Career Services Assignment 9 – API Flash Cards

Instructions: Research common interview questions online revolving around REST, Spring, and building APIs and create 20 flash cards from the information you find. Study your flash cards regularly to better prepare for interviews. Fill out the table below with the information you put on each of your flash cards.

Front of Card	Back of Card
What is Spring Framework?	Spring is a powerful open-source, loosely coupled, lightweight, java framework meant for reducing the complexity of developing enterprise-level applications. This framework is also called the “framework of frameworks” as spring provides support to various other important frameworks like JSF, Hibernate, Structs, EJB, etc.
What are Spring Beans?	They are the objects forming the backbone of the user’s application and are managed by the Spring IoC container. Spring beans are instantiated, configured, wired, and managed by IoC container. Beans are created with the configuration metadata that the users supply to the container (by means of XML or java annotations configurations.)
What is a Spring configuration file?	A Spring configuration file is basically an XML file that mainly contains the classes information and describes how those classes are configured and linked

	to each other. The XML configuration files are verbose and cleaner.
What do you understand by Dependency Injection?	The main idea in Dependency Injection is that you don't have to create your objects but you just have to describe how they should be created. The components and services need not be connected by us in the code directly. We have to describe which services are needed by which components in the configuration file. The IoC container present in Spring will wire them up together. In Java, the 2 major ways of achieving dependency injection are: Constructor injection: Here, the IoC container invokes the class constructor with a number of arguments where each argument represents a dependency on the other class. Setter injection: Here, the spring container calls the setter methods on the beans after invoking a no-argument static factory method or default constructor to instantiate the bean.
What are the bean scopes available in Spring?	The Spring Framework has five scope supports. They are: • Singleton: The scope of bean definition while using this would be a single instance per IoC container. • Prototype: Here, the scope for a single bean definition can be any

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	number of object instances. • Request: The scope of the bean definition is an HTTP request. • Session: Here, the scope of the bean definition is HTTP-session. • Global-session: The scope of the bean definition here is a Global HTTP session. Note: The last three scopes are available only if the users use web-aware ApplicationContext containers.
What is autowiring and name the different modes of it?	The IoC container autowires relationships between the application beans. Spring lets collaborators resolve which bean has to be wired automatically by inspecting the contents of the BeanFactory. Different modes of this process are: • no: This means no autowiring and is the default setting. An explicit bean reference should be used for wiring. • byName: The bean dependency is injected according to the name of the bean. This matches and wires its properties with the beans defined by the same names as per the configuration. • byType: This injects the bean dependency based on type. • constructor: Here, it injects the bean dependency by calling the

	constructor of the class. It has a large number of parameters. • autodetect: First the container tries to wire using autowire by the constructor, if it isn't possible then it tries to autowire by byType.
Differentiate between Spring and Spring Boot.	• The Spring Framework provides multiple features like dependency injection, data binding, aspect-oriented programming (AOP), data access, and many more that help easier development of web applications whereas Spring Boot helps in easier usage of the Spring Framework by simplifying or managing various loosely coupled blocks of Spring which are tedious and have a potential of becoming messy. • Spring boot simplifies commonly used spring dependencies and runs applications straight from a command line. It also doesn't require an application container and it helps in monitoring several components and configures them externally.
What are the uses of @RequestMapping and @RestController annotations in Spring Boot?	@RequestMapping: This provides the routing information and informs Spring that any HTTP request matching the URL must be mapped to the respective method. @RestController: This is applied to a class to mark it as a request handler thereby creating

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	RESTful web services using Spring MVC. This annotation adds the @ResponseBody and @Controller annotation to the class.
How does a spring boot application get started?	Just like any other Java program, a Spring Boot application must have a main method. This method serves as an entry point, which invokes the SpringApplication#run method to bootstrap the application.
What is Spring Boot CLI and what are its benefits?	Spring Boot CLI is a command-line interface that allows you to create a spring-based java application using Groovy. Example: You don't need to create getter and setter method or access modifier, return statement. If you use the JDBC template, it automatically loads for you.
What is the default port of tomcat in spring boot?	SThe default port of the tomcat server-id 8080. It can be changed by adding sever.port properties in the application.property file.
Explain @RestController annotation in Sprint boot?	It is a combination of @Controller and @ResponseBody, used for creating a restful controller. It converts the response to JSON or XML. It ensures that data returned by each method will be written straight into the response body instead of returning a template.
Why is the Web API important?	Web API is generally considered as a service that basically provides us

	information or data from the server. It is very important because of the following reasons: • It is used to provide an interface for websites and client applications to have access to data. • It can also be used to access data from the database and save data back to the database. • It supports different text formats such as XML, JSON, etc. • It is suitable or compatible with any type of browser and any type of device like mobile, desktop, web, etc. • It uses low bandwidth such as XML or JSON data, etc., and is therefore considered good for devices that have limited bandwidth such as smartphones, etc. • From a business point of view, web API is more applicable for UI/UX, increases interest in the company's product and services, increases website traffic.
What is different between REST API and RESTful API?	REST (Representation State Transfer) API: It is basically an architectural style that makes productive use of existing technology and protocols of the web. It is a set of rules that developers need to follow when they develop their API or services that are scalable. It is used with HTTP protocol using its verbs such as GET, DELETE,

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	POST, PUT. RESTful API: It is simply referred to as web services executing such as architecture.
What are the advantages of using Rest in Web API?	REST is very important and beneficial in Web API because of the following reasons: • It allows less data transfer between client and server. • It is easy to use and lightweight. • It provides more flexibility. • It also handles and controls various types of calls, returning various data formats. • It is considered best for using it in mobile apps because it makes less data transfer between client and server. • It uses simple HTTP calls for inter-machine communication rather than using more complex options like CORBA, COM+, SOAP, or RPC.
What is REST and SOAP? What is different between them?	REST (Representational State Transfer): It is a new and improved form of web service. It describes the architectural style of networked systems. It does not require greater bandwidth when requests are sent to the server. It just includes JSON message. SOAP (Simple Object Access Protocol):

	It is a simple and lightweight protocol that is generally used for exchanging structured and typed information on the Web. It works mostly with HTTP and RPC (Remote Procedure Call). This protocol is mainly used for B2B applications one can define a data contract with it. SOAP messages are heavier in content and therefore use greater bandwidth.
What is XML and JSON?	XML (Extensible Markup Language): • It is especially designed to store and transport data. • It is similar to HTML but is more flexible than HTML because it allows users to create their own custom tags. • It is used for representing structured information such as documents, data, configuration, etc. JSON (JavaScript Object Notation): • It is a lightweight format designed to store and transport data. • It is easier to understand and is a standard text-based format used for representing structured data based on JavaScript object syntax. • It is faster and easier to use.
What are the differences between PUT and POST in REST?	PUT methods are used to request the server to store the enclosed entity in request. In case, the request does not

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	exist, then new resource has to be created. If the resource exists, then the resource should get updated. POST method is used to request the server to store the enclosed entity in the request as a new resource.
What are HTTP Status codes?	These are the standard codes that refer to the predefined status of the task at the server. Following are the status codes formats available: • 1xx - represents informational responses • 2xx - represents successful responses • 3xx - represents redirects • 4xx - represents client errors • 5xx - represents server errors Most commonly used status codes are: • 200 - success/OK • 201 - CREATED - used in POST or PUT methods. • 304 - NOT MODIFIED - used in conditional GET requests to reduce the bandwidth use of the network. Here, the body of the response sent should be empty. • 400 - BAD REQUEST - This can be due to validation errors or missing input data. • 401- UNAUTHORIZED - This is

	returned when there is no valid authentication credentials sent along with the request. • 403 - FORBIDDEN - sent when the user does not have access (or is forbidden) to the resource. • 404 - NOT FOUND - Resource method is not available. • 500 - INTERNAL SERVER ERROR - server threw some exceptions while running the method. • 502 - BAD GATEWAY - Server was not able to get the response from another upstream server.
What are the HTTP Methods?	HTTP Methods are also known as HTTP Verbs. They form a major portion of uniform interface restriction followed by the REST that specifies what action has to be followed to get the requested resource. Below are some examples of HTTP Methods: • GET: This is used for fetching details from the server and is basically a read-only operation. • POST: This method is used for the creation of new resources on the server. • PUT: This method is used to update the old/existing resource on the server or to replace the resource. • DELETE: This method is used to delete the resource on the server. • PATCH: This is used for modifying the resource on the

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	server. • OPTIONS: This fetches the list of supported options of resources present on the server. The POST, GET, PUT, DELETE corresponds to the create, read, update, delete operations which are most commonly called CRUD Operations. GET, HEAD, OPTIONS are safe and idempotent methods whereas PUT and DELETE methods are only idempotent. POST and PATCH methods are neither safe nor idempotent.