Shahjalal University of Science & Technology

Institute of Information and Communication Technology
Discipline: Software Engineering
3rd Year 1st Semester Examination, 2020
Session: 2017-18
Course: **CSE 323** (Computer Networking)

Group A

Answer all the questions

1.

a.	Assume ten devices are arranged in a mesh topology. How many cables are needed? How many ports are needed for each device?	0.5
b.	Name two functions of transport layer.	0.5
c.	What is the meaning of response status code: 301 and 404?	0.5
d.	Write the IP address 16.5.2.10 with mask 255.255.255.128 in CIDR notation.	0.5
e.	What at the loop back address used in IPV4 and IPV6?	0.5

2.

a.	IP/Network layer provides best effort service- write two properties of best effort service. Write the name of another protocol which provides best effort service.	2.5
b.	TCP is not a secure protocol by itself. How can you make it secure?	2.5
c.	List the available residential access technologies in your city. For each type of access, provide the advertised downstream rate and upstream rate.	2.5

3.

Can frames collide with CSMA and how? What is the problem in CSMA that CSMA/CD is trying to resolve?   5

Group B

Answer all the questions

4.

a.	What are the additional layers in OSI model that are absent in TCP IP protocol suite?	0.5
b.	What is multicast transmission?	0.5
c.	Name two functions of physical layer.	0.5
d.	What is the purpose of the DHCP?	0.5
e.	Which control bit flags are used during the TCP 3-way handshake.	0.5

5.

a.	Why it is said that HTTP sends control in formation "in band"?	2.5
b.	What is the difference between a recursive query and an iterated query in the DNS?	2.5
c.	What is subnet mask? How many subnets can be gained by subnetting 172.17.32.0/23 into a /27 mask and how many usable host addresses will there be per subnet?	2.5

6.

Consider the E Commerce site- Daraz, that wants to keep a purchase record for each of its customers. Describe how this can be done with cookies.   5

Shahjalal University of Science and Technology
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3rd Year 1st Semester Final Examination (Session: 2017-18)
Course Code: SWE 321   Course Title: Software Architecture and Design Patterns

Group A
[Answer all the questions]

1) What is the motivation of Template pattern? What are the participant object of template pattern? Briefly explain the role of each participant object. Show an UML diagram and example code that demonstrate the use of template pattern. **6**

2) Consider a class TCPConnection that represents a network connection. A TCPConnection object can be in one of several different states: Established, Listening, Closed. When a TCPConnection object receives requests from other objects, it responds differently depending on itscurrent state. For example, the effect of an Open request depends onwhether the connection is in its Closed state or its Established state. **6**

Based on this behavior, state a solution applying appropriate design pattern. Mention the participants for the pattern and provide UML diagram.

3) Explain what the team Oddball Solution means, giving a short code or diagram example to illustrate the remedies. **3**

Group B
[Answer all the questions]

4) i) *"Talk to the interface, not to the concrete class"* ---Explain the statement with appropriate reasoning. **4**
ii) What does Delegation and Object Composition means?

5) Name two different patterns that are used to eliminate if else statement in code? Give an example each of these two patterns explaining how these patterns help eliminating if else statement. **4**

6) Imagine you are an executive chef who oversees a large chain of restaurants that serves pasta. In order to ensure that dishes at all the restaurant locations are consistent, instructions are provided for making popular dishes. The two most popular dishes are spaghetti with tomato sauce and meatballs, and penne noodles with alfredo sauce and chicken. **7**
Both dishes require that you boil water, cook the pasta, add the sauce, add the protein, and garnish the plate. Some of these steps have different implementation depending on which dish is being prepared – each dish has a different sauce, protein, and garnish. Other steps, however, would be the same, such as boiling the water.

Design the above mentioned system with appropriate design pattern. Draw the class diagram and write the code to support your design.

Shahjalal University of Science and Technology
Institute of Information and Communication Technology
BSc (Engg.) in Software Engineering 3rd year 1st Semester Final Exam, 2020
Course: SWE 327 (Database Management System)

Marks: 30; Credit: 3.0

PART A

Q.1. Consider the bank database of figure 1 and answer the following questions. (**2+3+10**)

branch(branch_name, branch_city, assets)
customer (customer_name, customer_street, customer_city)
loan (loan_number, branch_name, amount)
borrower (customer_name, loan_number)
account (account_number, branch_name, balance)
depositor (customer_name, account_number)

Figure 1: Banking Database

a) What are the appropriate primary keys?

b) Given your choice of primary keys, identify appropriate foreign keys.
c) Write the following query in SQL, using the bank schema.

    i. Find the name of all branches located in "Dhaka".
    ii. Find the names of all borrowers who have a loan in branch "Mirpur".
    iii. Find all loan numbers with a loan value greater than BDT100,000.
    iv. Find the names of all depositors who have an account with a value greater than BDT60,000.
    v. Find the names of all depositors who have an account with a value greater than BDT60,000 at the "Motejheel" branch.

PART B

Q.2. Answer of the following questions. (**7+3+5**)

a. Give a lossless-join, dependency preserving decomposition into 3NF of the following video library schema. Also explain each steps.

    member(membershipid, fullname, physicaladdress, saluation)

    movierented(membershipid, moviesrented)

b. Explain the difference between a weak and a strong entity set.

c. Design an E-R diagram for keeping track of the exploits of your favorite sports team. You should store the matches played, the scores in each match, the players in each match, and individual player statistics for each match. Summery statistics should be modeled as derived attributes.