



FEDERAL UNIVERSITY OF TECHNOLOGY, MINNA
SCHOOL OF INFORMATION AND COMMUNICATION TECHNOLOGY
DEPARTMENT OF INFORMATION AND MEDIA TECHNOLOGY

Time Allowed: 2 Hours Credit Unit: 3 Units

Course Lecturers: Dr I.O. Oyefolahan and Dr S.O. Ganiyu

INSTRUCTION: Answer Question ONE (1) and Any Other THREE (3) Questions

Question 1 (24 Marks) Compulsory

```
@Entity
@Table(name = "ADMIN")
@NameQueries({
    @NamedQuery(name = "Admin.findAll", query = "SELECT a FROM Admin a"),
    @NamedQuery(name = "Admin.findByAdminId", query = "SELECT a FROM Admin a WHERE
a.adminId = :adminId"),
    @NamedQuery(name = "Admin.findByUserName", query = "SELECT a FROM Admin a WHERE
a.userName = :userName"),
})
public class Admin implements Serializable {
    private static long serialVersionUID = 1L;
    @Id
    @Column(name = "ADMIN_ID")
    private Short adminId;
    @Column(name = "USER_NAME")
    private String userName;
    @Column(name = "PASSWORD")
    private String password;
    @OneToMany(name = "admin")
    private Collection<Accommodation> accommodationCollection;

    public Admin() {
    }

    public Admin(Short adminId) {
        this.adminId = adminId;
    }

    public Admin(Short adminId, String userName, String password) {
        this.adminId = adminId;
        this.userName = userName;
        this.password = password;
    }
}
```

Figure 1

Use the Snippet in Figure 1 to answer questions 1(a) to 1(e)

(a) How many columns do you expect the table referenced by Admin JPA entity to have? (1 mark)



- (b) Write the missing NamedQuery in the snippet. (1 mark)
 (c) Generate the getter and setter methods for:
 i. adminId (2 marks)
 ii. the established relationship in snippet. (2 marks)
 (d) Identify the three (3) syntax errors in the snippet. (3 marks)
 (e) What method must the Admin class override to fully implement Serializable interface? (1 mark)

Figure 2

Use Figure 2 to answer question 1(f) and (g)

- (f) What could be the possible reason for the error, after a user clicked the **Save** link? (2 marks)
 (g) Assume the label before each JSF component is the same as the id attribute for the component. Also, the target URL when the user clicks **Save** link is **update.xhtml**. Similarly, suppose the managed bean for the screenshot is called **IMTBean**.
 i. Write a simple, but reasonable JSF script for the screenshot presented in Figure 2. (5 marks)
 ii. Write a reasonable Managed bean called **IMTBean** that has a default scope for the JSF in (g)i above. (5 marks)
 (h) What is the name of the JSF web application as registered (or deployed) in the web application server? (2 marks)

Question 2 (12 Marks)

- (a) List the three (3) available table generation strategies in Java Persistence Architecture wizard. (3 marks)
 (b) Which of the three (3) table generation strategies will you adopt for a new project? (1 mark)
 (c) Why will you adopt the strategy for (b) above? (2 marks)
 (d) Why will you not adopt the strategy you chose in (b) above for use in existing project? (3 marks)
 (e) List three (3) of the ORM APIs that were implemented to overcome the limitations of J2EE Entity Beans. (3 marks)

Question 3

- (a) Give two short scenarios to justify the usefulness of library contract in JSF web application. (2 marks)
 (b) Explain @Entity and @Id annotations. (6 marks)
 (c) Describe @GeneratedValue with one example? (4 marks)

**Question 4 (12 marks)**

- (a) List and describe three (3) of the key generation types. (9 marks)
- (b) Why will you use Data Access Object (DAO) design pattern in your JSF web application project (3 marks)

Question 5 (12 marks)

- (a) Write all the four (4) entity relationship types supported by JPA API. (4 marks)
- (b) Group the relationships in 4(a) above according to lazy or eager fetching. (2 marks)
- (c) Explain the followings: (6 marks)
 - i. @NamedQueries
 - ii. @NamedQuery
 - iii. JPQL

Question 6 (12 marks)

- (a) Write three (3) of the J2EE web application frameworks that were used before JSF. (3 marks)
- (b) i. Briefly describe a facelet. (2 marks)
- ii. Discuss the columnClasses attribute of <h:panelGrid> (3 marks)
- (c) Explain the underlisted namespaces: (4 marks)
 - i. xmlns:h="http://xmlns.jcp.org/jsf/html"
 - ii. xmlns:f="http://xmlns.jcp.org/jsf/core"