National Australia Bank
in partnership with PYCOGROUP

Java Development Challenge

Subject	Designing and Coding challenge for Experienced Java Engineer
Owner	NAB - Vietnam Development Center
Version	V8.0.1

Problem Statement 2

- Bank ABC want to provide a new feature on its website. The feature is to purchase prepaid data for a SIM card by getting a voucher code from a 3rd party. Anyone can purchase the prepaid data on the website without login.
- The 3rd party provides an API for the client to call via HTTP(s) protocol to get the voucher code The API always returns a voucher code after 3 to 120 seconds, it depends on the network traffic at that time.
- The bank wants to build a new service(s) to integrate with that 3rd party. But it expects that the API will return voucher code or a message that says the request is being processed within 30

  seconds.
- If the web application receives the voucher code, it will show on the website for customers to use. In case that the code can't be returned in-time, the customer can receive it via SMS later.
- The customer can check all the voucher codes that they have purchased by phone number on the website, but it needs to be secured.
- Assume that the payment has been done before the website call to the services to get the voucher code.

Expected Outputs

- Example implementation for some operations of at least two of the backend web services. The example implementation must demonstrate inter-service communication between these services.

- For the requirement , if the integration is too complex, you can make it simple by making the service always wait until getting the voucher code and returns it to the client

- Entity relationship diagram for the database and solution diagrams for the components, infrastructure design if any
- For candidates applying for Principal Engineer or Engineering Manager position, it's important to have your solution design covers not only the Java backend web services but also all other components of the application as well including the infrastructure
- Readme file includes:
- Brief explanation for the software development principles, patterns & practices being applied
- Brief explanation for the code folder structure and the key Java libraries and frameworks being used
- All the required steps in order to get the application run on local computer
- Full CURL commands to verify the APIs (include full request endpoint, HTTP Headers and request payload if any)

Tips:

- As an experienced Java Engineer, you're responsible for designing and implementing **the backend web services** of the application (**you don't need to build the frontend web application**).
- You can build a mock service of 3rd party to return the voucher code. It should simulate both happy case and unhappy case
- You should treat this as a real-world application. While we do not expect for it to be deployed, it must be able to run locally.
- You are free to use whatever Java libraries and frameworks you are familiar with, but Java 8, Spring Boot / Spring Cloud + JPA/Hibernate + JUnit are recommend
- You are encouraged to take this test to show up your expertise about **Security, Problem-solving, Architectural/OOP design patterns, principles** and best practices as long as you have the right reason to use it
- You should commit your solution including source code and all the relevant documentation to GitHub and set the repository is publicly accessible. Your submission just needs to be a link to the repository.

Last but not least, don't see this as a coding assignment, and don't limit it to coding only. Use it as a chance for you to show your expertise in software development, your ability to design a solution, and how passionate you are as an experienced JAVA engineer! If you have knowledge and hands-on experience in other concerns other than coding such as solution architecture, infrastructure, cloud computing, containerised application etc. why not show it up!

At NAB, we're looking for developers, not coders!