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| **Qualification details** | | | |
| **Training Package Code and Title:** | ICT - Information and Communications Technology Training Package (Release 1) | | |
| **Qualification National Code and Title:** | ICT40120 Certificate IV in Information Technology | **State code:** | BFF9 |
| **Qualification National Code and Title:** | ICT30120 Certificate III in Information Technology | **State code:** | BFF7 |

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| **Assessment Title** | Assessment Tool 2 – Portfolio of Work | | |
| **Unit National Code & Title** | ICTPRG302 – Apply Introductory Programming Techniques | **State code:** | OBT27 |
| **Date Due** |  | **Date Received** |  |

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| --- | --- | --- | --- |
| **Student Name** |  | **Student ID** |  |
| **Student Declaration** | I declare that the evidence submitted is my own work:  ………………………………………….. | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Assessor Name** |  | | | |
| **Assessment Decision** | Satisfactory | | Not Yet Satisfactory | |
| **Assessor Signature** |  | | **Date** |  |
| **Is student eligible for reassessment (Re-sit)?** | No | Yes | **Reassessment Date:** |  |

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| --- | --- | --- | --- |
| **Feedback to student** | | | |
| *Via Blackboard (LMS) – Please check [Grade] section.* | | | |
| **Feedback from student** | | | |
| *Via Blackboard (LMS) – Please use [Comment] section during submission.* | | | |
| **Student signature** |  | **Date** |  |

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| **Assessment Instructions** |

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| **TO THE ASSESSOR** | |
| Type of Assessment | Portfolio of Work |
| Duration of Assessment | 12 Class Sessions (Week 3 - 15) |
| Location of Assessment | Classroom |
| Conditions | Assessor to ensure that the noise levels, natural interactions and time variances are maintainedas it would in the be in the Software Development industry.  Learners are required to complete the required tasks in class and submit the required documentation electronically via Blackboard |
| Elements and Criteria | As detailed in the assessment plan  You are required to make sure that all students meet the elements, performance criteria and oral communication items as outlined in the provided checklist. |

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| **TO THE STUDENT** | |
| Purpose of Assessment | You are required to show you can:  ICTPRG302 – Apply Introductory Programming Techniques   * Establish application task * Apply language syntax and layout * Apply control structures * Code using standard programming algorithms * Test code * Create a simple application and seek feedback   You are required to meet the elements, performance criteria and oral communication items as outlined in the provided checklist. |
| Allowable Materials | Blackboard (Topic by topic) will include the following: Weekly Readings, Class notes, and Weekly Activities. |
| Required Resources | Computer with:   * Internet Access * Microsoft Office (or Office 365) * Access to Learning Management System (LMS) * Web links and example code can be downloaded from Blackboard Learning Management System. * Desktop Computer with Windows Operating System * PyCharm IDE * Python 3.8.x or Python 3.9.x |
| Reasonable Adjustment | In some circumstances, adjustments to assessments may be made for you. If you require support for literacy and numeracy issues; support for hearing, sight or mobility issues; change to assessment times/venues; use of special or adaptive technology; considerations relating to age, gender and cultural beliefs; format of assessment materials; or presence of a scribe you need to inform your lecturer. |
| Assessment Submission | All questions and activities must be attempted.  Use of research tools and peers in formulating answers are acceptable – but work submitted must be your own work.  Final project documentation is to be uploaded to the appropriate area in the Blackboard course created for this unit.  If you are marked as NYS (Not Yet Satisfactory) on your first attempt, you will be provided with another opportunity to re-attempt the assessment. |
| Project contents | This project consists of the following tasks:  Provide complete answers for all questions in AT2.1 - Console Output  Provide complete answers for all questions in AT2.2 - Python Variables & Data Types  Provide complete answers for all questions in AT2.3 - If Else Statements  Provide complete answers for all questions in AT2.4 – Loops and Data Structures  Provide complete answers for all questions in AT2.5 - Working with Strings and File I/O  Provide complete answers for all questions in AT2.6 – Develop Pseudo Code For Application Design  Provide complete answers for all questions in AT2.7 - Designing & Developing Algorithm |

# **AT2 Assessment**

**Scenario**

You have been hired as a Junior Programmer for CITE Management Services.

CITE MS has a reputation to uphold for providing top quality IT services including SaaS (Software as Service) through a web application they have developed in Python.

This is your first job working as a software developer. It has become apparent to you that your manager wishes to see how extensive your level of knowledge is and what your standard of work is before allowing you to work in the staging or production environment of the software product the company is known to the general public for developing.

It has not been explicitly communicated to you by the manager but one of your peers has warned you that your future at the company depends largely on your ability to be self-driven and to identify and resolve issues.

Some of the tasks given to you are a test by your manager and others you may view as menial what your job description is.

You must do your best job to show your manager that you are worthy of progressing to working in the staging and production environment on their flagship software.

The business is struggling financially and you know you will be out of a job if you fail to perform to the level in your job description and what has been communicated to you by your manager.

You must show your employer that you are invaluable or risk becoming unemployed and being set back in your mission to become a software developer.

You must complete all of the tasks contained here to demonstrate that you are a competent employee.

**Job Role Requirements (Assessment Requirements)**

1. All code must be thoroughly commented to and demonstrate a very clear understanding of how the code works on a method by method basis. And in smaller solutions essentially a line by line basis. An overall understanding of the solution must be communicated in the code comments.
2. All documentation and answers to questions MUST be detailed (three or four words is NOT an answer.) Your manager (Lecturer) will not accept anything but your full effort. And you will comply with this if you wish to keep your job.
3. All of your code must follow the standard naming conventions for Python code. Your manager (Lecturer) will reject your work.
4. If you fail to complete a task to a satisfactory level you MUST include all files in your re-submission not just the files you have corrected or brought up to standard.

# **AT2.1**

## Console Output

## Question 1

What your manager wants from you is for you to submit to him a simple application (a single code file) in Python that outputs text to the console. You must also provide a screenshot of the application outputting text to the console in your submission.

Your application should output the text “Hello World”.

**AT2.1 Question 1 Submission:**

1. Entire Python Project including HelloWorld.py
2. A JPEG/PNG screenshot showing the application printing out text to console.
3. All your work MUST be entirely in line with the Job Role Requirements.

## Question 2

Your employer is also a huge fan of cats and cat artwork and would like you to further demonstrate that your Python installation is working by having you send him a screenshot of an ASCII cat printed out to the console.

You may use any source you wish to find ASCII artwork but you may wish to use:

<https://www.asciiart.eu/animals/cats>

Name your code file: CatASCIIArt.py

**AT2.1 Question 2 Submission:**

1. CatASCIIArt.py containing code to print out an ASCII Art piece to the console.
2. A JPEG/PNG screenshot showing the application printing out ASCII art to console.
3. All your work MUST be entirely in line with the **Job Role Requirements.**
4. You must present your code and demonstrate it working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.2**

## Python Variables and Data Types

## Scenario

As a programmer for CITE MS you are required to create a series of small applications to work with numbers and strings. Some of these applications you have not been given any pseudo code for others you are provided with a design in the form of pseudo code to follow when building the application.

Each of these applications will perform small but useful tasks for CITE MS.

## Question 1

You have been tasked with writing some Python code that will be later used by other Python developers that have been hired as part of the team. As a junior programmer you have been assigned the task of creating pieces of code to perform String manipulation related tasks.

Write some Python code that does all of the following in sequence:

1. Takes input from the user and stores the input inside of a String.
2. Replace three different commonly misspelled words with the correct spelling within the String and print out the String variable contents afterwards. (See: <https://en.wikipedia.org/wiki/Commonly_misspelled_English_words>)

**AT2.2 Submission:**

1. StringManipulation.py code file that performs all the tasks above in sequence.
2. A JPEG/PNG screenshot showing the application executing.
3. All your work MUST be entirely in line with the **Job Role Requirements.**
4. You must present your code and demonstrate it working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.3**

## Question 1 - If Else Statements

You are required to write an application that takes input from the user and converts that String input to a float datatype. You are to prompt the user to input their body temperature and then use an If statement followed by Else If statements to print out where in the range the temperature is based upon the below table.

|  |  |
| --- | --- |
| Temperature | Range |
| Between 37 and 38 degrees Celsius | Normal Body temperature |
| Between 38 and 39 degrees Celsius | Is a Fever |
| Between 39 and 40 degrees Celsius | Is a High Fever |
| Between 40 and 41 degrees Celsius | Is A Very High Fever |
| Over 41 degrees Celsius | Is A Serious Emergency |

**AT2.3 Submission:**

1. BodyTemperature.py code file that performs the above tasks.

2. A JPEG/PNG screenshot showing the code file executing and outputting the result to the console.

3. All your work MUST be entirely in line with the **Job Role Requirements.**

4. You must present your code and demonstrate it working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.4**

## Loops and Data Structures

## Scenario

You are given a data structure to iterate through, you must use the For loop in Python to iterate through data structure that you define.

Complete the following Question in a single code file called LoopDataStructure.py.

## Question 1

Create some Python code to loop through the following **List** data structure using a **For** Loop and print out each element.

carlist = ["Toyota Camry", "Ford Falcon", "Nissan Pulsar", “Ferrari F50”, “BMW M5”]

**AT2.4 Submission:**

1. LoopDataStructure.py code file that performs the above task.

2. A JPEG/PNG screenshot showing the code file executing and outputting the result to the console.

3. All your work MUST be entirely in line with the **Job Role Requirements.**

4.You must present your code and demonstrate it working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.5**

## String Manipulation and File IO

## Question 1

Create a code file that opens a text file named “vehicles.txt” and then using a for loop to print out each line of the text file. Your code must also close the file after reading from it.

Name your code file **FileReader.py**

## Question 2

Create a code file that opens a text file named “news.txt” to write to it and writes an entire paragraph of text from a news article of your choice. You must close the file after you have written to it.

Name your code file **FileWriter.py**

**AT2.5 Submission:**

1. Complete each of the questions and submit all of the code files requested.

2. A JPEG/PNG screenshot showing the code files executing and outputting the result to the console.

3. All your work MUST be entirely in line with the **Job Role Requirements.**

4. You must present each of your code files and demonstrate them working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.6**

## Develop Pseudo Code for Application Design

## Question 1

Develop Pseudo Code for the below Python code:

|  |
| --- |
| print("The code calculates the area of a rectangle.")  width = int(input("Please enter width:"))  height = int(input("Please enter height:"))  area = width \* height  print("The area of the rectangle is:"+str(area)) |

**Keep In Mind The Following:**

* + - 1. Your pseudo code should not contain any programming code or constructs. You will not use any colons or brackets/parenthesis in pseudo code.
      2. You do not have to concern yourself with datatypes and type conversion for this assessment involving the development of pseudo code.

**AT2.6 Submission:**

1. Write Pseudo code for the given Python code and submit in a text file named “area\_pseudo\_code.txt”

3. All your work MUST be entirely in line with the **Job Role Requirements.**

4. You must present your pseudo code to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.

# **AT2.7**

## Designing and Developing and Algorithm

## Question 1

Create a Linear Search method in Python and pass it the following **List** to search through.

fruitlist = ["mango", "watermelon", "apple", “orange”, “grape”, “banana”]

The code file should have the Linear Search method at the top and then below it define the List data structure. The Linear Search method should have two parameters one for the List to search and another for the String to search for in the List. This search method should return the index of the location of the String if found.

Your code must be thoroughly commented on and explain in detail how the Linear Search method you have created works.

Name your code file: **LinearSearchMethod.py**

You need to debug your application using the debugging tool(s) built into the IDE you are using to develop your Python application.

Make any required changes to fix any errors you discover during the debugging of your application.

**AT2.7 Submission Requirements:**

1. LinearSearchMethod.py with any additional requested changes and thoroughly commented code.

2. You must also include screenshots of the debugging and testing of your application. This must be included in a structured document where testing and debugging is presented in logical order.

3. All your work MUST be entirely in line with the Job Role Requirements.

4. You must present your code and demonstrate it working to your Lecturer and verbally communicate and clarify with your lecturer that it meets requirements and make any requested changes.