Full Stack Engineer
Interview Prep Guide

Welcome to your prep guide for your interview process with Canada Clean Fuels (CCF). Our engineers and recruiters put together this guide, so you know what to expect and how to prepare. This document is designed to answer most of the questions you may have about the role, the interview process, and how to set yourself up for success by preparing.

Before you begin prep, one important piece of advice for your interview: it's ok if you don't know! No one who works at CCF is an expert in all things, and we don't look for perfection in the people we interview. If you aren't sure if something is true or if it's the best solution, then say that. Explain what you do know, and your interviewer will ask you follow-up questions.

Now, please take some time to review the information and think about how much time you need to really prepare for your interviews

I. FULL STACK DESIGN ASSIGNMENT

What can you expect?

Mastering the basics of stacks is key to cracking the full stack developer interview at CCF. In this take-home assignment, you will be expected to build a full stack system containing zero or more: web app that generates data, remote data store, and a web app that consumes the data.

Please feel free to use any tech stack. Just be prepared to discuss the rationale behind your choices.

Examples include:

- A responsive web app which consumes an API, lists the data, make a form, and send data via a POST request.

- Make a clone of Trello cards that have draggable feature.

How to prepare?

Fundamentals of data structures, object-oriented programming, and control flow must be a part of your full stack developer interview prep.

The main objective is to assess your ability to code with a reason rather than in-depth preparation. Since most languages have similar constructs, it is not necessary to be a master of every language.

Your preparation arsenal should include:

- Languages: (HTML, CSS, SQL, Python, JavaScript)

- Front-end Framework (e.g., Bootstrap, ReactJS)

- Back-end Framework (e.g., Flask, Django)

- Basic Database Systems

Notes:

• Aim to spend no more than approximately 4 hours on this task.

• Feel free to cut corners, but make a note where you do, and be prepared to explain what you would do in a production context.

• In the consumer app, we are far more interested in the data flow than the visual design.

Be prepared to talk about what you did, how you did it, and how long it took. Talk about the tech stack and any libraries used in your project and why you chose them

II. CODING INTERVIEW

What can you expect?

This interview focuses heavily on coding. You'll be assessed on how you solved the problem as well as the structure and style of your code. It's best to avoid bugs, but the interviewer will not compile your code so don't worry about making minor mistakes. Finding and catching bugs in your code is a positive sign!

Additionally, we'll want to hear your thought process throughout, so be sure to provide a narrative as you go through the code. You're welcome to code in whatever language you feel most comfortable but choosing one that is going to assist in getting an optimal solution in the most speedy and efficient manner is key.

What do we look for?

Your interviewer will be thinking about how your skills and experience might help CCF. In your coding interview, your interviewer will assess your performance on four focus areas:

- **Problem Solving**: We're evaluating how you comprehend and explain complex ideas. Are you providing the reasoning behind a particular solution? Using appropriate data structures?

- **Coding**: Can you convert solutions to executable code? Is the code organized and does it have a logical structure?

- **Verification**: Are you considering several test cases? If your solution has bugs, are you able to walk through your own logic to find them and explain what the code is doing?

- **Communication**: Are you asking for clarity when necessary, or are you just diving into the code? Your coding interview should be a conversation, so don't forget to ask questions.

- **Performance**: Can you identify how efficient your solution is? How would you optimize it?

Practice real questions online like LeetCode Problem Sets. Attempt to solve medium problems.

What can you expect?

This interview focuses on walking through your take-home assignment. Be prepared to explain what you did and what you would do differently in a production environment.

Additionally, we'll want to hear your thought process throughout, so be sure to provide a narrative as you go through the code. Good communication is key in this interview.

We will guide you to areas of the code that seem ripe for discussion. We may ask you to zoom in or out of layers of abstraction (into/out of functions, classes, and packages) to help us build a shared understanding of the code under review. You will be asked to explain how particular parts of the code under review work.

The level of explanation will vary (but will not be a mystery): we may ask how high-level components interact, or we may ask how an individual function works in detail. We will try to ask both!

We will ask follow-up questions about performance, usage ergonomics, code complexity, and ideas for improvements. We'll also ask clarifying questions about how the code under review reacts to certain input or usage conditions. You will be asked to explain potential trade-offs given different hypothetical design constraints (what in the code would need to change). Can you list some common ways to reduce the load time of the web application?

How can you ensure that the application is highly available and reliable?

IV. BEHAVIORAL INTERVIEW

The STAR Method

The STAR method is a structured manner of responding to a behavioral-based interview question by discussing the specific situation, task, action, and result of the situation you are describing.

Situation: Describe the situation that you were in or the task that you needed to accomplish. You must describe a specific event or situation, not a generalized description of what you have done in the past. Be sure to give enough detail for the interviewer to understand. This situation can be from a previous job, or any relevant event.

Task: What goal were you working toward?

Action: Describe the actions you took to address the situation with an appropriate amount of detail and keep the focus on YOU. What specific steps did you take and what was your contribution? Be careful that you don't describe what the team or group did when talking about a project, but what you did. Use the word "I," not "we" when describing actions.

Result: Describe the outcome of your actions and don't be shy about taking credit for your behavior. What happened? How did the event end? What did you accomplish? What did you learn? Make sure your answer contains multiple positive results.

Make sure that you follow all parts of the STAR method. Be always as specific as possible, without rambling or including too much information. Oftentimes students must be prompted to include their results, so try to include that without being asked. Also, eliminate any examples that do not paint you in a positive light. However, keep in mind that some examples that have a negative result (such as "lost the game") can highlight your strengths in the face of adversity.

SAMPLE STAR RESPONSE:

Situation (S): Advertising revenue was falling off for my college newspaper, The Review, and large numbers of long-term advertisers were not renewing contracts.

Task (T): My goal was to generate new ideas, materials and incentives that would result in at least a 15% increase in advertisers from the year before.

Action (A): I designed a new promotional packet to go with the rate sheet and compared the benefits of The Review circulation with other ad media in the area. I also set-up a special training session for the account executives with a School of Business Administration professor who discussed competitive selling strategies.

Result (R): We signed contracts with 15 former advertisers for daily ads and five for special supplements. We increased our new advertisers by 20 percent over the same period last year.

Thank you for taking the time to review this guide!

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