King Saud University

College of Computer and Information Sciences
Information Systems Department

Course Code/Title: IS466 (Decision Support System)
TOTAL MARKS: 15
Exam: **Midterm I** **Semester / Year**: Spring 2016-17
Exam date: April 17, 2017
Time Allowed: 1.0 Hours

Student ID: _____ Name: _____

EXAM POLICY&ETHICS:

- Read the paper carefully, should have any query be asked within first 15 minutes.
- Closed-book exam, no course-related papers are allowed.
- During examination, any form of communications with peer students is strictly forbidden.
- Students will not be allowed to attend the exam if arrived 20 minutes after the exam starts.
- Mobile phones should strictly be off.

QUESTIONS/ Questions TOTAL STUDENT OUTCOMES: This exam covers the following student outcomes (SOs):

Outcomes Covered	Questions	TOTAL
	Question 1 Part A	**__ / 2= /5**
	Question 2 Part A	**__ / 2= /4**
	Question 1	**/2**
	Question 2	**/4**
	Total	**/15**

FEEDBACK SUMMARY:

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Part A: (9 marks) consist of two questions.
Question No. 1 (5 marks): Select the correct answer as True/False. TTFTF TFTTF

1. **[T/F] Metadata** describe the structure and meaning of the data, contributing to their effective use. True
2. **[T/F] Dimensional** modeling is a retrieval-based system that supports high-volume query access. True
3. **[T/F]** Knowledge-based management subsystems does not provide intelligence to augment the decision maker's own intelligence. False
4. **[T/F]** Group communication and **collaboration** involves decision makers who are likely to be in different locations. TRUE
5. **[T/F]** Fact constellation data modelling involves dimensional hierarchy in which each level represent one table. False
6. **[T/F]** In a four-step process for decision making, managers construct a model of the problem before they evaluate potential solutions. True
7. **[T/F]** Data warehouses are subsets of data marts. False
8. **[T/F]** Visualization differs from traditional charts and graphs in complexity of data sets and use of multiple dimensions and measures. True
9. **[T/F]** One way an operational data store differs from a data warehouse is the summarize of their data. True
10. **[T/F]** A well-designed data warehouse means that user requirements do not have to change as business needs change. False

Question No. 2 (4 marks): Select the appropriate answer from multiple choice questions.

1. A DSS application can employ a data management subsystem, a model management subsystem, a user interface subsystem, and a(n) _____.
   (i) Internet, intranet, extranet
   (ii) **knowledge-based subsystem**
   (iii)Other computer based systems
   (iv)None of above

2. When querying a dimensional database, a user went from summarized data to its underlying details. The function that served this purpose is
   (i) slice
   (ii) roll-up
   (iii)**drill down**
   (iv)dice

3. A search for alternatives occurs in which phase of the decision making/action model?
   (i) the intelligence phase
   (ii) the implementation phase
   (iii)the choice phase
   (iv)**the design phase**

4. The knowledge-based management subsystem can be interconnected with the organization's knowledge repository, which is sometimes called the _____.
   (i) **organizational knowledge base**
   (ii) data management
   (iii)knowledge-based subsystem
   (iv)all of above

5. Which of the following activities permeates nearly all managerial activity?
   (i) planning
   (ii) **decision-making**
   (iii)directing
   (iv)controlling

6. Operational or transaction databases are product oriented, handling transactions that update the database. In contrast, data warehouses are:
   (i) **subject-oriented and nonvolatile.**
   (ii) subject-oriented and volatile.
   (iii)product-oriented and nonvolatile.
   (iv)product-oriented and volatile.

7. In which stage of extraction, transformation, and load (ETL) into a data warehouse are irregularities detected and corrected?
   (i) load
   (ii) transformation
   (iii)**cleaning**
   (iv)extraction

8. When representing data in a data warehouse, using several dimension tables that are each connected only to a fact table means you are using which warehouse structure?

(i) relational schema
(ii) dimensional schema
(iii)**star schema**
(iv)snowflake schema

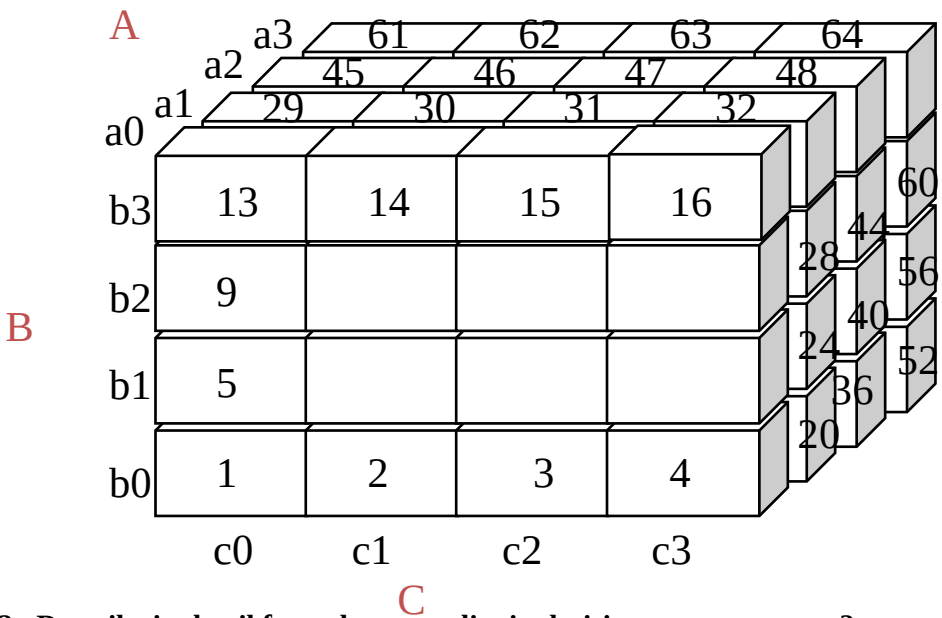
Part B: (6 marks) consist of three questions, each of 3 marks.

1. a. (1pts) What is multi-way array aggregation for cube computation?

Compute aggregates in "multiway" by visiting cube cells in the order (1) which minimizes the # of times to visit each cell, and (2) reduces memory access and storage cost.

b. (2pts) Let us consider the following data cube where size(A) = 4000, size(B) = 400 and size(C) = 40. The size of each chunk of A, B and C are respectively 1000, 100 and 10. What is the best order among 1,2,3,4,5,6,7,… and 1,17,33,49,5,21,37,35 to scan chunks in cuboids computation?

In order to avoid bringing 3-D chunk into memory more than once the minimum memory requirement for holding 2-D plans according to chunk ordering of 1 to 64 is
40*400 (for BC)
+ 40*1000 (for one row of AC)
+ 100 * 1000 (for one chunk of AB) = 156 000
If the chunk ordering is 1,17,33,49,5,21,37,53,…the memory requirement is
400*4000 (for AB)
+ 10*4000 (for one row of AC)
+ 10*100 (for one chunk of BC) = 1 641 000
The best traversing is from 1 to 64



2. Describe in detail four phases applies in decision support system?

Intelligence phase
  Reality is examined
  The problem is identified and defined
Design phase
  Representative model is constructed
  The model is validated and evaluation criteria are set
Choice phase
  Includes a proposed solution to the model
  If reasonable, move on to the
Implementation phase
  Solution to the original problem
  Failure: Return to the modeling process