Concept Wise)

- Javascript
  - JS Core - https://www.w3schools.com/js/default.asp
  - JS Versions and ES6 - https://www.w3schools.com/js/js_versions.asp
  - JS Objects - https://www.w3schools.com/js/js_object_definition.asp
  - JS Functions - https://www.w3schools.com/js/js_function_definition.asp
  - JS Classes - https://www.w3schools.com/js/js_class_intro.asp
  - JS Async - https://www.w3schools.com/js/js_callback.asp
  - JS HTML DOM - https://www.w3schools.com/js/js_htmldom.asp
  - JS Browser BOM - https://www.w3schools.com/js/js_window.asp
  - JS Web API - https://www.w3schools.com/js/js_api_intro.asp
  - JS AJAX - https://www.w3schools.com/js/js_ajax_intro.asp
  - JS JSON - https://www.w3schools.com/js/js_json_intro.asp
  - JS Jquery - https://www.w3schools.com/js/js_jquery_selectors.asp
  - JS Examples and Questions - https://www.w3schools.com/js/js_examples.asp

- jQuery
    - Basics: Link
    - jQuery Effects: Link
    - jQuery - HTML Actions: Link
    - jQuery Traversing: Link
    - jQuery Properties: Link
- **https://youtu.be/PlbupGCBV6w?si=XKSFjOQgy3stHPWN (Javascript from Beginner)**

Javascript Exercise (Estimation Time: 2 days)

- ➔ **Task 1:** Need to create JavaScript functions for a sum of numbers in the string (Example like "foo8bar8cat2tc2")
- ➔ **Task 2:** Need to create a Javascript function for the sum of string (Example like "1.5, 2.3, 3.1, 4, 5.5, 6, 7, 8, 9, 10.9")
- ➔ **Task 3**: Write a JavaScript program that creates a class called 'Shape' with a method to calculate the area. Create two subclasses, 'Circle' and 'Triangle', that inherit from the 'Shape' class and override the area calculation method. Create an instance of the 'Circle' class and calculate its area. Similarly, do the same for the 'Triangle' class.
- ➔ **Task 4**: Write a JavaScript program that creates a class called University with properties for university names and departments. Include methods to add a department, remove a department, and display all departments. Create an instance of the University class and add and remove departments.
- ➔ **Task 5:** Write a program to print fibonacci series. Take the number of steps from input using HTML Input and when click on Print button, using JS print the entered number of steps in the fibonacci series on HTML page.
- ➔ **Task 6**: Write a program to find the factorial of a number using a recursive function

Session 5 - React

Estimated Time: 10 days

Documentation: https://react.dev/

React Complete Tutorial:

- https://www.youtube.com/watch?v=bMknfKXIFA8
- https://www.youtube.com/watch?v=Ke90Tje7VS0

Exercise Assignments (*Estimated Time: 2 days)*

Assignment 1:

Convert the given design to a responsive web page using React JS.

Design link - https://www.figma.com/file/qb0C6GI24GvJqMrE3wcyrt/Mendleson?node-id=0%3A1

The objective of Assignment:

- Adjust the responsiveness based on your experience and user-centric thinking
- Adhere to the pixel-perfect development of the given design
- The use of SCSS is preferred over traditional CSS
- Feel free to add effects, animations etc.… to make things look nicer
- Feel free to follow any CSS/SCSS framework such as React Bootstrap, tailwind or any other you may decide based on your experience

Deliver the source code via Github or Bitbucket repository

Evaluation Criteria:

- Completion of the given task and pixel-perfect matching with the design
- Project and coding structure and standards, commenting, naming conventions and clean coding practices
- Components structure, reusability, separation of concerns for components and SCSS/CSS
- It is compulsory to use any one (Bootstrap OR Tailwind)

Estimated Time: 0.5 days

Assignment 2:

Develop a front-end application (using NEXT JS) that lets users help list and browse games developed for different platforms conveniently.

User this Web API to fetch the details:

Web API: https://s3-ap-southeast-1.amazonaws.com/he-public-data/gamesarena274f2bf.json

Utilize the parameters as Title, platform, score, genre, editors_choice

Requirement:

- Visually interactive listing of all the games
- Implement a feature to sort games based on platform
- Autocomplete search with game title

Parameters overview

- Title: title of the game
- Platform: name of the platform from where the game designed
- Score: game rating score
- Genre: genre of game
- editors_choice: whether the game is editor choice or not

Evaluation Criteria:

- Use React Boostrap OR Tailwind as UI Framework
- Proper use of the life cycle of React
- User Proper Naming conventions, Commenting and variable name in components (Code standards)
- Follow a component-based approach so if you are creating a listing OR Auto suggestion search Or filter each is represented with a component

Estimated Time: 0.5 days

Assignment 3:

You have to create the closest possible replica of the https://react-advanced-assignment.psamd.vercel.app/

API for Data fetching method: GET

URL: https://jsonplaceholder.typicode.com/users

For Avatar, you will get from: https://avatars.dicebear.com/v2/avataaars/{{username}}.svg?options[mood][]=happy

The response you will get

```
[
 {
  id,      // The user's id
  username,
  name,
  email,
  phone,
  website,
  address: {
            street, // Address line 1
            suite, // Address line 2
            city,
            zipcode
  },
  company: {
            name, // The name of company where the user works
  }
 }
]
```

Assignment Requirement:

- Proper state management with Like button, For Edit (with modal pop-up), Remove specific frontend only
- Once we edit any data then it should reflect in list also (NOT with API but with state management)

Estimate Time: 1 day

Session 6- MY SQL

MYSQL

- Intro - https://www.w3schools.com/mysql/default.asp
- SQL Keywords - https://www.w3schools.com/mysql/mysql_sql.asp
- Database DDL and Constraints - https://www.w3schools.com/mysql/mysql_create_db.asp
- Data Types - https://www.w3schools.com/mysql/mysql_datatypes.asp
- MySQL - https://www.w3schools.com/mysql/mysql_examples.asp

Practices:

- Make practice through LINK.

Session 7 - NODE JS

Ref: https://www.youtube.com/playlist?list=PL4cUxeGkcC9gcy9lrvMJ75z9maRw4byYp

***NOTE:** Make sure to do hands-on along with the video lectures. The more you practice, the better you will become.

- Introduction
- Installing Nodejs
- The V8 Engine
- The Global Object
- Function Expressions
- Modules and require()
- Module Patterns
- The Event Emitter
- Reading and Writing Files
- Creating and Removing Directories
- Clients and Servers
- Creating a Server & Streams and Buffers
- Readable Streams
- Writable Streams
- Pipes
- Serving HTML Pages
- Service JSON Data
- Basic Routing

Go through all the topics of this session again and make yourself comfortable Learn and play around Node.js in your local machine for the rest of the day. Try reading a file and writing that to another one. Make use of events and see how it works. Make some routes and serve different HTML and JSON responses.

Continue with the same tutorial series. Ref:
https://www.youtube.com/playlist?list=PL4cUxeGkcC9gcy9lrvMJ75z9maRw4byYp \

***NOTE:** Make sure to do hands-on along with the video lectures. The more you practice, the better you will become.

- The Node Package Manager
- The package.json file
- Installing nodemon
- Introduction to Express - **IMPORTANT**
- Express Route Params - **IMPORTANT**
- Template Engines - **IMPORTANT**
- Template Engines - Part 2
- Partial Templates
- Middlewares and Static Files - **IMPORTANT**
- Query Strings
- Handling POST Requests
- Making To Do App - Part 1 Making To Do App - Part 2 Making To Do App - Part 3 Making To Do App - Part 4 Intro to NoSQL and MongoDB Making To Do App - Part 5 Making To Do App - Part 6

Assignment 4:

Estimated Time: 3 days

Mini Project - Blogging Platform

Objective: Develop a web-based Blogging application which can be accessed on the computer and on mobile browsers. The application should manage blogs. Admin can create and manage blogs whereas Users can access the blogs. For reference, you can use www.medium.com, https://www.freecodecamp.org/news/, etc. We will develop this application with UI and REST APIs.

Libraries/Things to use:

- Nodejs with EJS Templates for UI Screens
- Use Bootstrap for Styling (Feel free to use any free template available on the internet. Example https://startbootstrap.com/templates/blog-home/)
- Express
- Mongoose+MongoDB
- JWT and Authorized Routes

- Controllers
- Models
- ES6

Features:

- There will be a website for guest users and an admin panel area.

  Features for Admin

- Admin Login and Logout (create a fixed admin user)
- The layout of the admin panel should be header, left menu and content area. You can also use template https://www.creative-tim.com/product/argon-dashboard-nodejs
- Upon successful login, the admin will see the list of blogs available in the system
- The left menu should have options as below:
  - All Blogs
  - Add New Blog
  - All Categories
  - Add New Category
  - Logout
- All Blogs: Admin can see a list of all the blogs in a tabular format. Name/Title, Category, Description, Actions (Edit, Delete)
- Add New Blog: Name/Title, Slug (auto-generated), Category (drop-down), Description (Rich text editor), Publish Date, Image Thumbnail and Image Featured, Save and Cancel button
- All Categories: Admin can see a list of all the categories in a tabular format. Name, Actions (Edit, Delete)
- Add New Category: Name, Save, Cancel button
- Logout

  Features for Users

- The home page should display a list of all the LATEST blogs in a listing
- When user will click on any blog, it should open the blog with its details.
- The search option to be given so the user can search for a specific blog by its title.
- The blog details should open with its slug: For example, mywebsite.com/hello-world, mywebsite.com/how-to-cook-meal, etc.

After mastering these concepts, you should have a thorough understanding of each topic, along with practical skills. You should be able to accomplish the key objectives outlined in each area before beginning the learning path.

Best of luck & All the best on your new adventure to start your initial journey with the Zignuts family 🎀