**THE HONG KONG ASSOCIATION FOR COMPUTER EDUCATION**

**INFORMATION AND COMMUNICATION TECHNOLOGY**

**MOCK EXAMINATION 2018**

**PAPER 2 (A)**

**MARKING SCHEME**

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|  |  |  |  |
| --- | --- | --- | --- |
| 1 | (a) | SELECT COUNT(\*) FROM VIDEO V , USER U  WHERE V.P\_ID = U.P\_ID  AND P\_DATE BETWEEN #1/7/2017# and #31/7/2017#  AND P\_NAME LIKE “Chan%”  ① for COUNT(\*), ① for joining condition,  ① for BETWEEN #1/7/2017# and #31/7/2017# and P\_NAME LIKE “Chan%” | 1  1  1 |
|  | (b) | SELECT P\_ID from VIDEO WHERE LENGTH = (SELECT  MAX(LENGTH) FROM VIDEO) | 1  1 |
|  | (c) | SELECT P\_NAME FROM USER WHERE P\_ID NOT IN  (SELECT P\_ID FROM VIDEO)  Alternative:  SELECT P\_NAME FROM USER U  LEFT JOIN VIDEO V ON V.P\_ID = U.P\_ID ①  WHERE U.PID IS NULL ① | 1  1 |
|  | (d) | SELECT LOCATION, SUM(VIEWS)  FROM VIDEO AS V, USER AS U  WHERE V.P\_ID = U.P\_ID  GROUP BY LOCATION  ORDER BY SUM(VIEWS) DESC | 1  1  1  1 |
|  | (e) | 1. S145789   S214579   1. Find the User ID of the user who will view the video using more than one device and   the user who will view the video from more than one location. | 1  1  1  1 |
| 2 | (a) | CREATE TABLE EXAM (  SID CHAR(7),  SUBJECT CHAR(4),  MARK NUMERIC(2) ) | 1  1 |
|  | (b) | ALTER TABLE STUDENT  ALTER COLUMN CNAME CHAR(30) | 1  1 |
|  | (c) | 1. CREATE INDEX I\_SID ON   EXAM(SID)   1. Improve the searching speed. | 1  1  1 |
|  | (d) | UPDATE EXAM  SET MARK = MARK + 2  WHERE SID in (SELECT SID FROM STUDENT WHERE CLASS = ‘3A’) | 1  1 |
|  | (e) | 1. SID 2. No, referential integrity was ensured by the foreign key /   All the SID in EXAM should refer to the SID in STUDENT | 1  1 |
|  | (f) | 1. (1) The processing time of queries for the data of a particular year will decrease.   (2) No need to join different tables in the queries, which made the SQL commands simpler.   1. The field, School year, should be added for both tables, STUDENT and EXAM to indicate years of the records.   The field, Active, should be added for STUDENT to show whether the students still study in the school. | 1  1  1  1 |
| 3 | (a) | primary key : ProductNo + ShopID | 1 |
|  | (b) | Table 　　SHSTOCK  Foreign key ProductNo , ShopID | 1 |
|  | (c) | The ProductNo in SHSTOCK is a foreign key references the ProductNo in the table Product. /  Modification to ProductNo in table PRODUCT should be prohibited if it is being referenced by a foreign key. /  Deletion of a record in the PRODUCT table is allowed only when the corresponding record in SHSTOCK has been deleted.  (any reasonable answer) | 1 |
| 3. | (d) | The field selling\_price is a derived attribute. The field depends on the value of another field . For instance, selling\_price=cost\*2.5. (Derived attribute + explanation) | 1 |
|  | (e)  (e) | 1. Move the field selling\_price to the table SHSTOCK. So the field selling\_price can vary in different values according to shop's location. 2. @pair of cardinality and participation constraint   @Name of entity  SHOP  PRODUCT  EMPLOYEE  is assigned  is managed by  sells  Diagram 1  圖1  1  1  1  M  M  N | 1  1 x 3  1 x 2 |
|  | (f) | 1. There is multi-valued attribute (Need to specify the field) in the table ORDERS. So the table ORDERS is not in first normal form (1 NF). 2. ORDER ( Order\_id, address, Customer\_id)   CUSTOMER ( Customer\_id, name)  OrderDetails ( Order\_id, Good\_id, Quantity)  GOOD( Good \_id, Description, Price)  *\* deduct 1 mark for not underlining any primary key* | 1  1  1  1  1 |
| 4. | (a) | database administrator, maintenance and monitoring of database  database designer, design table structure and constraints  data entry operator, input data into database  system analyst, define system requirement, database design  programmer, coding / application development  database developer, develop SQL commands  (any one pair of personnel and corresponding duty) | 1 + 1 |
|  | (b) | 1. Design   Problem Analysis  Testing   1. Advantages:  * Improved productivity in development * Improved quality through automated checking * Automatic preparation and update of documentation * Encouragement of prototyping and incremental development * Automatic preparation of program code from requirements definition * Reduced maintenance systems   Disadvantages:   * Need for specialized training * Limitations in flexibility of documentation * Inadequate standardization * Slow implementation * Unrealistic expectations   (Sources: <http://databasemanagement.wikia.com/wiki/CASE_Tools> ) | 1  1  1  1  1 |
|  | (c) | 1. Report,   It output the summarized information from database.   |  |  |  |  | | --- | --- | --- | --- | |  |  | Update of customer information |  | |  |  | |  |  | | --- | --- | | CustomerID: |  |  |  |  | | --- | --- | | Name: |  |  |  |  | | --- | --- | | No. of purchases: |  |  |  |  | | --- | --- | | Month: |  |  |  |  | | --- | --- | | Amount: |  | |  |   ① for including all fields, ① for reasonable layout | 1 + 1  2 |
|  |  | 1. Sum / count function   Find the customers with expanded most / the largest number of purchase | 1  1 |
|  | (d) | No, the customer information should be used by Mary’s company only. / privacy reason | 1 + 1 |