|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Student Name |  | | Student Number | |  |
| Unit Code/s & Name/s | ICTPRG523 Apply advanced programming skills in another language | | | | |
| Assessment Name | Take-home exam/research | | Assessment Task No. | | AT2 |
| Date of test/exam | Thu 26-May-2022 | | | | |
| **Student Declaration:**  I declare that this assessment is my own work. I am aware of and understand the rules related to assessment as outlined in TAFE Queensland Student Rules and acknowledge that failure to comply with these rules will be regarded as misconduct and will be subject to disciplinary action as outlined. | | | | | |
| Student Signature |  | | | Date |  |
| Assessor Feedback:  Student provided with feedback *(check box when completed)* | | | | | |
| Attempt 1 | Satisfactory | Unsatisfactory | | Date | / / |
| Attempt 2 | Satisfactory | Unsatisfactory | | Date | / / |
| Assessor Name |  | Assessor Signature | |  | |
| Note to assessor: Please record any reasonable adjustment below that has occurred during this assessment. E.g. written assessment given orally; scribe provided. | | | | | |
|  | | | | | |
| **PRIVACY DISCLAIMER:** TAFE Queensland is collecting your personal information for assessment purposes. The information will only be accessed by authorised employees of TAFE Queensland. Some of this information may be given to the Australian Skills Quality Authority (ASQA) or its successor and/or TAFE Queensland for audit and/or reporting purposes. Your information will not be given to any other person or agency unless you have given us written permission or we are required by law. | | | | | |

|  |  |
| --- | --- |
| Assessment rules | Only students enrolled in the unit of competency, the Assessor / Supervisor, and other authorised personnel may enter or remain in the room during a written test / exam. The Assessor/ Supervisor may ask you to produce photographic identification (e.g. student ID card, driver’s licence).  Unless approved by the Assessor / Supervisor prior to the written test / exam (e.g. for open-book exams) you may not bring any devices capable of conveying information relevant to the content (e.g. text books, course notes, mobile phones, pagers, notebook computers, and other devices). You must ensure mobile phones and other electronic devices are turned off prior to the commencement of the written test / exam.  You are required to comply with all directions:   1. Detailed in assessment material supplied; 2. Set out on any notice displayed in the room; and 3. Given by the supervisor.   During a written test / exam session you may not:   1. Communicate with any person other than the supervisor; 2. Assist another person to communicate with another person; and 3. Willingly receive communication from any person except with the approval of the supervisor.   Unless permitted by the supervisor, you may not take from the room any papers or other materials provided for use during the written test / exam.  You are expected to be considerate of other students when entering or leaving the room or when in the vicinity of the room.  If you consider that your performance in the written test / exam has been adversely affected by illness, disability, bereavement or other exceptional circumstances you may apply for special consideration. **For more information, refer to the Student Rules.** |

|  |  |
| --- | --- |
| Instructions to Student | **General Instructions:**  You are required to answer each of the questions provided.  If you have used or paraphrased an answer taken from a source which is not of your own (in other words, content taken from another person or organisation), you are to use an appropriate reference to the source in your answer.  For example:  **Reference:**  <Author’s last name or organisation name>, <Author’s first name initial>. (<Year of Publication>). <*Title of article/blog*>. Retrieved on <Date> from <URL>  For example: (author’s article in a web page)  Kumar, R.R. (2019) *A basic introduction to C# Unit test for beginners*. Retrieved on 21-Jul-2020 from <https://www.c-sharpcorner.com/article/a-basic-introduction-of-unit-test-for-beginners/>  Another example: (from an organisation web page)  Microsoft (2020) *Get started with unit testing*. Retrieved on 21-Jul-2020 from <https://docs.microsoft.com/en-us/visualstudio/test/getting-started-with-unit-testing?view=vs-2019>  **What to submit:**  Submit this file renamed as **ICTPRG523\_AT2\_TEX\_<Your Name>.docx** into CONNECT  **Number of Attempts:**  You will receive up to two (2) attempts at this assessment task. Should your 1st attempt be unsatisfactory (U), your teacher will provide feedback and discuss the relevant questions with you and will arrange a date your 2nd attempt. If your 2nd attempt is unsatisfactory (U), or you fail to attend the scheduled date for a 2nd attempt, you will receive an overall unsatisfactory result for this assessment task. Only one re-assessment attempt may be granted for each assessment task, with the exception of Apprentices or Trainees who are permitted an additional supplementary assessment. **For more information, refer to the Student Rules.** |
| Instructions for the Assessor | Remind students of TAFE Queensland Student Rules assessment requirements. |
| Note to Student | An overview of all Assessment Tasks relevant to this unit is located in the Unit Study Guide. |

**Test Questions:**

1. In relation to your ICTPRG523 assignment #1 (Networked Math Quiz), present a summary of your findings and analysis in each of the following areas. (Present sample code where applicable.)

**Double linked List (Elements 1 & 2)**

The structure of…

Best application of…

Features of an applicable Search Routine.

**Binary Tree (Elements 1 & 2)**

The structure of

Best application of…

Features of an applicable Search Routine.

**Sort Routines: (Element 2)**

* Three Types, with their respective best use or form of application. Outline the respective advantages and disadvantages (strengths and weaknesses) of each sort routine used.

**Program Communication: (Elements 3 & 4)**

* Component communication mechanism (such as communication between applications running concurrently on a network)
* Communication with the operating system (such as the associated operating system communications required when two or more applications are communicating across a network)
* Structure and linking techniques for 3rd party libraries / packages.

**Program Documentation: (Element 6)**

* A sample program header including sample version control
* A process for creating external program documentation (e.g. XML-generated class documentation)

**Program Testing: (Element 7)**

* Test planning and developing test cases
* Completing testing
* Recording test results

**Programming: (Element 8)**

* Using complex data structures (such as a doubly linked list and binary tree) and complex algorithms (such as sort or hashing algorithms)
* Deciding on the most appropriate data structures and complex algorithms based on the client and technical requirements for a software development project.

**Knowledge Evidence:**

1. List three (3) popular programming languages currently used by developers and describe some of their features.

1. List two (2) programming languages for a GUI environment and provide a brief description of each.

1. What project management and development strategies would you utilise to develop a large-scale application?  
     
   Development period >= 6 months  
   Costing >= $5,000.00  
   Dev Team >= 6 people  
     
   NOTE: Ensure that you cover PROJECT MANAGEMENT aspects --- AND --- SOFTWARE DEVELOPMENT methodologies.

1. What additional considerations and processes are required of you as a programmer when you are asked to develop with one or more complex data structures?

1. Describe in detail the steps in using a third-party supplied library for performing common programming tasks using C# .NET in Visual Studio.

**End of assessment**