

EE4717

NANYANG TECHNOLOGICAL UNIVERSITY

SEMESTER 1 EXAMINATION 2013-2014

EE4717 – WEB APPLICATION DESIGN

November / December 2013

Time Allowed: 2 hours

INSTRUCTIONS

1. This paper contains 1 question and comprises 3 pages.
 2. Answer 1 question.
 3. This is an open-book examination.
 4. Unless specifically stated, all symbols and acronyms have their usual meanings.
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1. A web design company in Singapore is asked to design and develop a web portal for the booking of a taxi from one of the three Singapore-based taxi operators, namely, Operator A, Operator B and Operator C. In the web portal, a new visitor who is using the portal for the first time can make a booking by entering the following information: name, mobile phone number, address and postcode of the pickup location, and selecting the preferred taxi operator. For a returning visitor who has used this portal in the past, he/she is required to enter his/her mobile phone number only. This visitor's name, together with the pickup locations and taxi operators of his/her last three bookings will be retrieved from the booking history stored in the system and listed on the page. If the visitor wants to reuse the same pickup location and taxi operator, he/she can select from one of his/her 3 previous booking records to make a new booking. Otherwise, he/she will enter the address and postcode of a pickup location and select a taxi operator. Once a booking is made, the system will forward the booking to the selected taxi operator. The taxi operator will send an SMS to the visitor's mobile phone number on the outcome of his/her booking. The transmission of SMS from the taxi operator's booking system is beyond the scope of this portal.

Note: Question No. 1 continues on page 2.

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You, as a designer and developer of the system, are asked to come up with the design of the web portal and to implement the design. Note that the home page by default shows the booking form for a new visitor. A button for returning visitor is included in this page to allow switching of the form to the one for a returning visitor, and vice-versa. You are advised to create a page template for the portal to ensure consistent visual layout in all the web pages of the portal.

- (a) Draw the site map and storyboards to illustrate the architecture of the web portal and its task flows.

(15 Marks)

- (b) Design the page layout and draw the wireframe of the web portal template to be used. Your design should reserve a content area for the taxi booking form and the switch button for switching between new and returning visitors.

(10 Marks)

- (c) Write the HTML5 and CSS3 codes to create the taxi booking forms in the content area of the web pages. Note that there are two scenarios: one for a new visitor and the other for a returning visitor. The following names should be used in the HTML5 FORM element:

- Visitor name: **customer_name**
- Mobile phone number : **phone**
- Pickup Location Address: **address**
- Postcode of pickup location : **zone**
- Taxi operator : **company**

A visitor must enter the mobile phone number, pickup address and select a taxi operator.

(25 Marks)

- (d) Based on the codes written for Question 1(c), add the necessary validation checks on the user's data entries using JavaScript. Extract out the relevant lines of HTML5 codes written in the answer for Question 1(c) and show the modifications to the HTML codes and the respective JavaScript codes for the following data validations:

- (i) Visitor's name should consist of maximum 20 characters, including spaces and hyphens ('-').
- (ii) A mobile phone number should consist of 8 numeral digits and beginning with an '8' or a '9'.
- (iii) Postcode should consist of 6 numeral digits.

(15 Marks)

Note: Question No. 1 continues on page 3.

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- (e) In the system, a database account named TAXIPORTAL with password SeCreTe and a database named BOOKINGS will be created on the database server. Your table(s) should store the name, mobile phone number, pickup address, postcode and taxi operator.
- (i) Design the necessary table(s) in the database to handle taxi bookings and maintain booking history.
 - (ii) Define the data types for the column names and underline the primary key(s).
 - (iii) Write a PHP script to establish a connection to the database on the database server.
 - (iv) Explain how the records for 3 most recent bookings by a visitor are determined and maintained in the database.
- (20 Marks)
- (f) Write the PHP scripts for generating the HTML5 codes for the two scenarios:
- (i) A new visitor making the booking.
 - (ii) A returning visitor making the booking.

Your PHP scripts may reuse the HTML5 and CSS3 codes in the answer for Question 1(c) and add necessary codes to complete the PHP generated page. You should use the names created in your answer for Question 1(e) for database transactions.

(15 Marks)

END OF PAPER

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Please read the following instructions carefully:

- 1. Please do not turn over the question paper until you are told to do so. Disciplinary action may be taken against you if you do so.**
2. You are not allowed to leave the examination hall unless accompanied by an invigilator. You may raise your hand if you need to communicate with the invigilator.
3. Please write your Matriculation Number on the front of the answer book.
4. Please indicate clearly in the answer book (at the appropriate place) if you are continuing the answer to a question elsewhere in the book.