UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMINATION
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	DATABASE SYSTEM
COURSE CODE	:	BIT 20803
PROGRAMME	:	2 BIT
EXAMINATION DATE	:	JUNE 2013
DURATION	:	3 HOURS
INSTRUCTION	:	ANSWER **ALL** QUESTIONS

THIS QUESTIONS PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 Translate the following Entity Relationship (ER) diagram to a relational database design. Try to minimize the number of relations your solution has, and merge relations where appropriate. Specify the primary keys (PK) and foreign keys (FK).
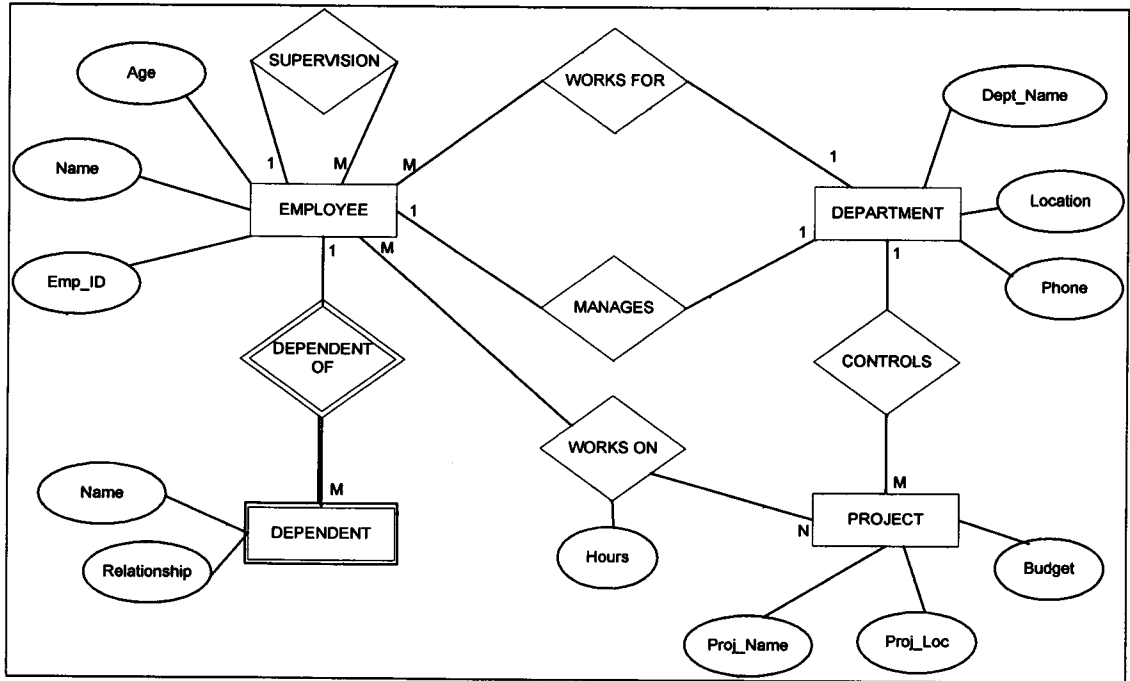

FIGURE Q1

(25 marks)

Q2 Consider the following scenario:

There are televisions series, which have names, networks and production companies, and are identified by the name and network.

- A television series has one or more episodes, identified by episode number. Episodes also have a title and a length. No episode can exist without a corresponding television series.

- There are also movies. A movie is identified by its title and the year it was released. It also has a studio.

- An actor is identified by name and birth date, and also has a nationality.

- A writer is also identified by name and birth date, and also has a literary agency that represents him or her.

- An actor can appear as a "regular" on a television series, a guest star on an episode, and a performer in a movie.

- An episode has a writer, and a movie has a writer.

Draw an ER diagram that represents this scenario. Mark the key attributes and include cardinality constraints on relationships.

(25 marks)

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Q3 An engineering consultancy firm supplies temporary specialized staff to bigger companies in the country to work on their project for certain amount of time. **Table Q3** below lists the time spent by each of the company's employees at other companies to carry out projects. The Emp_ID is unique for every member of staff.

Table Q3: Employee

Emp_ID	Contract No	Hours	Employee Name	Company ID	Company Location
616681B	SC1025	72	Halim Othman	SC115	Senggarang
674315A	SC1025	48	Azizul Zamri	SC115	Senggarang
323113B	SC1026	24	Rauf Hamdan	SC23	Batu Pahat
616681B	SC1026	24	Halim Othman	SC23	Batu Pahat

(a) State in which normal form the table is and explain why.

(3 marks)

(b) Suggest the Primary Key for table Employee.

(2 marks)

(c) Find the Fully Functional Dependencies and Partial Dependencies on the Primary Key that you specified in **Q3(b)**.

(6 marks)

(d) Normalize table Employee to 2NF and identify the Primary Key for each relation

(6 marks)

(e) List out transitive dependencies (if any) based on relations in **Q3(d)**.

(2 marks)

(f) Normalize all tables to 3NF. Show the Primary Key and Foreign Key in all the relations.

(3 marks)

(g) Are all the tables in **Q3(f)** is in BCNF? Explain your answer.

(3 marks)

Q4 The following schemas show part of Homestay database. Create Structured Query Language (SQL) statement for each question based on these schemas.

OWNER (Owner_ID, Owner_Name, Owner_Phone, Owner_Email)

HOMESTAY (Homestay_ID, Homestay_Name, Homestay_Add1, Homestay_Add2, Price_Pernight, Owner_Id)

CUSTOMER (Customer_ID, Cust_Firstname, Cust_Lastname, Cust_Phone, Cust_Add1, State)

CUSTOMER_BOOKING(Homestay_ID , Cust_ID, Start_date, End_date, Total_payment)

(a) Add **ONE (1)** row of new data into OWNER.

(2 marks)

(b)   Display all data for CUSTOMER.

(2 marks)

(c)   Display data on Cust_Firstname and Cust_Lastname for customer from Johor. Sort data in descending order of first name.

(4 marks)

(d)   Write a query to find the difference between the highest and lowest homestay price per night.

(3 marks)

(e)   Display data on Homestay_Name and Price_Pernight for all homestays that begin with letter A.

(3 marks)

(f)   Display the sum of payment made by customer from CUSTOMER_BOOKING.

(3 marks)

(g)   Display customer first name, customer last name and start date who stay at Angkasa Homestay.

(4 marks)

(h)   Display owner name, customer first name, customer last name and homestay name.

(4 marks)

- END OF QUESTION -
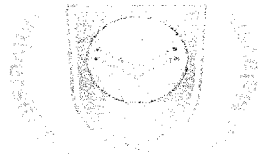
UNIVERSITI TUN HUSSEIN ONN MALAYSIA

FINAL EXAMAMINATION
SEMESTER II
SESSION 2012/2013

COURSE NAME	:	SOFTWARE QUALITY ASSURANCE
COURSE CODE	:	BIT 3113/ BIT 31103
PROGRAMME	:	3 BIT
EXAMINATION DATE	:	JUNE 2013
DURATION	:	2 HOURS 30 MINUTES
INSTRUCTION	:	ANSWER **ALL** QUESTIONS.

THIS QUESTIONS PAPER CONSISTS OF **FOUR (4)** PAGES

Q1 (a) Describe **TWO (2)** measures of system size that typically used for software quality metrics.

(4 marks)

(b) Outline the processes that are required to estimate a project size using function point method.

(6 marks)

Q2 (a) Explain the **THREE (3)** out of **SEVEN (7)** main characteristics of Software Quality Assurance (SQA) environment.

(6 marks)

(b) Compare software products to other industrial products.

(6 marks)

(c) Discuss the ways in which these differences in **Q2(b)** affect SQA

(8 marks)

Q3 (a) Briefly define Computer Aided Software Engineering (CASE) tools.

(2 marks)

(b) Demonstrate how the causes of software error as the measurement of software product quality can be affected by the use of CASE tools.

(10 marks)

(c) Explain the contributions of the various case tools to software maintenance components in relation to the SQA

(8 marks)

Q4 (a) Compare black box testing to white box testing

(8 marks)

(b) Based on the case study below, answer the following questions:

ABC Company has developed an accounting software package that can be marketed as commercial of the shelf (COTS) software. The company is concerned about the quality of the accounting software package as well as the marketable of the software.

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(i)   List **TWO (2)** strategies that suitable to identify the software design and code error.

(2 marks)

(ii)   Compare the two strategies in **Q4 (b)(i)**.

(6 marks)

(iii)   According to your answer in **Q4(b)(ii)**; Propose to the ABC Company the best implementation plan that they may use to ensure the quality and the marketable of the COTS software.

(4 marks)

Q5   Based on the statement below answer the following questions:

```
G5 is coupled with G6 at the same level of hierarchy; G5 has 4 lower-level
modules whereas G6 has 3 lower-level of hierarchy; and both of them has
only one upper-level module.
```

(a)   Draw the structure of the modules.

(6 marks)

(b)   Based on your answer in **Q5(a)**; Outline the effects of module G5's specific coupling situation on the resources required to perform unit tests according to the top-down strategy and the bottom-up strategy.

(10 Marks)

(c)   Discuss how the number of couplings affects the efforts required for incremental testing strategy.

(4 marks)

Q6   Based on the case study below, answer the following questions:

```
Parit Raja Taxi Services (PTS) serves one-time passengers and regular
customers (identified by a taxi card). The PTS taxi fares for one-time
passengers are calculated as follows:
i)     Minimal fare: RM2. This fare covers the distance traveled up to 1000
       yards and waiting time (stopping for traffic lights or traffic jams,
       etc.) of up to 3 minutes.
ii)    For every additional 250 yards or part of it: 25 cents.
iii)   For every additional 2 minutes of stopping or waiting or part
       thereof: 20 cents
iv)    One suitcase: no charge; each additional suitcase: RM 1
v)     Night supplement: 25% effective for journeys between 21.00 and 6.00

Regular customers are entitled to a 10% discount and are not charged the
night supplement
```

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(a)   Prepare a flow chart for the case study.

(7 marks)

(b)   Prepare a program flow graph for the case study.

(8 marks)

(c)   Calculate the cyclomatic complexity for the case study.

(5 marks)

(d)   Develop test cases for the case study based on the following template:
        (i)   Test Cases identification details
        (ii)   The related requirements identification details
        (iii)   Test cases description
        (iv)   Input data and / or input conditions
        (v)   Expected result

(10 marks)

-END OF QUESTION-