

B.TECH - SEM - VII - IT - 2018



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VII [INFORMATION TECHNOLOGY]
SUBJECT: (IT710) E-COMMERCE AND E-SECURITY

Examination : Regular
Date : 26/11/2018
Time : 11.30 to 2.30pm

Seat No :
Day : Monday
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

SECTION - I

- Q.1** Do as directed. [10]
- (I) What are the two basic functions used in encryption algorithms? [2]
 - (II) What are the essential ingredients of a symmetric cipher?
 - (b) A message "COMPUTERNETWORK" encrypted (ignore quotes) using columnar transposition cipher with a key "LAYER". The encrypted message is _____ [2]
 - (c) The minimum positive integer p such that $3^p \text{ modulo } 17 = 1$ is _____
(A) 5 (B) 8 (C) 12 (D) 16
Show the calculation. [2]
 - (d) How many and which of the below statement(s) are true?
S1- MD5 is vulnerable to the Birthday attack.
S2- traceroute uses the "Destination port unreachable" ICMP error message.
S3- 3DES is a type of Public Key Encryption Algorithm.
S4- IPv6 has a 40-byte fixed header size (without Options fields). [2]
 - (e) Differentiate end-to-end & link encryption. [2]
- Q.2** Attempt *Any TWO* from the following questions. [10]
- (a) Explain S-DES algorithm with neat diagram and example. [5]
 - (b) Consider a Diffie-Hellman scheme with common prime $q=13$ and a primitive root $\alpha = 2$.
 - (I) Show that 2 is a primitive root of 13.
 - (ii) If a user A has a public key 9, What is A's private key?
 - (iii) If user B has public key 3, what is the shared secret key?[5]
 - (c) Explain SHA-1 algorithm with necessary diagrams. [5]
- Q.3** (a) Construct a Playfair matrix with the key "largest". Make a reasonable assumption about how to treat redundant letters in the key. And encrypt the following message:
Plain Text: Must see you over Cadogan West. Coming at once. [5]
- (b) Draw and explain HMAC structure. [5]
- OR**
- Q.3** (a) Write Fast exponentiation algorithm and use the algorithm to determine $5^{596} \text{ mod } 1234$. Show the steps involved in the computation. [5]
- (b) Explain Handshake protocol of Secure Socket Layer. [5]

SECTION - II

- Q.4 Do as directed.** [10]
- (a) What are the advantages of cipher block chaining over electronic code book? [1]
 - (b) Which one of the following algorithm is not used in asymmetric key cryptography? [1]
 - (A)RSA Algorithm
 - (B)Diffie-Hellman Algorithm
 - (C)Electronic Code Book Algorithm
 - (D)None of the above
 - (c) The total number of keys required for a set of n individuals to be able to communicate with each other using secret key and public key crypto-systems, respectively are: [2]
 - (A) $n(n-1)$ and $2n$
 - (B) $2n$ and $((n(n-1))/2)$
 - (C) $((n(n-1))/2)$ and $2n$
 - (D) $((n(n-1))/2)$ and n
 - (d) Justify your answer. [2]
 - (e) What are two problems with the one-time pad? [2]
 - (f) What is traffic padding and what is its purpose? [2]
 - (g) Define : 1) Security Parameter Index 2) Security Association [2]
- Q.5 Attempt Any TWO from the following questions.** [10]
- (a) Encrypt the following plain text using hill cipher: [5]
Key is:
$$\begin{bmatrix} 17 & 17 & 5 \\ 21 & 18 & 21 \\ 2 & 2 & 19 \end{bmatrix}$$
 - (b) What are the components of SET (Secure Electronic Transaction)? Draw and discuss how dual signature is constructed? [5]
 - (c) Explain any three block cipher modes of operation with proper diagram. Also mention the disadvantages and advantages. [5]
- Q.6** (a) Explain RSA Algorithm. A participant X uses two prime numbers $p=13$ and $q=11$ to generate his public and private keys. If the public key of X is 37. Find private key of X. If the message to be encrypted is 5 find the cipher text. [5]
- (b) Draw and discuss with diagram how kerberos provide a mechanism for interrealm authentication? [5]
- OR**
- Q.6** (a) Explain centralized key distribution scenario with proper figure and step by step explanation. [5]
- (b) Why network layer security is important? Explain security protocols used at network layer. [5]



Examination : *Regular*
Date : *27/11/2018*
Time : *11-30 to 2-30pm*

Seat No. :
Day : *Tuesday*
Max. Marks : *60*

INSTRUCTIONS:

1. Figures to the right indicate maximum marks for that question.
2. The symbols used carry their usual meanings.
3. Assume suitable data, if required & mention them clearly.
4. Draw neat sketches wherever necessary.

Section- I

Q.1 Do as directed.

- (a) How Output Cache dependency is useful and what is the use of Substitution Control. [2]
- (b) How to print the value of node selected by user in Treeview control. [2]
- (c) In Master page and content page whose page_load event gets executed first? Justify your answer. Explain importance of SOAP, WSDL in web service in brief. [2]
- (d) What is the importance of keywordFilter property in adrotator? [2]
- (e) Write the code to fill the dropdownlist using datasource. [2]

Q.2 Attempt *Any Two* from the following questions.

- (a) Explain validations control with all required properties [5]
 - 1) Required Field Validator
 - 2) Compare Validator
 - 3) Range Validator
- (b) Write down code to provide login functionality for a user. When user enter username and password into textboxes and press button this data will be validated with user table. If username and password matches with the entered data then user get message “successful login” else “Enter username and password again”. Structure of the user table (username varchar(20),password varchar(20)). [5]
- (c) Write a program using wizard control where Step 1(start) : select course from RadioButtonList Step 2 : Enter registration details Step 3(finish) : Display selected course and registration details using labels. [note: write .aspx and .cs file] [5]

Q.3 Attempt following questions.

- (a) Write down the program for calculator using CommandArgument and CommandName. Calculator provides four functions: +, -, * and /. Only two textbox for input and only all four button click will map with only single event. [5]
- (b) Explain life cycle of .aspx page in detail. [5]

OR

Q.3 Attempt following questions.

- (a) Write program using calendar control. [5]
 - 1) 9th May 2018 will display “Convocation Day”.
 - 2) Disable all the cells of week-end.
 - 3) Disable cell of 1st May 2018 because it is holiday.
- (b) Write down program using File Cache Dependency. A design have three buttons [5]
 - 1) Fill Cache: Event will create Dataset by reading xml file. This event also stores the dataset into Cache.
 - 2) Show Cache: Event will retrieve dataset from cache and display in Gridview.
 - 3) Clear Cache: Event will remove cache.

Also write the importance of File cache Dependency. Write appropriate .Xml file.

Section II

Q.4 Do as directed.

- (a) Explain MVC architecture in brief. [2]
- (b) What is importance of CLS and CTS in .net framework ? [2]
- (c) Explain Group property of Validators control and its importance? [2]
- (d) In Master page and content page whose page_load event gets executed first? Justify your answer. [2]
- (e) Explain importance of SOAP, WSDL in web service in brief. [2]

Q.5 Attempt Any Two from the following questions.

- (a) Write down login User control for following company problem:
A company has following requirement: company has 50 projects and all needs login. So company decided to create a user control for login. Login User control contains username and password textbox and one Login button. Event of Login button will validate the user with database. Here for every project have different database name, relation name, attribute for username and password in relation have different name. These four properties of user control are set by user in page_load of .aspx file where this user control will use and accordingly the validation will perform by user control.
Write down .cs file of user control. [5]
- (b) Explain the web service where consumer of the web service will pass the employee id and web service will return the dataset of employee whose employee id pass by consumer of the web service. Consumer of the web service will display the retrieved employee record in Grid View control. Employee (emp_id numeric, emp_name varchar, emp_Salary numeric). Write web service part along with consumer part. [5]
- (c) Write down the chat application using application object. [5]

Q.6 Attempt all of the following questions.

- (a) Write a login application using MVC architecture where user enter username and password in textboxes and it will match with attributes u_name and pwd in student relation. Structure of student relation (stu_id, u_name, pwd). Properly write model,view and controller for this application. [5]
- (b) Explain Master page and its use in details with example. [5]

OR

Q.6 Attempt all of the following questions.

- (a) Explain following state management techniques with example [5]
 - 1) Session Management
 - 2) Cookie Management
 - 3) Query String Management
- (b) Write a code to satisfy following requirements [1 to 4] and write answer of 5 separately. [5]
 - 1) upload a file have extension : .png, .jpeg, .tiff types
 - 2) allow to upload file with Maximum file size is 1500 MB
 - 3) Check whether file upload control has files to upload
 - 4) Save the uploaded file
 - 5) How can prevent execution of section of code written in page_load ?



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VII [Information Technology]
SUBJECT: (IT 715) Distributed Computing

Examination : Regular
Date : 28/11/2018
Time : 11.30 to 2.30pm

Seat No :
Day : Wednesday
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
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5. Draw neat sketches wherever necessary.

SECTION - I

Q.1 Do as directed.

- (a) Draw and Discuss the working of Mobile Agent Paradigm. Also Discuss its significance. [2]
- (b) What Happens when write () system call is executed from our TCP program in context of socket programming? [2]
- (c) Differentiate the MSS, MSL and Advertise Window with proper justification. [2]
- (d) Explain the concept of memory mapped file in brief. [2]
- (e) List out the functions used for locking and unlocking of semaphore with proper example. [2]

Q.2 Attempt Any TWO from the following questions.

- (a) Differentiate the Iterative and Concurrent Servers in term of their working in context of Socket Programming. Also write code snippet for implementing the concurrent server. [5]
- (b) Create web-service for finding area of Triangle using contract first approach. [5]
- (c) Discuss following paradigm 1) Publish – Subscribe 2) Message Oriented Middleware 3) Object Space [5]

Q.3 Attempt following Questions.

- (a) Discuss the various error conditions that may occur while connect() system call is called in context of TCP client-server program, implemented using C language. Also write code snippet to read those error code. [5]
- (b) Implement echo client -server program using FIFO in C Language. [5]

OR

Q.3 Attempt following Questions.

- (a) Implement the System Logger application using POSIX shared memory. Both client and server processes maps shared memory to its address space. When a client wants to log a message, it creates a string in the format <client pid><timestamp><message> and writes the string in the shared memory object. The server reads strings from the shared memory object, one by one, and writes them in a log file [5]
- (b) Implement Echo client-server program using UDP protocol in C Language. [5]

SECTION – II

- Q.4 Do as directed.** [10]
Why SOAP is used as a protocol for accessing a web service: [2]
- (a) (i) SOAP is platform and language independent, allows to get around firewalls, (ii)
SOAP is based on HTML, (iii) SOAP is designed to communicate through LAN,
(iv) All of the above [2]
- (b) List and Differentiate the two approaches for the web service composition. [2]
- (c) Draw Hour Glass Model for Grid [2]
- (d) What is ESB? Write down services provided by ESB. [2]
- (e) Listout advantages of webservice over RMI and CORBA paradigm. [2]
- Q.5 Attempt Any TWO from the following questions.** [10]
- (a) Discuss the Whitespace , minoccurred and maxoccurred, and pattern restriction over XMLSchema document with proper example. Also write associated XML Document. [5]
- (b) What is SOA Governance ? How it Manages the Services? Also discuss various phases of SOA governance life cycle. [5]
- (c) Draw and discuss layered diagram showing architecture of CORBA. Explain the roles and responsibilities of each layer. [5]
- Q.6 Attempt following Questions.** [10]
- (a) Implement echo client -server program using CORBA. Write down step to run the program. [5]
- (b) Write down functional and non-functional requirements of peer-peer systems. [5]
- OR**
- Q.6 Attempt following Questions.** [10]
- (a) Write down steps for implementing BPEL process to get solution of Cos(a/b).
1. Create two separate web services one for Division operation and second for Finding Cos value of input. [3]
2. Give BPEL process, involved activities and their sequences and mapping of Variables [3]
3. Write down steps to use BPEL process as a web service. Also give implementation of client [2]
- (b) Write down the definition of GridService. [2]



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VII [I.T.]

Examination
Date
Time

SUBJECT: (IT 704) DATA ANALYSIS AND INFORMATION EXTRACTION

: Regular
: 29/11/2018
: 11-30 to 2.20 pm

Seat No :
Day : Thursday
Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

SECTION - I

- Q.1 Do as directed.** [10]
- (a) Describe the terms spatial databases and temporal databases in brief. [2]
 - (b) What do you mean by a predictive accuracy of a method? Explain with example. [2]
 - (c) What is concept description? Explain the various types. [2]
 - (d) Explain the following:
Age(X, "20...29") and income(X, "20K...29K") => buys(X, "CD player")
[support = 2%, confidence = 60%] [2]
 - (e) Calculate number of cuboids for 8 dimensions and each dimension has 5 levels. [2]
- Q.2 Attempt Any TWO from the following questions.** [10]
- (a) Explain various OLAP operations in brief. [5]
 - (b) Propose a concept hierarchy for the attributes address, status, major and GPA. Also state what kind of concept hierarchy it is. [5]
 - (c) Explain KDD process with proper diagram. [5]
- Q.3** (a) Suppose that a data warehouse consists of the four dimensions date, spectator, location and game, and the two measures count and charge.
a) Draw a star schema diagram for the data warehouse.
b) Starting with the base cuboid [date, spectator, location, game], what specific OLAP operations should one perform in order to list the total charge paid by student spectators at GM_Place in 2000?
[5]
- (b) Explain BIRCH method of clustering approach. [5]

OR

- Q.3** (a) Explain the algorithm of decision tree induction with example.
[5]
(b) Consider the following data: [5]

Target class(graduate students)		Contrasting class(under-graduate students)	
GPA	Count	GPA	Count
Very_good	16	Very_good	18
Excellent	12	Fair	20
Excellent	18	Fair	22
Excellent	25	Fair	24
Excellent	21	Very_good	22
Excellent	18	excellent	24

Find out whether the attribute GPA is task relevant or not if the minimum information gain threshold is 0.4.

SECTION - II

- Q.4 Do as directed.** [10]
- (a) Explain the five parameters of a box plot. [2]
 - (b) Mention hash based technique for improving Apriori algorithm. [2]
 - (c) Explain market basket analysis with an example. [2]
 - (d) Is Prediction same as Classification? If YES, justify by giving examples. If NO, highlight the differences. Describe what is clustering? State some of the applications. [2]
 - (e) What is the difference between PAM and CLARA? Which one is better? [2]

Q.5 Attempt **Any TWO** from the following questions. [10]

- (a) Explain dimensionality reduction methods for data reduction. [5]
- (b) Explain the algorithm of attribute-oriented induction. Give an appropriate example. [5]
- (c) Explain the genetic algorithm and fuzzy logic approach in the classification. [5]

Q.6 (a) The following contingency table summarizes supermarket transaction data. [5]

	Hotdogs	hotdogs
hamburgers	2000	500
hamburgers	1000	1500

a) Suppose that the association rule “hot dogs=>hamburger” is mined. Given a minimum support threshold of 25% and a minimum confidence threshold of 50%, is this association rule strong?

b) Based on the given data, is the purchase of hot dogs independent of the purchase of hamburger? If not, what kind of correlation relationship exists between the two?

- (b) Explain DBSCAN method of clustering approach.

OR

Q.6 (a) Explain DENCLUE method of clustering approach. [5]

(b) The following data represent the sales(in hundreds of thousands of dollars) for two outdoor furniture outlets for the last ten years: [5]

Year	Outlet(A)	Outlet(B)	Year	Outlet(A)	Outlet(B)
1	118	95	6	143	145
2	114	100	7	147	160
3	130	118	8	158	181
4	125	124	9	149	190
5	140	130	10	161	205

(a) Calculate the regression coefficients for data for both outlets.

(b) How does the average yearly change in sales differ from one outlet to another?



DHARMSINH DESAI UNIVERSITY, NADIAD
FACULTY OF TECHNOLOGY
B.TECH. SEMESTER VII [IT]
SUBJECT: (IT714) KNOWLEDGE SYSTEM

Examination : Regular Seat No : _____
Date : 30/11/2018 Day : Friday
Time : 11-30 to 2.30pm Max. Marks : 60

INSTRUCTIONS:

1. Answer each section in separate answer book.
2. Figures to the right indicate maximum marks for that question.
3. The symbols used carry their usual meanings.
4. Assume suitable data, if required & mention them clearly.
5. Draw neat sketches wherever necessary.

SECTION – I

- Q.1 Do as directed.** [10]
- (a) What is symmetric and anti-symmetric fuzzy relation? [2]
 - (b) Statements: All mangoes are golden in color. No golden-colored things are cheap. [2]
Conclusions:
 - (I) All mangoes are cheap.
 - (II) Golden-colored mangoes are not cheap.Which of the given conclusions/conclusion are/is true or false?
 - (c) For the following prolog code, what will be the output if We write 'a' in goal. Show the trace. [2]
a :- b , c , ! , d.
b.
c :- b, e, write("Hello").
c :- b, f.
d.
f:-write("This is what you want to print").
 - (d) What is Means-End-Analysis? How does it work? [2]
 - (e) How will we know if we have succeeded to build an AI? [2]
- Q.2 Attempt Any TWO from the following questions.** [10]
- (a) Apply MiniMax algorithm with alpha-beta pruning on a tree given in Figure 1. [5]
Clearly show alpha or beta cuts.
 - (b) Give Conceptual dependencies representations of following sentences:
 1. Since smoking can kill you, I stopped. [2]
 2. While going home I saw frog. [2]
 3. John slapped Bill. [1]
 - (c) Consider the graph shown below in figure2, where the numbers on the links are link costs. Note that the arcs are undirected (Traverse in alphabetical order). Let A be the start state and G be the goal state. Find the solution path using Depth first search and breadth first search. Calculate the cost and compare. [5]
- Q.3** (a) Solve a given cryptarithmatic problem. [8]
m o t h e r + f a t h e r = p a r e n t
(b) What is use of fail predicate and cut predicate in prolog? [2]

OR

- Q.3** (a) How does Simulated annealing algorithm work? Write the algorithm and explain. [4]
(b) Represent the given sentences using predicate logic and prove using resolution that "Mary does not like John." [6]

1. Anyone whom Mary likes is a football star.
2. Any student who does not pass does not play.
3. John is a student.
4. Any student who does not study does not pass.
5. Anyone who does not play is not a football star.
6. John does not study.

SECTION – II

- Q.4 Do as directed.** [10]
- What is difference between Monotonic and non monotonic reasoning? Give examples. [2]
 - For the given problems describe good heuristics. [2]
 - 1.Eight tile puzzle 2. tic-tac-toe
 - Give one example and explain work of Generate and test algorithm. [2]
 - Consider the following statements:
 P : Honest people are not cheater.
 Q: Cheater people are not honest.
 L: P implies Q M: P is equivalent to Q
 Which of the given propositions (L , M) are/is true or false? [2]
 - What are the two requirements of a good control strategy? [2]
- Q.5 Attempt Any TWO from the following questions.** [10]
- What are the components of NLP? Explain phases of it in brief. [5]
 - Why do we need partitioned Semantic network? Represent the following statement using it.
 “Tommy the dog killed Danny the monkey.” [5]
 - What is an expert system? Take one example and explain its components. [5]
- Q.6**
- You are sitting in a classroom and you thought to build a fuzzy control system which can automatically manage the speed of the ceiling fan in it.
 List out the variable you will take in consideration.
 Define fuzzy sets for those variables.
 Write the rules for inference engine of your fuzzy control system. [6]
 - Apply A-star algorithm on the graph given in figure 3. S is the start node and T is the goal node. Heuristic values are given with each node in circle and actual costs are given on each edge. Keep track of open nodes and closed nodes [4]
- OR**
- Q.6**
- What is Bayesian belief Network? [2]
 How can we deal with uncertainty using it? Take one example explain. [4]
 - Compare Best first search and Hill climbing algorithms based on their work strategy and completeness. [4]

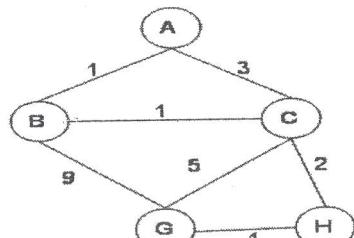


Figure 2

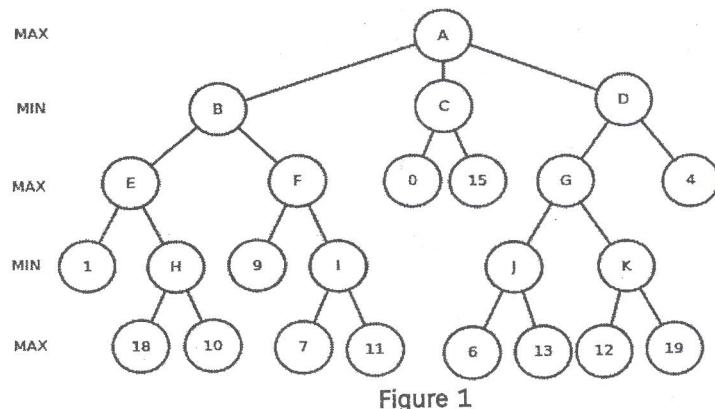


Figure 1

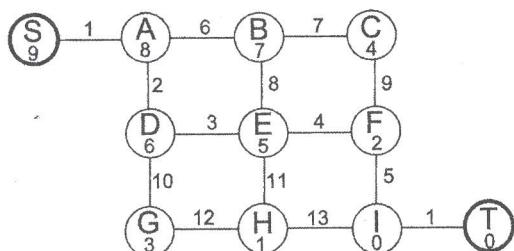


Figure 3