# Student Version

| Section A – Program/Course details | | | |
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| **Qualification code:** | ICT50718 | **Qualification title:** | Diploma of Software Development |
| **Unit code:** | ICTPRG601  ICTPRG532 | **Unit title:** | (cluster title: Android Programming with Java)  Apply advanced object-oriented language skills  Develop advanced mobile multi-touch applications |
| **Department name:** | BDIT, Computer and Information Technology | **CRN number:** | Enter CRN number |

| Section B – Assessment task details | | | |
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| **Assessment number:** | 2 of 3 | **Semester/Year:** | 2/2021 |
| **Due date:** | Session 16 | **Duration of assessment:** | 12 sessions |
| **Assessment method** | Portfolio | **Assessment task results** | Ungraded result |
| Other: Click here to enter text. |

| Section C – Instructions to students |
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| **Task instructions:** |
| You are required to develop an Android mobile application and back-end API services. Detailed instruction, system specification and questions to answer are provided in separate files along with this document. You are required to develop the applications that fully meet the requirements and correctly answer all the questions to be deemed competent.  Marking criteria for each question and the software are defined in the “Marking Guide” section in this document. It is recommended that you read and understand these criteria as you are working on the programming and answering questions.  A final submission check list is also provided in the “Assignment Instructions” document. You should double check all the files before summiting.  Attached documents include: 1. “Assessment\_2\_Assignment\_Grapic Design.xd” – Graphic design, and this file can be opened with Adobe XD. 2. “Assessment\_2\_Assignment\_Instructions.docx” – Detailed instruction, system specification and questions to answer are provided in this document 3. “Test\_Plan\_Template.docx” – Test plan template file. 4. “Test\_Summary\_Report.docx” – Test summary report template file. |

| Section D – Conditions for assessment | |
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| **Conditions:**  Student to complete and attach Assessment Submission Cover Sheet to the completed Assessment Task. | |
| - This assessment is to be completed individually by yourself. - You must meet all criteria listed in the marking guide to be satisfactory in this task. - You are expected to dedicate time to developing this assessment task both in and out of the classroom. - Development tools should include but are not limited to: Android Studio and emulator, Visual Studio Code … - You must submit all required working files, documentation and any other assets that you feel may be required in a zipped file. - This Assessment task must be uploaded along with a complete and signed coversheet.  - You will have the opportunity to resubmit if any part of the assessment is deemed unsatisfactory (two resubmit allowed per assessment) within the enrolment period. - This is an individual task. However, you are required to get information, feedback and ideas from your assessor, peers and industry to help complete the assessment planning guide.  - It is expected all documents will be completed and submitted electronically but if this is not possible, make alternative arrangements for submitting the documents with your assessor. - You can appeal an assessment decision according to the Holmesglen Assessment Complaints and Appeals Procedure. - If you feel you require special allowance or adjustment to this task, please decide with your assessor within one week of commencing this assessment. - The learner may use the internet research answers for this assessment. | |
| **Equipment/resources students must supply:** | **Equipment/resources to be provided by the RTO:** |
| Students attending remote learning must have access to Computer Android Studio Android Virtual Device Tool Adobe XD Word processor Web browser Internet Connection | Computer Android Studio Android Virtual Device Tool Adobe XD Word processor Web browser Internet Connection |

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| Section E – Marking Sheet - Student Answer Sheet | | | |
| **Student ID:** | 100576422 | **Student name:** | Timothy Owens |
| **Unit code:** | ICTPRG601  ICTPRG532 | **Unit title:** | (cluster title: Android Programming with Java)  Apply advanced object-oriented language skills  Develop advanced mobile multi-touch applications |
| **Date:** | 26/11/2021 | | |

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| **Criteria for assessment** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| **Final submission items:** | | | | | |
| 1 | A signed assessment document | |  |  |  |
| 2 | This instruction document with all questions answered and signed off by assessor for each phase. | |  |  |  |
| 3 | Android app project (source code) | |  |  |  |
| 4 | Server-side project (source code) | |  |  |  |
| 5 | Client-side database snapshots | |  |  |  |
| 6 | Server-side database snapshots | |  |  |  |
| 7 | Web API design document | |  |  |  |
| 8 | User document (html file) | |  |  |  |
| 9 | All test plan documents | |  |  |  |
| 10 | All test report documents | |  |  |  |
| 11 | Performance analysis report | |  |  |  |
| 12 | Application files for deployment (e.g. Android APK) | |  |  |  |
| 13 | Inter device communication program project (if programmed separately) | |  |  |  |
| **Marking criteria for each phase** | | | | | |
| **Phase 1 - Plan & Preparation** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q1.1 | | Programming language, IDE, test environment, and version control system are all identified for both server-side and client-side development |  |  |  |
| Q1.2 | | Development environment has been setup and verified |  |  |  |
| Q1.3 | | Implementation plan has been documented and approved by client |  |  |  |
| **Phase 2 - Client-side Android app user interface design** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q2.1 | | Test plan document has been created and test cases coverer all required UI functionalities. |  |  |  |
| Q2.2 | | Learner understand how to use Android Activity / Fragment component to create multi-page app and navigation between pages. |  |  |  |
| Q2.3 | | Screenshot of all designed pages have been provided. Page navigation has been correctly implemented and sample code screenshots have been provided. |  |  |  |
| Q2.4 | | Learner understand Android Activity lifecycle and how auto-rotating and auto-resizing trigger state change in lifecycle. |  |  |  |
| Q2.5 | | Learner understand Activity state transaction and how programmingly respond to state change events. |  |  |  |
| Q2.6 | | Learner understand the options (at least two) of local data persistence. |  |  |  |
| Q2.7 | | Learner has implemented saving / load theme configuration, and code screenshot has been provided. |  |  |  |
| Q2.8 | | Learner understand how to design Android app to support different screen size. Two technologies are discussed. |  |  |  |
| Q2.9 | | Supporting different screen size have been implemented and sample code screenshots have been provided. |  |  |  |
| Q2.10 | | Learner understand how to separate view and model to prevent data lost when Activity is recreated. |  |  |  |
| Q2.11 | | Learner has implemented the mechanism to prevent data lost when Activity is recreated. And sample code screenshots have been provided. |  |  |  |
| Q2.12 | | Learner understand how to build a list view in Android app |  |  |  |
| Q2.13 | | Learner understand the widely used Model-Adapter-View pattern in Android. And how list view component uses this pattern. |  |  |  |
| Q2.14 | | Learner understand and has implemented gesture to navigate “Welcome Page” to “List Page” |  |  |  |
| Q2.15 | | Learner understand and has implemented “touch” and “animation” functions in Android |  |  |  |
| Q2.16 | | Learner understand and has implemented “drag-drop” function in Android |  |  |  |
| Q2.17 | | Learner understand and has implemented view “click” or “tap” function in Android |  |  |  |
| Q2.18 | | Learner understand and has implemented button “click” or “tap” function in Android |  |  |  |
| Q2.19 | | Learner understand Hash technology and has implemented a Hash technology in application |  |  |  |
| Q2.20 | | Learner understand double-linked list technology and has implemented a double-linked list in application |  |  |  |
| Q2.21 | | Learner understand sorting technology and has implemented one sorting algorithm in application |  |  |  |
| Q2.22 | | Learner understand searching technology and has implemented one searching algorithm in application |  |  |  |
| Q2.23 | | Learner understand binary search tree technology and has implemented a binary search tree algorithm |  |  |  |
| Q2.24 | | Learner understand nested class and has implemented nested class in application |  |  |  |
| Q2.25 | | Test plan has been executed and results have been reported using template |  |  |  |
| Q2.25 | | Learner demonstrate the skill to troubleshoot software issue using debugging tool and the skill to resolve the issue. |  |  |  |
| **Phase 3 - Client-side Local database design and connect to the UI** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q3.1 | | Test plan document has been created and test cases coverer all required SQLite functionalities. |  |  |  |
| Q3.2 | | Learner understand how to use “Room Entity” to define an entity (or table) for SQLite |  |  |  |
| Q3.3 | | Learner has implemented “Room Entity” data model. Source code screenshots have been provided. |  |  |  |
| Q3.4 | | Learner understand how to use “Room DAO” to design database access interface for operations like CRUD |  |  |  |
| Q3.5 | | Learner has implemented “Room DAO” interfaces / methods. Source code screenshots have been provided. |  |  |  |
| Q3.6 | | Learner understand how to use proper technology to auto synchronize UI data to database data |  |  |  |
| Q3.7 | | Learner has implemented the mechanism to auto synchronize UI data to database data. Source code screenshots have been provided. |  |  |  |
| Q3.8 | | Learner has connected UI designed in Phase 2 to Room interfaces. Source code screenshots have been provided. |  |  |  |
| Q3.9 | | Learner understand how to manage SQLite DB files with proper tool. |  |  |  |
| Q3.10 | | Test plan has been executed and results have been reported using template |  |  |  |
| Q3.11 | | Learner demonstrate the skill to troubleshoot software issue using debugging tool and the skill to resolve the issue. |  |  |  |
| **Phase 4 - Server-side database design** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q4.1 | | Server-side stack has been confirmed. |  |  |  |
| Q4.2 | | Server-side environment is ready, and screenshots have been provided. |  |  |  |
| Q4.3 | | Learner has designed server-side DB structure. Screenshots have been provided. |  |  |  |
| Q4.4 | | Learner has created server-side DB and sample data has been injected. Screenshots have been provided. |  |  |  |
| Q4.5 | | Learner has verified server-side DB using an OOP language. Screenshots have been provided. |  |  |  |
| **Phase 5 - Server-side Web API design** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q5.1 | | Learner understand the concept of RESTful API |  |  |  |
| Q5.2 | | Learner has designed API structure for the web service |  |  |  |
| Q5.3 | | Test plan document has been created and test cases coverer all required web API functionalities. API testing tool must be used for testing. |  |  |  |
| Q5.4 | | Test plan has been executed and results have been reported using template |  |  |  |
| Q5.5 | | Test API using API testing tool has been demonstrated. |  |  |  |
| **Phase 6 - Connect front-end Android app to back-end web APIs** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q6.1 | | Learner has Identify one third-party HTTP library used for the project; and have the official documentation ready. |  |  |  |
| Q6.2 | | Learner has planned a strategy to work with both local and remote databases |  |  |  |
| Q6.3 | | Test plan document has been created and test cases coverer all required web API connection functionalities. |  |  |  |
| Q6.4 | | Learner has implemented API consumption with Android app, and screenshots have been provided. |  |  |  |
| Q6.5 | | Test plan has been executed and results have been reported using template. And all issues have been addressed. |  |  |  |
| Q6.6 | | One advanced feature has been implemented |  |  |  |
| **Phase 7 - Software test and performance analysis** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q7.1 | | End-to-end test plan document has been created and test cases coverer all requirements |  |  |  |
| Q7.2 | | Test plan has been executed and results have been reported using template. |  |  |  |
| Q7.3 | | All issues have been addressed. Learner demonstrate the skill to troubleshoot issues found in test and the skill to resolve the issue. |  |  |  |
| Q7.4 | | Learner has established 3 performance objectives and understand how to apply them in Android app. |  |  |  |
| Q7.5 | | Performance analysis has been conducted and results have been reported using template. |  |  |  |
| Q7.6 | | Learner understand the technology to eliminate useless and garbage application on a target device. |  |  |  |
| Q7.7 | | Application has been reviewed against system specification, and variances has been identified. The results have been reported in writing. |  |  |  |
| Q7.8 | | Learner has presented the application to client and client has approved. |  |  |  |
| **Phase 8 - Documentation and quality control** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q8.1 | | User help document has been developed in HTML format. |  |  |  |
| Q8.2 | | Code conversion document is followed, and screenshots have been provided. |  |  |  |
| Q8.3 | | Codes are fully documented, and screenshots have been provided. |  |  |  |
| Q8.4 | | Source codes are managed by version control system, and URL & screenshots have been provided. |  |  |  |
| **Phase 9 - Publish mobile app and handover project** | | | **Satisfactory** | | **Comment** |
| **Yes** | **No** |
| Q9.1 | | Learner understand how to publish app to Google Play Store |  |  |  |
| Q9.2 | | Learner has published APK file with public access, and screenshots have been provided. |  |  |  |
| Q9.3 | | Learner has published user help document file with public access, and screenshots have been provided. |  |  |  |

# Assessment Submission Cover Sheet (VET)

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| By submitting this assessment task and signing the below, I acknowledge and agree that:   1. This completed assessment task is my own work. 2. I understand the serious nature of plagiarism and I am aware of the penalties that exist for breaching this. 3. I have kept a copy of this assessment task. 4. The assessor may provide a copy of this assessment task to another member of the Institute for validation and/or benchmarking purposes. |

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| **Student ID:** | 100576422 | **Student name:** | Timothy Owens |

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| **Submission or observation date:** | **26/11/2021** |
| **Student signature**  For electronic submissions: By typing your name in the student signature field, you are accepting the above declaration. | **Timothy Owens** |

| Section F – Feedback to Student | | | | | | |
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| **Has the student successfully completed this assessment task?** | | | | | **Yes** | **No** |
|  |  |
| **Additional Assessor comments (as appropriate):** | | | | | | |
|  | | | | | | |
| **Resubmission allowed:** | **Yes** | **No** | **Resubmission due date:** |  | | |
| **Assessor name:** |  | | | | | |
| **Assessor signature:** |  | | | | | |
| **Date Assessed:** |  | | | | | |