Short Answer:

Answer the following questions with complete sentences in your own words. You are encouraged to conduct your own research online or through other methods before answering the questions. If you research online, please consult multiple sources before you write down your answers. You are expected to be able to explain your answers in detail

1. What is “Offline Transaction”?
2. What is RabbitMQ and what can it help us to achieve in a web application?
3. What are the component of RabbitMQ?
4. What are different types of Exchange that exist in RabbitMQ?
5. What is Scheduler and what can it help us to achieve in a web application?

Coding Questions:

Write code in Java to solve following problems. Please write your own answers. You are highly encouraged to present more than one way to answer the questions. Please follow best practice when you write the code so that it would be easily readable, maintainable, and efficient. Clearly state your assumptions if you have any. You may discuss with others on the questions, but please write your own code.

For the coding practice, our goal is to add a new functionality to our RESTful Quiz Application. We want our application to send a email to every user at 6:00 PM of everyday, the content of the email is this user’s quiz submission history. To achieve this functionality, we need to implement below steps:

1. Install RabbitMQ on your computer, create a direct exchange called emailExchange, a queue called emailQueue and a binding to bind the emailExchange and emailQueue with a binding key.
2. In your RESTful Quiz Application, connect to your local RabbitMQ and create a scheduled task which will publish messages to the emailExchange at 6:00 PM of everyday. (You need to decide the content of these messages. Hint: think about what information does the consumer need to complete the email sending task.)
3. Create another SpringBoot Application called EmailApp, this application’s only job is to listen to the emailQueue in your local RabbitMQ and send an email once a RabbitMQ message is consumed.

Note: Spring provides a very convenient module for sending emails: Spring Mail. Some very useful references are listed below, for the specific implementation of the EmailApp, please refer to these references:

- https://docs.spring.io/spring-framework/docs/3.0.x/spring-framework-reference/html/mail.html
- https://www.baeldung.com/spring-email