SULIT

POLITEKNIK
Jabatan Pengajian Politeknik

BAHAGIAN PEPERIKSAAN DAN PENILAIAN
JABATAN PENGAJIAN POLITEKNIK
KEMENTERIAN PENDIDIKAN MALAYSIA

JABATAN KEJURUTERAAN ELEKTRIK

PEPERIKSAAN AKHIR

SESI JUN 2013

EC601: DATABASE SYSTEM

TARIKH : 23 OKTOBER 2013
TEMPOH : 2 JAM (2.30 – 4.30 PM)

Kertas ini mengandungi **EMPAT BELAS (14)** halaman bercetak.
Bahagian A: Struktur (10 soalan)
Bahagian B: Esei (3 soalan)

JANGAN BUKA KERTAS SOALAN INI SEHINGGA DIARAHKAN

(CLO yang tertera hanya sebagai rujukan)

SECTION A : 40 MARKS

BAHAGIAN A : 40 MARKAH

INSTRUCTION:

This section consists of **TEN (10)** structured questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **SEPULUH (10)** soalan berstruktur. Jawab semua soalan.*

CLO1
C1

QUESTION 1

Identify any **FOUR (4)** main components of a database system environment.

*Kenalpasti mana-mana **EMPAT (4)** komponen utama dalam persekitan sistem pangkalan data.*

[4 marks]
[4 *markah*]

CLO1
C1

QUESTION 2

List **FOUR (4)** types of users in a database system.

*Senaraikan **EMPAT (4)** jenis pengguna dalam Sistem Pangkalan Data.*

[4 marks]
[4 *markah*]

CLO1
C1

QUESTION 3

Give the purpose of the following Tool Facilities in Database System.

i. CASE (Computer-aided Software Engineering) tools.

ii. Data Dictionary .

Berikan kegunaan bagi Kemudahan Perkakasan berikut dalam Sistem Pangkalan Data.

i. CASE (Computer-aided Software Engineering) tools .

ii. Data Dictionary .

[4 marks]
[4 *markah*]

CLO1
C4

QUESTION 4

"Patients are treated in a single ward by the doctors assigned to them. Usually each patient will be assigned a single doctor, but in rare cases they will have two. Heathcare assistants also attend to the patients, a number of these are associated with each ward."

From the statement above, identify the entity and the relationship between all the entity.

"Pesakit-pesakit yang di rawat dalam satu wad diberikan seorang doktor .Biasanya setiap pesakit di berikan seorang doktor, tetapi untuk kes-kes tertentu mereka di berikan dua orang doktor. Pembantu Heathcare juga akan berada bersama pesakit, bilangannya adalah bergantung kepada setiap wad."

Daripada kenyataan di atas, kenalpasti entiti dan hubungan antara semua entiti.

[4 marks]
[4 *markah*]

CLO1
C3

QUESTION 5

Draw an E-R diagrams with attributes and entities for the following :

Customers identified by a CUSTOMER_NAME and with an ADDRESS buy items, items are identified by an ITEM_NO and have a COLOR. The QTYBOUGHT of an item by each customer is recorded. An item can be bought by many customers.

Lukiskan Rajah E-R dengan atribut dan entiti seperti berikut :

Pelanggan yang dikenalpasti sebagai CUSTOMER_NAME dengan ADDRESS pembelian item, di mana item dikenalpasti sebagai ITEM_NO yang mempunyai COLOR. QTYBOUGHT bagi item yang dibeli oleh setiap pelanggan di rekodkan. Setiap item boleh dibeli oleh ramai pelanggan.

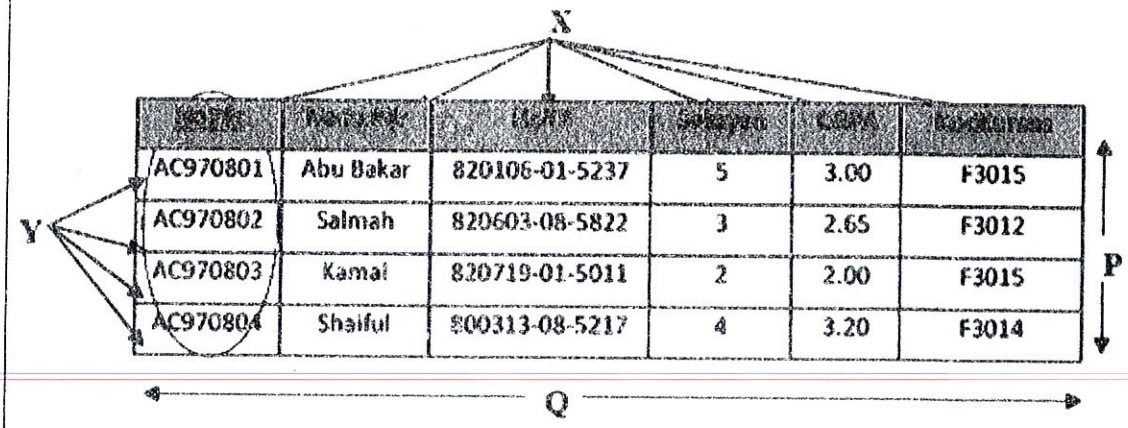
[4 marks]
[4 *markah*]

CLO1
C1

QUESTION 6

Based on Table A1 : PELAJAR, identify each P, Q, X and Y .

Berpandukan kepada Jadual A1 : PELAJAR , tentukan P, Q, X dan Y.



[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
AC970801	Abu Bakar	820106-01-5237	5	3.00	F3015
AC970802	Salmah	820603-08-5822	3	2.65	F3012
AC970803	Kamal	820719-01-5011	2	2.00	F3015
AC970804	Shaiful	800313-08-5217	4	3.20	F3014

Table A1: PELAJAR

[4 marks]
[*4 markah*]

QUESTION 7

Use the Staff table in Table A2 to answer Question 2a and 2b.

CLO1
C3

a) By using relational algebra, write a syntax to list all staff with a salary greater than RM20,000

CLO1
C3

b) Build the table resulting from Question 2a.

Rujuk jadual Staf bagi menjawab soalan 2a dan 2b.

a) *Dengan menggunakan algebra hubungan, tuliskan sintaks pertanyaan untuk menyenaraikan semua staf yang berpendapatan lebih dari RM20,000.*

b) *Bina jadual hasil keluaran bagi Soalan 2a.*

Staff

staffNo	fName	lName	Position	DOB	Salary	branchNo
SL21	John	White	Manager	1/10/45	30000	B005
SG37	Ann	Beech	Assistant	10/11/60	12000	B003
SG14	David	Ford	Supervisor	24/3/68	18000	B003
SA9	Mary	Howe	Assistant	19/2/70	9000	B007
SG5	Susan	Brand	Manager	3/6/40	24000	B003
SL41	Julie	Lee	Assistant	13/6/65	9000	B005

Table A2 : Staff Table

[4 marks]
[*4 markah*]

CLO1
C4

QUESTION 8

Subject

Name	Course
Systems	BCS
Database	BCS
Database	MCS
Algebra	MCS

Subject2

Name	Course
DataMining	MCS
Database	MCS
Systems	BCS
Writing	BCS

Table A3

Refer to the Table A3 , deduce the result using the relational algebra operator below:
Merujuk kepada Jadual A3, terbitkan hasil keluaran dari hubungan operator algebra di bawah.

a) Subject U Subject2

b) Subject ∩ Subject2

[4 marks]
[*4 markah*]

QUESTION 9

CLO1
C3

Sketch the data model schema and data model instance based on the following SALES RECORD DATABASE of ABC Manufacturing Company below;

Lakarkan skema model data dan kejadian model data berdasarkan PANGKALAN DATA REKOD JUALAN untuk Syarikat ABC Manufacturing seperti di bawah:

PRODUCT – PRO_ID, PRO_DECS, UNIT_COST

CUSTOMER – CUST_ID, CUST_NAME, CUST_HP.[CLO1]

[4 marks]
[4 markah]

CLO1
C3

QUESTION 10

Build the SQL command to insert a new record containing information which is "EC601", "Database System", "2" to COURSE table as in Table A4.

Bina arahan SQL untuk memasukkan satu rekod baru yang mengandungi maklumat iaitu "EC601", "Database System"," 2" ke dalam jadual COURSE seperti dalam Jadual A4.

COURSE

CourseCode	CourseName	Credit

Table A4: COURSE

[4 marks]
[4 markah]

SECTION B : 60 MARKS

BAHAGIAN B : 60 MARKAH

INSTRUCTION:

This section consists of **THREE (3)** essay questions. Answer **ALL** questions.

ARAHAN:

*Bahagian ini mengandungi **TIGA (3)** soalan esei. Jawab **SEMUA** soalan.*

QUESTION 1

SOALAN 1

CLO1
C1

a) Distinguish between data and information.

Bezakan di antara data dan maklumat

[2 marks]
[2 markah]

b) Data Definition Language (DDL) and Data Manipulation Language (DML) are two types of database language.

'Data Definition Language' (DDL) dan 'Data Manipulation Language' (DML) adalah dua jenis bahasa yang terdapat dalam pangkalan data.

CLO1
C1

i. Write down TWO (2) examples of Data Definition Language (DDL)

Tuliskan DUA (2) contoh 'Data Definition Language' (DDL).

[2 marks]
[2 markah]

CLO1
C1

ii. Write down THREE (3) examples of Data Manipulation Language (DML)

Tuliskan TIGA (3) contoh 'Data Manipulation Language' (DML)

[3 marks]
[3 markah]

c) Figure B1 illustrate a Database System Environment.
Rajah B1 mengambarkan persekitaran sistem pangkalan data.

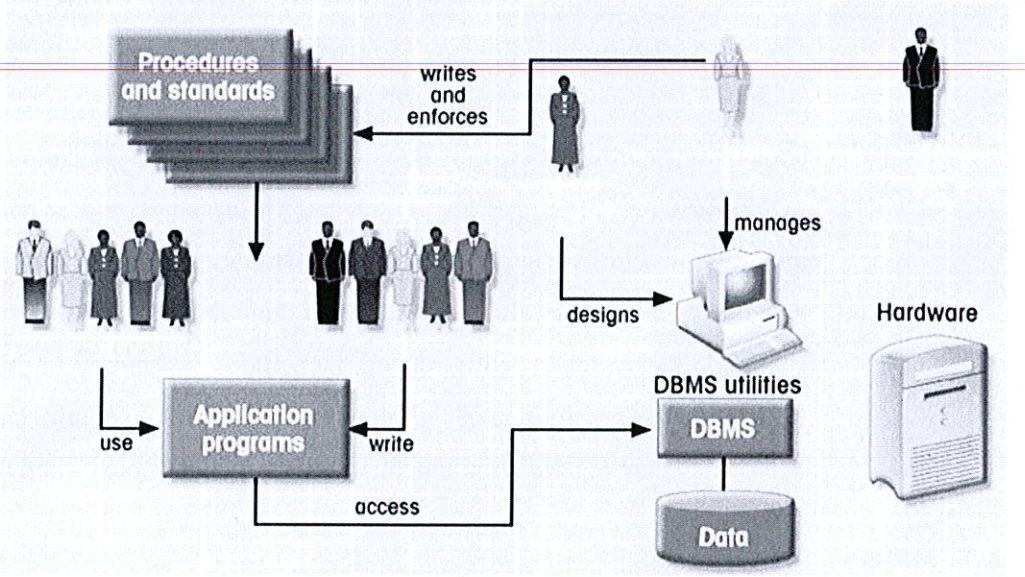


Figure B1
Rajah B1

Based on the Figure B1,

Berdasarkan Rajah B1,

CLO1
C3

i. List FIVE (5) major parts of a database system environment

Senaraikan LIMA (5) bahagian utama dalam persekitaran sistem pangkalan data.

[5 marks]
[5 markah]

CLO1
C3

ii. List FIVE (5) types of user of a database system environment

Senaraikan FIVE (5) jenis pengguna dalam persekitaran sistem pangkalan data.

[5 marks]
[5 markah]

d) Read the passage below, and then answer the following questions.

AiShuna Bookstore is a bookstore that also provides a book rental service. The service offered by the company is restricted for members only. The attributes for members are member ID, name, IC and address. A member could rent one or more books at a time. Attributes for book are ISDN, title, classification and rental price while attributes for rental are rental date, return date and rental duration. Each rented book will be charged accordingly. The attributes for charges are receipt no, pay date, total charges and total paid. The data at that company can be defined as a shared collection of logically related data, and a description of this data, designed to meet the information needs of an organization. It is a single, large repository of data which can be used simultaneously by many departments and users.

Baca kenyataan di bawah dan kemudian jawab soalan berikut.

AiShuna Bookstore ialah sebuah kedai buku yang turut menyediakan perkhidmatan sewaan buku. Perkhidmatan ini hanya dikhaskan untuk ahli sahaja. Ciri-ciri untuk ahli ialah, member ID, name, IC dan address. Seorang ahli boleh meminjam lebih daripada sebuah buku pada suatu masa. Ciri-ciri untuk buku pula ialah, ISDN, title, classification dan rental price manakala ciri-ciri bagi sewaan ialah, rental date, return date dan rental duration. Setiap buku akan dikenakan caj mengikut harga sewaan. Ciri-ciri untuk caj sewaan ialah, receipt no, pay date, total charges dan total paid. Data dalam syarikat itu berada dalam sekumpulan data logik yang terkumpul dan penjelasan tentang data ini di bina untuk memenuhi

kehendak organisasi. Ianya merupakan satu tempat simpanan besar data yang boleh digunakan secara langsung oleh pelbagai jabatan dan pengguna berbeza.

CLO1
C4

i. Identify THREE (3) characteristics of the system

Kenalpasti TIGA (3) ciri-ciri sistem tersebut.

[3 marks]
[3 markah]

QUESTION 2
SOALAN 2

The company you work wants to digitize their time cards. You have been asked to design the database for submitting and approving time cards. With the following information:

- A timecard should have hours worked and date submitted
- Each timecard is associated with exactly one employee
- Each timecard should have a unique id
- Each timecard has a status: it is either approved, not approved, or pending
- Each employee has a unique id
- Each employee has a name and address.
- Each employee submits a time card every pay period. i.e. In 1 year, they will submit multiple time cards
- Each employee either has direct deposit or physical check as their method of payment
- Each employee is associated with exactly one manager
- Each manager has a unique id and a name
- Each manager is in charge of multiple employees
- Each manager approves time cards for multiple employees

Syarikat anda bekerja mahu mendigitalkan kad perakam masa. Anda telah diminta oleh pihak syarikat untuk merekabentuk satu pangkalan data untuk menghantar dan meluluskan kad perakam masa. Berpandukan kepada maklumat berikut :

- *Kad perakam masa perlu mempunyai waktu bekerja dan tarikh dikemukakan*
- *Setiap kad perakam masa di khaskan kepada seorang pekerja*
- *Setiap kad perakam masa mempunyai status: samada diluluskan, tidak diluluskan atau belum diluluskan.*
- *Setiap pekerja masa mempunyai unik id.*
- *Setiap pekerja mempunyai nama dan alamat*
- *Setiap pekerja perlu menghantar kad perakam pada setiap tempoh bayaran contohnya Setahun, mereka boleh menghantar bantak kad perakam masa.*
- *Setiap pekerja dibayar melalui kaedah bayaran terus atau dengan cek.*
- *Setiap pekerja dikhaskan kepada seorang pengurus.*
- *Setiap pengurus mempunyai id unik dan nama*
- *Setiap pengurus bertanggungjawab kepada ramai pekerja*
- *Setiap pengurus meluluskan kad perakam masa untuk ramai pekerja.*

Based on the above statements,

Berpandukan penyataan di atas,

CLO1 C3 (a) Identify the entities and their attributes

Kenalpasti semua entiti dan atribut.

[8 marks]
[8 markah]

CLO1 C3 (b) Draw all the relationship between entities.

Lukiskan hubungan antara entiti

[3 marks]
[3 markah]

CLO1 C3 (c) Draw the complete Entity Relationship (ER) diagram.

Lukiskan gambarajah Hubungan Entiti yang lengkap

[9 marks]

[9 markah]

QUESTION 3

SOALAN 3

CLO1 C1

(a) List TWO (2) types of database language.

Senaraikan DUA (2) jenis bahasa pangkalan data

[2 marks]
[2 *markah*]

CLO1 C1

(b) State the functions of each languages in Question 3(a).

Nyatakan fungsi setiap bahasa tersebut dalam Soalan 3 (a)

[2 marks]
[2 *markah*]

CLO1 C3

(c) Apply the appropriate SQL syntax, write the SQL expression based on Klinik Fatehan database schema below;

Mengaplikasikan sintak SQL yang bersesuaian, tulis ungkapan SQL yang sesuai berdasarkan skema pangkalan data Klinik Fatehan di bawah:

DOCTOR (StaffNo, Name, Expertise, Salary)

PATIENT (PatientNo, Name, Gender, Age)

TREATMENT (StaffNo, PatientNo, Date, TreatmentType, Cost)

CLO1 C3

i. List all the expertise possessed by the doctors at the Klinik Fatehah.

Senaraikan semua kepakaran yang dimiliki oleh doktor-doktor di Klinik Fatehah.

[2 marks]
[2 *markah*]

CLO1
C3

ii. List the name of the patient and the type of treatment for patients who received treatment at the Klinik Fatehah.

Senaraikan nama pesakit dan jenis rawatan bagi pesakit yang mendapatkan perkhidmatan di Klinik Fatehah.

[3 marks]
[3 *markah*]

(d) Based on the EMPLOYEE table in Table B1, answer the following questions;
Berdasarkan jadual EMPLOYEE di bawah, jawab soalan-soalan berikut:

EMPLOYEE

StaffNo	StaffName	Salary(RM)	Department	Post
123	Muhammad	1500.00	Human Resources	HR Executive
257	Aminah	1800.00	Marketing	Marketing Executive
316	Gary	1450.00	ICT	IT Executive
411	Kumar	1800.00	ICT	IT Executive
639	Suet li	1500.00	ICT	IT Executive

Table B1 : EMPLOYEE T

CLO1
C3

i. Apply the appropriate SQL syntax, write the SQL expression to list all employees who earn more than RM1450.00.

Mengaplikasikan sintak SQL yang bersesuaian, tulis ungkapan SQL untuk menyenaraikan semua pekerja yang bergaji lebih daripada RM1450.00.

[3 marks]
[3 *markah*]

CLO1
C3

ii. Apply the appropriate SQL syntax, write the SQL expression to list all employees working in the ICT Department and paid less or equal to RM1500.00.

Mengaplikasikan sintak SQL yang bersesuaian, tulis ungkapan SQL untuk menyenaraikan semua pekerja yang bekerja di Jabatan ICT dan bergaji kurang atau sama RM1500.00.

[3 marks]
[3 *markah*]

CLO1
C4

iii. Determine the output when the following SQL commands executed:
Nyatakan output apabila arahan SQL berikut dilaksanakan:

```
SELECT StaffNo, StaffName, Salary*10 AS NewSalary FROM
EMPLOYEE;
```

[3 marks]
[3 *markah*]

CLO1
C4

iv. Determine the output when the following SQL commands executed:
Berikan output apabila arahan SQL berikut dilaksanakan:

```
SELECT COUNT (*) AS Count FROM employee;
WHERE Department = 'ICT';
SELECT COUNT(*) AS Count FROM EMPLOYEE;
WHERE Department='ICT';
```

[2 marks]
[2 *markah*]

SOALAN TAMAT