# Project assessment: Develop mobile application

## Criteria

### Unit code, name and release number

ICTICT449 - Use version control systems in development environments (1)

ICTPRG436 - Develop mobile applications (1)

ICTPRG437 - Build a user interface (1)

ICTPRG444 - Analyse software requirements (1)

### Qualification/Course code, name and release number

ICT40120 - Certificate IV in Information Technology (2)

## Student details

### Student number

### Student name

Harrison Plowes

## Assessment declaration

*Note: If you are an online student, you will be required to complete this declaration on the TAFE NSW online learning platform when you upload your assessment.*

This assessment is my original work and has not been:

* plagiarised or copied from any source without providing due acknowledgement.
* written for me by any other person except where such collaboration has been authorised by the Teacher/Assessor concerned.

### Student signature and Date

Version: 20210921

Date created: 24 July 2021

Date modified: 21 September 2021

For queries, please contact:

Technology and Business Services SkillsPoint

Ultimo

© 2021 TAFE NSW, Sydney  
RTO Provider Number 90003 | CRICOS Provider Code: 00591E

This assessment can be found in the: [Learning Bank](https://share.tafensw.edu.au/share/access/searching.do?doc=%3Cxml%2F%3E&in=P7ac4831b-430a-4b8d-8b56-f7b32ed5b9cf&q=&type=standard&sort=rank&dr=AFTER)

The contents in this document is copyright © TAFE NSW 2021 and should not be reproduced without the permission of TAFE NSW. Information contained in this document is correct at the time of printing: 26 November 2024. For current information please refer to our website or your Teacher/Assessor as appropriate.

## Assessment instructions

Table 1 Assessment instructions

| Assessment details | Instructions |
| --- | --- |
| **Assessment overview** | The objective of this assessment is to assess your knowledge and performance in developing mobile applications with user interfaces using version control. |
| **Assessment Event number** | 4 of 4 |
| **Instructions for this assessment** | This is a project-based assessment that assesses your knowledge and performance of the units.  This assessment is in five parts:  Build application prototype  Define technical UI requirements  Develop mobile application  Testing and feedback  Application release  And is supported by:   * Assessment Checklist * Observation checklist * Assessment feedback (not included here) * Supporting documents (within the assessment)   Check the Assessment and Observation Checklist to ensure that you’ve covered all the required tasks. |
| **Submission instructions** | On completion of this assessment, you are required to submit it to your Teacher/Assessor for marking. Where possible, submission and upload of all required assessment files should be via the TAFE NSW online learning platform.  Ensure you have included your name at the bottom of each page of documents you submit.  It is important that you keep a copy of all electronic and hardcopy assessments submitted to TAFE and complete the assessment declaration when submitting the assessment. |
| **What do I need to do to achieve a satisfactory result?** | To achieve a satisfactory result for this assessment you must complete all tasks satisfactorily.  If a resit is required to achieve a satisfactory result it will be conducted at an agreed time after a suitable revision period. |
| **What do I need to provide?** | * TAFE NSW student account username and password. * Computer or other device with word processing software and internet access * Writing materials, if required   To complete this assessment off campus:   * Prototyping and UI design tools * Version control systems * An integrated development environment * Mobile/digital devices and/or simulators * Server to deploy application (this can be a localhost server) * Mobile platform |
| **What the Teacher/Assessor will provide** | * Access to this assessment and learning resources, including the student workbook and any supporting documents or links. * Simulated work tasks, including client and software requirements and sources of information * Prototyping and UI design tools * Version control systems * An integrated development environment * Mobile/digital devices and/or simulators * Server to deploy application (this can be a localhost server) * Mobile platform |
| **Due date**  **Time allowed**  **Location** | Refer to UAG  Indicative hours to complete assessment:   * In class: Three hours * Out of class: 9.5 hours   Assessment is to be completed in and out of class. |
| **Supervision** | Some parts of this assessment are unsupervised, take-home tasks. Your Teacher/Assessor may ask for additional evidence to verify the authenticity of your submission and confirm that the assessment task was completed by you.  You may access your referenced text, learning notes and other resources. Some parts of this assessment will be supervised by your teachers/assessor. |
| **Assessment feedback, review or appeals** | In accordance with the TAFE NSW policy *Manage Assessment Appeals,* all students have the right to appeal an assessment decision in relation to how the assessment was conducted and the outcome of the assessment. Appeals must be lodged within **14 working days** of the formal notification of the result of the assessment.  If you would like to request a review of your results or if you have any concerns about your results, contact your Teacher/Assessor or Head Teacher. If they are unavailable, contact the Student Administration Officer.  Contact your Head Teacher/Assessor for the assessment appeals procedures at your college/campus. |

## Specific task instructions

The instructions and the criteria in the tasks and activities will be used by your Teacher/Assessor to determine if you have satisfactorily completed this assessment event. Use these instructions as a guide to ensure you demonstrate the required knowledge and skills.

Refer to the Assessment Checklist for the marking criteria.

You may have the option to record your participation and submit as video evidence. If you are submitting video evidence, you must:

* provide a video clearly meeting all requirements listed below and in the Observation Checklist
* ensure you have access to the equipment and resources required to participate in the demonstration
* follow the [Video recording instructions (pdf)](https://share.tafensw.edu.au/share/items/744af7d4-a241-45e2-adb0-0e13f2fe4950/0/?attachment.uuid=01c3c87a-4599-48c2-91f0-68a00b5bbb4c), which includes useful tips, links to resources and a demonstration video.  
  URL: <https://share.tafensw.edu.au/share/items/744af7d4-a241-45e2-adb0-0e13f2fe4950/0/?attachment.uuid=01c3c87a-4599-48c2-91f0-68a00b5bbb4c>.

### Scenario

You are working as an ICT Technician as part of the development team at [Gelos Enterprises](https://share.tafensw.edu.au/share/items/d0b458dc-3922-409d-b1fe-9a2f785f4a38/0/GelosEnterprises.zip/index.html) (Gelos). You have been working with the Software Development Team Leader, Christina Kaiser, on a Human Resources (HR) project for one of Gelos' clients, Red Opal Innovations (ROI).

ROI had planned to introduce their new HR system company wide. Due to a company strategic pivot in progress at ROI, the company-wide HR system rollout has been delayed. Due to this delay and a change in schedule, the HR Manager of ROI has asked Gelos to develop a mobile application for the Staff contact directory (part of the HR project). This will **provide a staff listing** and **manage the contact information** of people who work within the company.

You have been asked to develop the **Android** version of this app. The application must follow Gelos' development guidelines. All requirements and any criteria must be met for the project to be accepted by the HR manager.

Christina has provided you with the [Client brief](https://share.tafensw.edu.au/share/items/dfb82463-0ff3-4e55-9310-89c867180038/0/?attachment.uuid=43f2d30d-9e9b-4af9-89e4-ec43776a6407) (Cl\_MobileAppsDev\_AE\_Pro2\_Appx\_MobileAppClientBrief.pdf) for this project.

Download and unzip the [resource folder](https://share.tafensw.edu.au/share/items/dfb82463-0ff3-4e55-9310-89c867180038/0/?attachment.uuid=581566ce-147e-43c3-b940-f97da88a9691) (Cl\_MobileAppsDev\_AE\_Appx.zip), which contains Gelos' organisational guidelines and the client style guide.

You must follow the [Records and Information Management (ICT) Procedure](https://share.tafensw.edu.au/share/items/5f1cec7b-1d03-446a-85b7-edb42692c34e/0/?attachment.uuid=5a225cb2-b9c3-47b3-82f1-10aff2c72d2e) (GE\_Records-Information-Management-ICT\_procedure.pdf) when creating and naming your reports.

## Part 1: Build application prototype

Use the [Gelos report template](https://share.tafensw.edu.au/share/items/02285ff1-cfb2-4af4-b402-fdc23bf4bf11/0/?attachment.uuid=3c6a096c-b36f-4cb1-b0fe-f4a64dca7b83) (GE\_Report\_template.dotx) to create a **Development report**, recording details as listed for all parts of this assessment. In the report include space for name and signature for sign off.

The first task is to build an **interactive UI based prototype** of the app to demonstrate to HR manager the application content and flow.

1. Make a list of the functional requirements for the mobile application based on the scenario.
2. Build a prototype of the UI using suitable prototyping software. Design the UI for each screen according to the client requirements, including:
   1. page layouts (views) and content sections
   2. UI components, such as titles, links, buttons and other relevant interface objects, including a menu or navigation section
3. Ensure that your prototype and UI design supports:
   1. portrait orientation and small mobile resolution (phone)
   2. landscape orientation and medium resolution (tablet).
4. Include the proportions for each resolution with a screenshot of each orientation in your **Development report**.
5. Review your prototype with the client and discuss any changes required. Record your discussion via video or in writing (such as screenshots of emails or chat messages) and submit this recording as evidence.

The client may include another student enrolled in the same unit, a colleague, industry expert/representative or your teacher.

**Submit the following for Part 1:**

* Interactive link and prototype source file to review prototype
* Evidence of prototype review.

Your **Development report** will be submitted in Part 5.

## Part 2: Define technical UI requirements

1. Document the detailed technical requirements for the UI in preparation for coding in your **Development report**. List the requirements for each view (page layout) of the user interface based on the UI prototype developed in Part 1.

Each view must include an itemised list containing the following information:

* 1. UI: indicative screenshot from the UI prototype
  2. Functions: What function(s) is the view responsible for providing?
  3. Actions: What actions can the end-user perform? For example, view contact.
  4. Components: What components are required? For example, buttons.
  5. Events: What events can happen? For example, button clicked.
  6. Inputs/outputs: What input data is required and what output data is visible?

**Submit the following for Part 2:**

Include these details in your **Development report** that will be submitted in Part 5.

## Part 3: Develop mobile application

Build the mobile application according to the client requirements and details established in Part 1 and Part 2.

### Task 1: Setting up the development environment

To get started, first prepare the development environment you will be using (selected in Project 1 Part 3) by setting up your integrated development environment (IDE) and version control system (VCS).

1. Prepare and configure the IDE using appropriate features of the application for the target programming language and platforms.

Install the VCS on your computer, configuring the tools and user interface (UI) according to the organisational requirements and test everything works correctly.

Check that your installed VCS can connect to your personal hosted VCS account.

Include labelled screenshots of your development configuration and the features used in your **Development report**.

### Task 2: Using the VCS

As you start building the mobile application, you need to manage the codebase using the VCS, as follows:

1. Initialise version control on your project source code, according to the service provider procedures:
   1. Create a local working directory.
   2. Add each newly created file to the local repository.
   3. Commit at least three changes during development.
   4. Push local code to the remote host repository.
   5. Arrange for someone else to connect to your hosted repository, make a change and create a pull request. You should review and respond to the pull request, either merging it into your repo or rejecting it with stated reason.
   6. Include labelled screenshots that demonstrate each type of version control interaction in your **Development Report**.

### Task 3: Building the application

1. Build the mobile application user interface in the configured development environment, using the selected programming language, according to the required functionality and requirements (from Part 1 and Part 2).
   1. Follow the design from your approved prototype, making any changes as identified from the client review (Part 1).
   2. Integrate appropriate navigation and user input techniques, and other identified functionality and features.

To meet accessibility guidelines, add code to allow users to configure the application output, including text size, brightness and sound effects.

Bind the relevant user interface controls to the supporting data.

Persist changes and access remote data (this can be a localhost server), implementing update and insert operations.

**Submit the following for Part 3:**

Your **Development report** and **application code** will be submitted in Part 5.

## Part 4: Testing and feedback

### Task 1

You must now verify the mobile application works correctly and meets all requirements.

1. Create a test checklist (see example below) based on the functional requirements identified for the application for **all views** in the mobile application. For each view, ensure that your checklist tests:
   1. the functionality presented against requirements
   2. any navigation works as expected
   3. each screen orientation and resolution (phone or tablet) displays correctly.

Add any relevant non-functional requirements to your test checklist, including tests for internet and data source connectivity.

**Sample test checklist**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ID | Test name | Requirements details | Pass/fail | Evidence/screenshots |
|  |  |  |  |  |
|  |  |  |  |  |
|  |  |  |  |  |

1. Follow your test checklist to test the application. Debug any issues found, make code amendments as needed and undertake re-testing until the application meets all requirements.
2. Record the test results in the test checklist, including screenshots of all test results (both correct and incorrect) and include descriptions where relevant, describing what you changed in the code to correct any errors found in the application.

### Task 2

Before finalising the mobile application, you will need to ask for feedback from another development team member (this may be another student enrolled in the same unit, a colleague, industry expert/representative or your teacher) and make any changes as required.

1. Write an email to your team member using the [Gelos email template](https://share.tafensw.edu.au/share/items/02285ff1-cfb2-4af4-b402-fdc23bf4bf11/0/?attachment.uuid=2a6ed3d4-ca14-427f-8583-ceb6bcb08c1b) (GE\_Email\_template.docx), asking for their feedback on the Development report, VCS outcomes and the mobile application and process.
2. Record their feedback in your **Development report** and respond as required.

**Submit the following for Part 4:**

* Email to team member

Your **Development report** including evidence of testing and feedback will be submitted in Part 5

## Part 5: Application release

Now that your application has been fully tested you are ready for the release process. Complete the following tasks:

### Task 1: Deploy application

1. Create and package the application for deployment as relevant to the development environment used.
   1. Include labelled screenshots of every screen in the application in your **Development Report.**
2. Document the deployment procedure in your **Development Report** as simple instructions for the user on how to access and install the app.

### Task 2: Finalise application

Now that your mobile app is complete, you need to demonstrate it to another person acting as the Software Development Team Leader and obtain sign-off. The other person may be another student enrolled in the same unit, a colleague, industry expert/representative or your teacher.

This demonstration will be observed by your Teacher/Assessor or can be digitally recorded and submitted as evidence.

You should refer to the list of criteria in the Observation Checklist to understand what you need to demonstrate in this section of the assessment. This Checklist outlines the assessment criteria used to assess your performance.

1. Demonstrate all features of the application on the target devices (or simulators), including a phone and tablet device.
2. Submit your finalised **Development report** to obtain sign off, to indicate that the project is complete.

**Submit the following for Part 5:**

* Packaged application
* Source code for application
* Development report
* Evidence of sign off

## Assessment Checklist

The following checklist will be used by your assessor to mark your performance against the assessment criteria. Use this checklist to understand what skills and/or knowledge you need to demonstrate in your submission. All the criteria described in the Assessment Checklist must be met. The assessor may ask questions while the submission is taking place or if appropriate directly after the task/activity has been submitted.

Table 9: Assessment checklist 4

| TASK/STEP # | Instructions | S | U/S | Assessor Comments |
| --- | --- | --- | --- | --- |
| **Part 1** |  |  |  | *Date of Observation:*  *Assessors are to record their observations in sufficient detail to demonstrate their judgement of the student’s performance against the criteria.* |
| **1** | Built prototype using prototyping software |  |  |  |
| **2** | Designed UI, including:   * required page layout and content sections * menu/navigation section * two different screen orientations and resolutions * measurements or proportions |  |  |  |
| **3** | Reviewed UI prototype with client and obtained any changes to be made |  |  |  |
| **Part 2** |  |  |  |  |
| **1** | Documents UI including:   * UI screenshots * Functions * Actions * Components * Content flow through events and inputs/outputs |  |  |  |
| **Part 3** |  |  |  |  |
| **T1.1** | Prepared and configured the application development environment using application features |  |  |  |
| **T1.2** | Installed and configured tools and UI of VCS according to organisational requirements |  |  |  |
| **T2.1** | Project code is managed using VCS (as listed in Task 2), committing at least three code changes |  |  |  |
| **T3.1** | Built the mobile application user interface in the development environment, using selected language, according to the approved prototype and the required functionality |  |  |  |
| **T3.2** | Wrote logical code using correct syntax to allow users to configure application settings and output, including text size, brightness and sound effects |  |  |  |
| **T3.3** | User interface controls are bound to data sources |  |  |  |
| **T3.4** | Remote data is accessed and changes to data persists |  |  |  |
| **Part 4** |  |  |  |  |
| **T1.1** | Tested application for functionality (including different screen orientation and resolution), according to requirements |  |  |  |
| **T1.2** | Debugged and amended the application as required until test results confirmed it met functionality requirements |  |  |  |
| **T2.1** | Submitted documentation and asked for feedback on VCS outcomes and mobile application |  |  |  |
| **T2.2** | Responded to feedback |  |  |  |
| **Part 5** |  |  |  |  |
| **T1.1** | Packaged the application for deployment |  |  |  |
| **T1.2** | Documented deployment procedures |  |  |  |
| **T2.2** | Obtained sign-off on final product |  |  |  |
|  | Documentation follows organisational procedures |  |  |  |

## Observation Checklist

The Observation Checklist will be used by your Teacher/Assessor to mark your performance in Part 5 Task 2. Use this Checklist to understand what skills you need to demonstrate. The Checklist lists the assessment criteria used to determine whether you have successfully completed this assessment event. All the criteria must be met. Your demonstration will be used as part of the overall evidence requirements of the unit. The Teacher/Assessor may ask questions while the demonstration is taking place or if appropriate directly after the task/activity has been completed.

Table 2 Observation Checklist

| Task # | Task/Activity Performed | S | U/S | Assessor Comments (Describe the student’s ability in demonstrating the required skills and knowledge) |
| --- | --- | --- | --- | --- |
| 1 | Used mobile app on two devices or simulators of different sizes/resolutions |  |  | *Date of Observation:*  *Assessors are to record their observations in enough detail to demonstrate their judgement of the student’s performance against the criteria required.*  Q1 *Enter Question to Support Observation.*  *Comments/responses*  Q2 *Enter Question to Support Observation.*  *Comments/responses* |

## Assessment Feedback

*NOTE: This section must have the Teacher/Assessor and student signature to complete the feedback. If you are submitting through the TAFE NSW online learning platform, your Teacher/Assessor will give you feedback via the platform.*

### Assessment outcome

Satisfactory

Unsatisfactory

**Assessor feedback**

Has the Assessment Declaration for this assessment event been signed and dated by the student?

Are you assured that the evidence presented for assessment is the student’s own work?

Was reasonable adjustment in place for this assessment event?

*If yes, ensure it is detailed on the assessment document.*

*Comments*:

### Assessor name, signature and date:

### Student acknowledgement of assessment outcome

*Would you like to make any comments about this assessment?*

### Student name, signature and date