

QUIZ 3 – Java & Spring MVC

WEBD 5201 Web Development Frameworks

Name: _____

Student Id: _____

- 1) What does MVC stand for in the Spring MVC? (2 Marks)
 - a) Model-View-Controller
 - b) Model-View-Container
 - c) Managed-View-Container
 - d) Module-View-Controller
- 2) What annotation can be used to mention a controller in the Spring MVC? (2 Marks)
 - a) @Service
 - b) @Controller
 - c) @Component
 - d) @Repository
- 3) What is the purpose of the DispatcherServlet in SpringMVC? (2 Marks)
 - a) Handler HTTP requests and manage the flow control.
 - b) Handle HTTP requests and manage the application.
- 4) Which file is used to configure Spring MVC in the web application (2 Marks)
 - a) web.xml
 - b) applicationContext.xml
 - c) spring-config.xml
 - d) mvc-config.xml
- 5) what is the role of the @RequestMapping annotation in a SpringMVC controller? (2 Marks)
 - a) Maps a method to a specific HTTP request method.
 - b) Defines a request parameter.
 - c) Specifies a database query.
 - d) Marks a method as transactional
- 6) Describe the typical structure of a Spring MVC application, including the main components and their interaction (2 marks)

- 7) What is a microservice architecture, and how does it differ from a monolithic architecture (2 marks)
- 8) Describe the benefits and challenges associated with implementing a microservices architecture. (2 marks)
- 9) Explain the purpose of the `@PathVariable` annotation in a Spring MVC controller. Provide an example scenario where `@PathVariable` is used. (2 marks)
- 10) Explain the role of the `web.xml` file in a Java web application. Provide an example of a configuration commonly specified in the `web.xml` file. (2 marks)

- 11) Red Bank, a leading financial institution in Canada, is looking to enhance its ATM services. The bank operates a network of ATMs nationwide, serving a diverse customer base. As a senior developer at Red Bank, you are tasked with developing a modern ATM application using the Spring MVC framework. The application must support various functionalities, including cash withdrawals, balance inquiries, fund transfers, and receipt printing. Additionally, the bank wants to incorporate security features to protect customer transactions. Provide the Design and outline of the Spring MVC-based ATM application architecture for Red Bank. Highlight the key components and their responsibilities, considering the specific requirements of a banking ATM system. (20 Marks)

- 12) Highway 407 is a toll highway that wishes to modernize its toll collection system. The goal is to implement a backend system using the Spring MVC framework, incorporating microservices architecture to track vehicles and calculate toll charges efficiently. Develop a microservice to calculate toll charges based on the distance travelled, vehicle type, and applicable discounts. Ensure that toll charges are accurately calculated and recorded. Incorporate a user management system to handle user registration, authentication, and authorization. Users should be able to access their toll transaction history and account details. Design the toll collection system architecture using the Spring MVC framework and microservices. Clearly outline the responsibilities of each microservice, including how they communicate with each other and any external systems. (20 marks)

- 13) Park Canada, the national parks agency, wants to enhance the visitor experience by implementing a comprehensive park survey and reservation system. The system should allow users to view park information facilities and book campgrounds through a user-friendly interface. Develop a microservice architecture dedicated to managing park facilities. This includes camping grounds, hiking trails, and visitor centers. The microservice should handle reservations for camping grounds. Design a reservation workflow that allows users to search for parks, view available facilities, and make reservations for camping grounds. Implement features for checking availability, selecting dates, and confirming bookings. Using Spring MVC, outline the architecture for Park Canada's park survey and reservation system. Describe the roles and responsibilities of each microservice, how they interact, and the data flow during a typical campground reservation process. (20 marks)

14) Pearson Airport aims to enhance the traveller experience by providing a comprehensive flight tracking system. The system should include a dashboard that allows users to track live updates of flights arriving and departing from the airport. Users should be able to access information about delays and make informed decisions quickly. Implement a microservice to store and manage flight information, including flight number, airline, departure/arrival times, and current status. This microservice should expose APIs for retrieving live flight updates. Develop a front-end application using any framework to create a user-friendly dashboard. The dashboard should display a list of live flights with relevant details, including departure/arrival times, status, and any delays. Users should be able to search for specific flights and filter results based on different criteria. Design the architecture for Pearson Airport's flight tracking system using Spring MVC. Discuss how the front end interacts with the backend, particularly in obtaining live flight updates and handling user requests. (20 Marks)