Assessment Tool

Qualification national code and title	ICT40120 Certificate IV in Information Technology (Programming)
Cluster	Introductory Programming (C#)
Unit/s national code/s and title/s	ICTPRG433 Test Software ICTPRG440 Apply introductory programming skills in different languages

Assessment type (☑):

☐ Questioning (Oral/Written)
☒ Practical Demonstration
☐ 3rd Party Report
☒ Other – Project/App

Assessment Resources:

Visual Studio Community Edition 2019
Microsoft Word / Office 365

Assessment Instructions:

This assessment requires you to write a program that meets the requirements specifications, comment, debug and test the program. You will be demonstrating use of basic coding syntax, data structures and algorithms. You are being assessed on elements 1-3 of ICTPRG440 and elements 1-4 of ICTPRG433.

Due Date:
Assessment 1 Part A (Documented program): **Due end of week 14**

If your first submission does not achieve a satisfactory result, you will have the opportunity to resubmit the assessment again for re-marking, if you meet the due dates.
Students who can demonstrate all the required skills through prior experience may apply for skills recognition through the RPL (Recognition of Prior Learning) process as an alternative to doing this assessment.

1. Complete all the assessment tasks below.
2. Observation by your lecturer of you doing the assessment is considered part of the assessment process. (This is to be completed in time allocated in LAP)
3. Submit your documentation into the Blackboard assessments area.
4. All skills must be demonstrated to achieve a satisfactory result.
5. All work submitted must be your own individual effort.

Assessment Conditions
During the units you will have classes allocated to complete assessments. During this time, the assessment conditions will emulate the industry working environment. You should expect interruptions, differing noise levels and time variances as a result. In class time also forms aspects of observational evaluation for the purposes of assessment.

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Assessment Instrument:

Assessment 2: C# Program with unit tests

Read the Car Dealer Showroom scenario described in the appendix.
You are required to write and test a C# program that satisfies all the requirements for this scenario.

Please complete the following tasks.

Part A: Documented Program

1. Write a C# WPF or Windows Forms program that meets the requirements. The program must include the following features:
    a. The program must have a graphical user interface (GUI) frontend that displays the car inventory and provide the ability for the user to add, remove or search for cars.
    b. The program must use an array to hold the car inventory details. Other data structures may be used as needed.
    c. The program must include validation. (eg. To check that at least one vacant parking bay exists before a new car can be added.)
    d. The program must demonstrate two examples of array search algorithms to look through the inventory of the array:
        i. Sequential (eg. To find cars in a price range, or to find a vacant position.)
        ii. Random Access (eg. The program must be able to directly access the inventory array by position to find which car is in a numbered parking bay.)
2. The program should adhere to the C# coding standards document provided.
3. Comment your program to explain the purpose of your code. Use single-line, multi-line and XML documentation comments.

Deliverables

- **Part A** - A functional, documented program.

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Appendix 1

You are the manager of a car dealership with a showroom that can house up to 20 cars. Each car is assigned to a numbered parking bay. You need a program that allows you to manage your inventory of cars.

For each car, you must record details about it such as:

- Registration number
- Make
- Model
- Year
- Price
- File name of image/photo of car

When a car is sold to a customer, it needs to be removed from the inventory. Those car details need to be retained in a list of Sold Cars.

From time to time, new cars are also purchased from manufacturers and auctions for resale, if there is at least one vacant space available in the showroom where the car can be parked. The new car must be added to the “cars for sale” inventory. Use an array to represent the inventory so that an item’s position indicates its car parking bay number.

Besides being able to add and remove inventory items, dealership staff also need to be able to search the inventory. The following types of searches are typical:

- To find which car is allocated to a particular car parking bay. (ie. The user specifies a number between 1 and 20). *Rationale: The keys for the cars are stored on hooks corresponding to the car parking bay number. The result from this search will tell the user which hook the key is on.*
- To find a specific car by registration number. *Rationale: To ensure that car registrations are renewed before they expire, check airbag compliance, etc.*
- To find all cars within a specified price range. *Rationale: Customers should only be shown cars that are priced within their budget.*