University of Canberra

Faculty of Science and Technology Semester 2, 2022

**Database Design 5915 and Database Design G 6672**

**Assignment 2**

**This assignment is worth 60 marks constituting 30% of**

**the total marks for this unit.**

**Due date: Friday Week 12 of Semester 2 2022 at 11:55 pm**

You need to submit all your design documents and your database (MS Access database) with this assignment as described in the assignment specification below to the Canvas website of this subject. Please contact your lecturer or tutor if you have any queries about this assignment.

**1. General Information**

The purpose of this assignment is to provide you with experience in analyzing, designing, and implementing a solution for the scenario given below. Your solution should be implemented as a program for a database system using Microsoft Access. This assignment will help you to understand the nature and purpose of database analysis, design, and implementation. It offers you experience in managing a technical database project.

This assignment is to be attempted by groups of 4 to 5 students. Each group is collectively responsible for both the submission and the outcome. Individual efforts will not be marked. There are no restrictions on the use of word processors or similar tools for the production of submissions for this assignment.

Be sure to maintain regular back-ups for any models or material prepared with the aid of software. Loss of files will not be accepted as an excuse for the non-completion of this assignment.

**Submit your assignment to the Canvas website of this subject. Marked assignments will be available from the Canvas website of this subject. Only one group member will submit all your design documents with your Microsoft Access database to the Canvas website of this subject.**

**2. Problem Description**

Canberra Jobs (CJ) was established recently. It has several offices in Canberra. CJ requires your team to design a database system for the CJ. CJ database will record and store all data about each of its customers including their first and last name, home address (street number, street name, suburb, postcode, city), gender, and type/s of work a customer requires to be done at their property. The name (first and last name), contact telephone number, and address (street number, street name, suburb, postcode, city, state) of the customer's next-of-kin are also stored in the CJ database.

CJ offers several types of home repair services. Repair services are managed under the CJ repair section. There exist several types of repairs that CJ provides. Details of all repair services are stored in the CJ database and these details include: service name, service number, service type, and price. When a customer joins CJ, he or she is assigned a customer number and his/her details are recorded. Every customer is provided with a customer number and a sheet of paper describing the rules relating to CJ.

CJ has several staff members. For each staff member the following data is stored in the CJ database system: staff first and last name, staff number, position, gender, date of birth, salary, position, name of the section he/she works in, internal telephone number, and office number. CJ has 5000 customers with 25 full-time staff members.

CJ consists of a few sections. These are: the information section, service repair section, customer support section, customer feedback, and account section. The information about each section is: section name, email address, location, and telephone number. Each section has several telephone numbers.

CJ offers several gardening and home repair courses. Customers can browse the CJ website to find out about the details of all courses that are offered each month.

A customer can enroll in several types of courses. However, a customer is limited to a maximum of 6 courses at any particular time. A customer's identity is established with their customer number. A customer number is used to access a customer record.

Customers can enroll in courses or request repair services from CJ. An invoice is issued for customers who enroll in a course or request a repair service. Each invoice has a unique invoice number. The data stored on each invoice for a course enrolment includes the invoice number, course number and course name, course duration (start date and end date), payment due date, amount to be paid, client’s full name, and name of staff who issued the invoice.

The data stored on each invoice for a repair service includes the invoice number, repair service number, repair service name, payment due date, amount to be paid, client’s full name, and name of the staff who issued the invoice.

The details of all courses offered by CJ are stored in the CJ database. These details are: course number, course name, start date, end date, course fees, instructor number, and instructor name.

CJ has several instructors who conduct courses at CJ. The details of instructors are stored in the CJ database. Instructor details are: Instructor first and last name, instructor number, position, gender, date of birth, salary, internal telephone number, and office number.

CJ has several repair personnel who conduct repairs at CJ. The details of each repair person are stored in the CJ database. Repair person details are: first and last name, repairer number, position, gender, date of birth, salary, internal telephone number, and section number.

Each customer is required to make a payment for his/her invoice. The method of payment can be cash or credit cards. If there are any outstanding invoices for a customer then that customer will be sent a notice to pay his/her outstanding invoice. The details of each payment (payment number, customer number, invoice number, amount paid, date of payment) are stored in the CJ database. The details of each notice sent to a customer are also stored in the CJ database. These details include: the notice number, customer name, invoice number, and date of issue of notice.

For each payment made by a customer a receipt that shows details of the payment made by the customer are provided to the customer and it is recorded in the CJ database. Receipt details include: customer name, receipt number, date of payment, the amount paid, and invoice number.

CJ provides repair services upon a request from its customers. A customer first contacts CJ and informs the staff at CJ about the repair services that he/she is required for their property. A job is then logged into the CJ database which includes the following details: job number, customer name, repair number, repair name, date of job lodgement, and staff name of the staff who logged the repair job.

CJ provides an appointment for the customer where a CJ repair will visit the customer and provide a quotation for the cost of the repair. For an appointment reservation, a customer enters his/her name (first and last name), contact details (telephone number and postal address), and preferred time and date of appointment. An appointment is then made for the customer at that particular time with a staff member. A repairer from CJ then will visit the customer at the date and time of the appointment and provides a quotation. The details of all appointments by CJ customers are stored in the CJ database. These details are: customer number, customer property address, staff number, repair description, and quotation price. Once the quotation is accepted by the customer a repairer will contact the customer and organize a time to finalize the repair. The repair details are stored in the CJ database. The details stored about each repair are: customer name, customer contact details (telephone number and postal address), time and date of repair and repairer name, and repair number.

An invoice is for each repair job performed for a customer. The data stored about each invoice includes: the invoice number, repair number, payment due date, amount to be paid, property address, customer full name, and name of staff who issued the invoice. Each customer is required to make a payment for his/her invoice. The details of each payment (payment number, customer number, invoice number, amount paid, date of payment, invoice number) are stored in the CJ database. For each payment, a receipt that lists details of the payment made is provided to the customer and it is recorded in the database. Receipt details include: customer number, receipt number, date of payment amount paid, payment number, and invoice number.

CJ has quality control inspectors. These inspectors check randomly repair jobs and provide feedback to CJ about the quality of the repairs performed for the customer. The details of inspection by inspectors are recorded in the CJ database. These details are: inspection number, repair number, customer name, customer number, inspector number, comments on the quality of the repair job, and date and time of inspection.

CJ has 20 inspectors. For each inspector the following data is stored in the CJ database system: inspector first and last name, inspector number, gender, date of birth, salary, name of the section he/she works in, internal telephone number, and office number.

CJ rents its car park on Sundays to the general public. JB car park can be hired by any customer who wants to organize a Sunday Market. The cost of hiring of JB car park is $100 per day. The details of the customer hiring JB car park for Sunday market are stored in the JB database. These details are: car park hire number, customer number, date of hire JB car park. The details of all payments made by customers for Sunday car park hire are stored in the JB database. These details are payment number, payment date, the method of payment (check, cash, Visa card), customer number, car park hire number, and amount paid.

**3. Requirements**

CJ database program developed by your team should have well-designed screens that are easy to use, understand and follow by novice staff and customers of CJ. For security reasons, the views of customers and staff should be different. You need to use an MS Access switchboard for this task.

CJ database should provide the following facilities for staff:

1. Two types of computer-generated reports are produced by the CJ database system for staff.

* The first report shows all details of all customers that have enrolled in all courses at CJ. This report is ordered by the customer's name and customer number.
* The second report shows the details of all payments made by customers for each course with the name of the customer and course name order by course number.

2. CJ staff should be able to use the CJ database system to:

* Enter details of new customers,
* Enter details of new jobs,
* Check the details of all customers.
* Make an appointment for a customer

The customers should be able to use the CJ database to:

* Check detail of all available courses,
* Check all details of all CJ staff members, ordered by staff section number.

**4. Assignment submission**

For the scenario above:

(a) Identify entity types and their attributes, including the primary keys and any foreign keys for each entity. (Make sure that all your entities are in 3NF)

(b) Compile the E-R diagram of the system based on the entities you identified above (**state all assumptions that you have made**). Identify on your E-R diagram the relationship types and their multiplicity.

(c) Create a database using Microsoft Access based on your database design above. Enter three rows of data in each table you create in the Microsoft Access database you have created.

Include with your assignment a cover page containing the student number, first and last name of all students in your group, your tutorial day and time, subject name and number as well as the name of your tutor.

You need to include with your solution the details of all assumptions that you have made for the CWG database. Only one group member will submit all your design documents with your Microsoft Access database to the Canvas website of this subject.

**Marking Scheme**

**DOCUMENTATION (Hard copy)**

List of entities, attributes, and primary keys (Normalisation to 3NF) 30

E-R diagram 10

**IMPLEMENTATION (Soft copy)**

Tables and data 5

Queries 5

Forms 5

Reports 5

# TOTAL 50

**Note:**

Be sure to maintain regular back-ups for any models or material prepared with the aid of software. Loss of files will not be accepted as an excuse for the non-completion of this assignment. Every group member is advised to retain a full copy of the material handed in for this group assignment. Marked assignments will be available from the Canvas website of this subject.