

Technical Exam: Junior – Mid Level Full Stack Developer



The primary goal of this technical exam is to test the candidate's compatibility, technical knowledge and problem-solving capacity.

As part of your application with CGI as a Junior Automation Developer, below is the next step technical exam for your completion.

This test should be completed and submitted within 48 hours upon receipt of this email.

Following the below conditions.

- Test 1 and 2 can be answered directly below after every question.
- Test 3 output should be compiled, saved on your local machine as a zip file (not google drive or such) "FullName_Test_mmddyy.zip", and attached upon replying to this email for submission.

Situational

Analyze the below situation and provide your best answer:

1. In 2 paragraphs with ten sentences each, summarize the highlights of your College days, OJT, or actual job experiences. First Paragraph should contain the technologies you learned. The 2nd paragraph should be on how you applied those technologies to complete projects-thesis.

Answer:

My college era was basically divided into 2 parts: theoretical and the practical part. The first year was like the "onboarding" part where we are taught of the fundamentals when it comes to programing. In here, I actually learned my first programming language which is C, and we are taught of the basic concept like loops, decimal systems, basic functions like sorting, data, assignments, operators, etc. During my second year in the course, I learned about Java and the OOP concepts, data structures and digital design. That pretty much sums up the "theoretical" Part. During the last 2 years in college, it was mostly likely a practical part where we apply our learnings from the past 2 years to an actual project. During this time, we are freer to use whatever stack we see fits the requirements of the project we are working on. Since mostly of our projects are web-based applications, we opted to use JS, CSS and HTML for front end and PHP and MySQL for the backend and Database respectively. For our thesis which is an android app, we use Java JRE and JDK8.0, Android Studio with SDK and SDK Tools, Google Maps API and Gradle tools, and PHP and MySQL Lite. Along the way we also have small projects as a course requirement that we were able to use or explore different tools like NetLogo, Game Editor, Multisim Circuit Simulator, and python.

For me the highlight of my college days was during the actual project development where we had a grasp of the experiences of a real-world developer where we are involved in the planning, development, and testing stages. I have been to a total of 3 major projects during my 3rd and 4th year in college, two of which are web applications which is a basically a Document Management System (DMS). The first DMS system we built was for our Collaborative Service Learning Program (CSLP) where students in the university will

use their skills to help the community. We build a Facebook-like web application (posting updates/chatting) with uploading capabilities where files will be saved on a server computer where the application is hosted and is accessible within the university's network. The other one is for our OJT in Mines and Geo Sciences Bureau which is a simple DMS where they can upload files or folders to a server computer and can be accessed only inside their network. Both DMS do have a user login feature where user credentials are authenticated with the data from its MySQL database and built using JS, PHP and MySQL Databases and some digital media for logos and icons that we learned during our 2nd year in college. The most exciting project we did is our Thesis Project a mobile app called "MAN" a map application which is like Google apps but more focused on the routes of different modes of Transportation inside the city of Cagayan de Oro. Here, we applied our learning mostly on the project process part like planning, talking to stakeholder mostly outside the university, development life cycles, methodology to be used, etc. During this time our logical thinking and "finding-solution" mindset was already develop because of several years we are exposed to different languages but will still boil down to how you will approach the problem and fit the right fit technology to help you create the solution to that problem. What our mentors wants us to learn in this project is to be involve ourselves in the whole process, from communicating with our partners and co-developers, examine requirements and plan development actions based on those requirements, develop, test and produce a quality product for our client because learning the language will come the development stage.

2. Given two scenarios, what will you choose, and explain why?

- Scenario 1: A large development project estimated to be completed in 1 to 2 years, consisting of 5 members and yourself as the Project Lead.
- Scenario 2: A short 4-6 months development project on which to work alone, where another same type of project awaits in the pipeline.

Answer:

I could be in both scenario and perform just as well but if I must choose only one, it will be scenario 1 where I will be the project lead. I believe for the project to be successful, a project lead should not only order the team members on what to work on but also work with them. Also, being a project lead is like being a PM of some sort where you will be able to contribute to the growth and progress of the team. I can share my knowledge, skills and experiences with the team. I would be able to influence them to have a pleasant work environment within the team like promoting open communication, having stress relievers once in a while and the likes.

3. You have two groups to join: 1st group has a Bossy Lead who does not listen to his members. He wants to do things only in his way. 2nd group with half of its members who always want to work alone and do not cooperate with other members – which will you choose and why?

Answer:

These are present in most workplaces and if ever I will be on either I will simply adjust and adapt. But If I must choose, I will choose the latter one. The 2nd group will have only half of the team who are uncooperative and wants to work alone while the other half are cooperative which means the project can still be get going as long as each half will deliver as expected no matter how they want it to be done because I believe each developer has a unique personality and if they are more effective and productive that way we can still get

going with the project. But I will also encourage the team to eventually influence them to cooperate, will not force but to slowly connect the uncooperative ones with team and maybe give them the tasks that could be done on their own first and still reports or checks with the team for some info or questions, check on them if they have some blockers or something (daily standup is good for this). Then maybe eventually will be able to influence them to cooperate with the team. Because as developers we are expected to adjust, adapt and learn not just with technologies but the working environment as well.

4. You have a colleague, same course, same year graduated, same day hired to the company, same skills, same training attended with different project handled. After a year, your colleague got promoted, and you weren't? What do you think happened? What action will you do next? and why?

Answer:

In this case, for sure there are some rubrics of KPI to measure one's performance (giving everything is fair and just). My colleague must have out done himself and performed very well than I am. I think I am a logical person, so if I can see that he earned that promotion more than I do, I would clap for him and check for myself the areas that I must have not excel or things that I must improve and start from there and I'll make sure to get the promotion next time.

5. New application system security policies will soon be implemented company-wide. It will affect most of the applications and tools you and your team developed and currently developing. As a junior developer, what will you recommend to do and help address possible challenges for this case?

Answer:

First, I will recommend that we first check the new application system security policies and how it could affect the application and tools we developed or currently developing. From there we can inform the management of the possible challenges that might arise due to this implementation. I would also suggest that the currently under development application shall include a time frame where these adjustments could be addressed. For the existing ones, if the manpower permits, I would suggest creating a team to address these changes (headcount will be determined to the impact and number of application) prioritizing application that are essential to the business. If there is a shortage of manpower, I will suggest prioritizing these changes depending on its urgency especially if it will affect the business.

Practical Exam

Web application:

A Login Page that redirects to home on successful login.

A home page showing all the information indicated on your CV (but not the same format and view as your submitted CV).

A career objective page that lists down your career goals, including certification, training, and other learning goals to boost growth. On this page, you should be able to add new entries, review and modify entries, and delete entries. The entry object should contain the following fields id, name, description, reason target date and completed date.

Make it the most presentable and exhibit your artistic side in creating the design.

Add your work to a git repository and make sure the app runs when cloned.

Problem Solving

A law firm has hundreds and thousands of digital documents stored in the cloud. Each time they have a new client, the firm searches them manually and is having problems finding relevant documents that are most likely the same or related to the issues their clients are having.

Write a pseudo code that solves the issue on finding the top relevant documents where N is the total number of documents in the cloud.

Answer:

If I were to develop a solution to this problem, I would have two options:

1) Develop a solution that would utilize tags that does the ff:

- i. Every time a file is uploaded relevant tags are included (either user will select from frequently used or available tags or input a tag to be used**
- ii. During search:**
 - The user will input a search string**
 - The search will be used to search for file names (exact or has)**
 - Search tags based on the splitted search string**
 - Program will return the most accurate filenames/tags compared to the search string**
 - Program can use or have a relevance scoring logic/feature to sort the results**

2) The second solution will also involve relevance scoring but is more applicable to word documents

- The user will input a search string**
- The search will be used to search for file names (exact or has)**
- Search document contents based on the splitted search string**
- The program will calculate the scores gathered by every document based on the**

occurrences of the string inside the document.

- **The program will return a result with sorted documents based on their relevance scores from highest to lowest relevance.**