Government of Western Australia South Metropolitan TAFE	Interface Design Assessment Task 2	Form no: F1020110 Issue date: 10/12/2015 Review date: 10/12/2017

Qualification details			
Training Package code and title:	ICT Information and Communications Technology		
National Qualification Code & Title:	ICT40518 Certificate IV in Programming	**State code**	BEH5

Assessment Task	AT1 Portfolio of Tasks		
National Code & Title	ICTPRG410 - Build a user interface		
National Code & Title	ICTICT420 - Develop client user interface		
Date Due	See DAP	**Date Received**	Click here to enter a date.
Student Name			
Student Declaration	I declare that the evidence submitted is my own work: ……		
Assessor Name			
Assessment Decision	☐ Satisfactory	☐ Not Yet Satisfactory	
Assessor Signature		**Date**	Click here to enter a date.
Is student eligible for reassessment (Re-sit)?	☐ No ☐ Yes	**Reassessment Date:**	

Feedback to student
Feedback from student

Student signature		**Date**	

Candidate Instructions:

1. In order to meet the criteria, you will need to complete all parts of this assessment.
2. You may be required to explain or demonstrate your understanding of any component of this assessment.
3. Submitted work must meet presentation standards appropriate to the workplace or your registered training organisation.
4. Complete a small scale prototype of an Internet of Things (IoT) home climate automation system user interface. The project has 3 tasks
5. All work must be submitted by the due date and time.
6. If you are quoting work that is not your own it must be appropriately referenced. (APA referencing style).
7. All work must be uploaded to the BlackBoard shell using the appropriate link.
8. If you have any questions, please see your trainer/assessor.
9. Appeals process as informed at orientation.
10. During virtual classroom time you must adhere to ergonomic, work organisation and occupational health and safety requirements.

Resources Required

1. Windows 7/10
2. Visual Studio C# .NET
3. Office 365
4. Figma (available online)
5. Internet access
6. Blackboard
7. Arduino IDE

Performance Measurement

1. You will need to complete all components without errors.
2. All files are to be correctly saved with appropriate names or as instructed. Make sure that all files required are handed in.
3. Failure to do either of these tasks will result in a non-submission of assessment and a Not Yet Satisfactory being placed on your assessment.

Assessor Instructions

Type of Assessment	Project
Duration of Assessment	As detailed in the assessment plan
Location of Assessment	Virtual Classroom via Blackboard Collaborate
Conditions	This an individual project. Please check the plagiarism policy available in on the SMTAFE website under current students.
Marking Checklist	Use Marking Checklist to check off assessable items
Marking Key	Supplied in the Blackboard shell. Shows expected results and example answers
Elements and Criteria	As detailed in the assessment plan

Due Date **As per Delivery and Assessment Plan (DAP)**

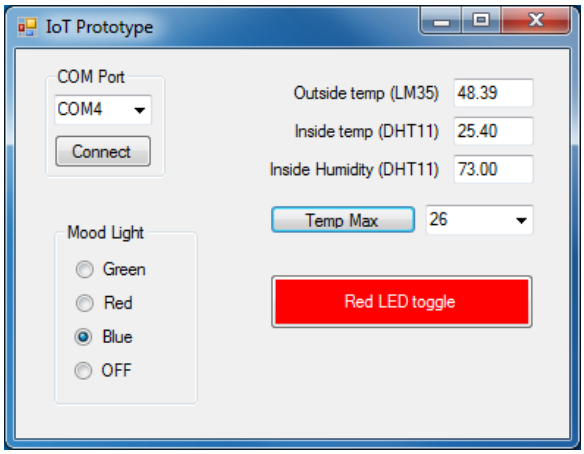
Project Assessment Task 2

Case Study IoT Prototype

You have been contracted by a software development company called SoftDev Pty Ltd, to develop a prototype to demonstrate an automated home climate control system. The prototype must use a Windows Forms interface with buttons and text boxes which will display the outputs from the various sensors and allow for user input actions. The prototype should demonstrate the following features;

1. Read and display the current inside temperature and humidity. Use the Arduino Humidity sensor DHT11 for this task.
2. Read and display the current outside temperature; use the single Temperature Sensor LM35 for this task.
3. Control the Red LED using a single toggle button, which clicks once for on and once for off.
4. Automatic timer to turn off lights; create a simple method which updates a variable to turn off the Blue LED after 10 seconds. (Point 4 and 5 can be combined)
5. Turn off lights when the room is too bright, uses the light sensitive LED to control the illumination of the Blue LED. The Blue LED will turn on when the Light A1 is covered (Dark) and turn off when under normal daylight. (Point 4 and 5 can be combined)
6. Sound a warning when the temperature is above a set comfort maximum. Use the DHT11 Sensor and Buzzer; set a temperature maximum that can be easily demonstrated (ie Temp between 25-28C).
7. Control mood light by manually adjusting the variable dial (Rotation A0). This feature will use the RGB LED and the Rotation Sensor. This could also be controlled by a radio button group (or similar control) on the Windows Form.

The interface will work with an Arduino board to Using the 321Maker shield and Arduino/Geekcreit platform implement a software solution that satisfies the seven criteria. A partial example is shown below, the exact inputs and outputs will need to be modified. The example shows a combobox to set the maximum inside temperature.



The purpose of this project is to create the interface from the initial concept above. Implementation of the attached Arduino functionality is not required

AT 2.1 – Create Design in Figma, create initial documentation, and get signoff

Initialise Documentation

Create a new document called **AutoClimate_Project.docx**.

Write an **Introduction** summarising the requirements of the project

Write a new section called **Requirements** and give a detailed list of the functional requirements of the interface.

Write a new section called **Interface elements** and list the interface elements required to satisfy the functional requirements.

Design in Figma

Create a design prototype in Figma which incorporates the interface elements listed in your documentation.

- Consider carefully the logical layout of the elements into relevant areas of functionality.
- Consider carefully the physical layout of the interface (position, font sizes, colours, spacing). Consider the possibilities of using groups and/or tabs to highlight logical connection.

Export the completed prototype design and add it to the documentation under a new heading **Prototype**

Add a list of the included elements with type, size, colour (rgb) and font face and size.

Submission

Submit the documentation to the assessor for signoff

AT 2.2 – Develop interface in Visual Studio C#.NET and verify against design

Develop interface

Develop a Visual Studio C#.NET application based on the guidelines agreed to in the documented prototype developed in AT2.1.

Documentation

As you build the solution you may need to make alterations to the original design. These need to be documented.

Under a new heading **Solution** put screenshots of the developed interface

Under a subheading **Validation and Design Modifications**, list all the initial requirements and indicate if they have been satisfied. If changes have been made to the original design, list these as changes and give the rationale for each change.

Submission

Submit the documentation and the working application to the assessor for feedback

AT 2.3 – Complete interface technical documentation and demonstrate to Assessor

Review the documentation

On the basis of feedback given in AT2.2, implement changes to the application.

Update the documentation to include the changes made (Include under **Design Modifications**)

Final Submission

Submit the completed application and documentation to the Assessor and demonstrate the application to the assessor