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| **Qualification Details** | | | |
| **Training Package Code & Title** | **UEE– Electrotechnology Training Package (Release 6.0)** | | |
| **Qualification National Code & title** | **UEE40720 – Certificate IV in Electronics and**  **Communications** | **State code:** | **BFP4** |
| **UEE40120 – Certificate IV in**  **Computer Systems** | **BFL8** |
| **UEE50520 – Diploma of Electronics and**  **Communications Engineering** | **BFP5** |
| **UEE50120 – Diploma of**  **Computer Systems Engineering** | **BFQ6** |

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| **Student Name** |  | | |
| **Student Declaration** | I declare that the evidence submitted is my own work:  **………………………………………………………………………….** | | |
| **Assessors Name** | Saranya Chandrukannan | | |
| **Date Due** | **Week 15** | **Date Received** | Click here to enter a date. |

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| **Units of Competency (UoC) detailed in this DAP | Week/Stage/Block/Cluster : Embedded Applications** | | | |
| **Unit National code and title** | UEECS0020 – Evaluate and modify object-oriented code programs | **State Code** | OCA73 |
| UEEIC0012 – Develop structured programs to control external devices | OCA08 |
| **Assessment Tool** | **AT3 Portfolio 3**  Develop simple and challenging program | | |

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| **Assessment Decision** | Satisfactory | | | Not Yet Satisfactory | | |
| **Assessor Signature** |  | | **Date** | | Click here to enter a date. | |
| **Feedback to student** | | | | | | |
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| **Feedback from student** | | | | | | |
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| **Student signature** | |  | **Date** | | |  |

**Assessment Instruction**

**Instruction to the student:**

* OHS will be observed for the entire Assessment.
* The attached checklist will be used to mark your assessment submission. Please read it carefully before start working on your assessments.
* You must finish all the activities.
* You must fill the “Debugging Table” (at the end of the assessment sheet) with your problems/issues that you have faced during the program development process. **This table cannot be left blank.**
* This worksheet is to be completed during the lecture/lab, if possible, and submitted as a **single zip file or zipped file** via the Blackboard submission button before the due date.
* You can use the following tools to develop your programs at home. However, you need to represent your work and how have you done it to your lecturer.
* Python 3 web Interpreter
* Raspberry Pi Sense HAT Web Emulator
* W3School Python Reference
* Python Tutorial
* API Documentation
* Object-oriented language reference documentation

# **Introduction:**

*This assessment introduces you to understanding the use of operators, user input and literals. To deepen your understanding of Python you are required to attempt all activities and questions.*

**Student Checklist:**

Students are required to complete all the below tasks within one week (**PC1.3)PC1.4**

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| Tasks (OHS will be observed for the entire Assessment) **[PC1.1] [(1.1/1.2)(2.1)** | Completed to Industry Standard. You will be required to demonstrate knowledge of established OHS procedures and best practices (e.g. safe handling practices) **(1.6)** |
| Finish Task 1 |  |
| Finish Task 2 |  |
| Log for problems and their. Please Use the table (**Debugging Table**) at the end of the assessment. | **[PC2.4/ 2.5] (2.5)(2.6)**  **[PC 3.1/ 3.2/ 3.3] (3.1/3.2/3.3)** |

**TASK 1**

For this assessment you will be required to create a basic Python program that:

* Gets sensor data from the Raspberry Pi Sense Hat or use trinket simulator **1.3/1.4/1.5 1.3/1.4/1.6**
* Stores data in a file,
* Runs the program for a set amount of time (**PC 1.4/1.5/2.2/2.5)**

Be sure to read all task requirements carefully before you begin this assessment

Task requirements:

* Demonstrate knowledge of established OHS procedures and best practices (e.g. safe handling practices), Python language features, operators, control structures, syntax, Classes, Objects and file access.
* You are required to write a Python program that fulfils the following requirements:

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| **ACTIVITY 1** |
| 1. Must take at least 30 measurements for:  * Temperature * Humidity * Pressure   In order to get a different value in simulations, keep adjusting/changing values in trinket simulator or use Raspberry Pi Sense Hat/get data from API’s  **PE: 1.2/1.3/1.4/1.5/2.2**  **PE:1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6** |
| 1. Every measurement must have a timestamp of when the measurement was taken in the   following format:   * YYYY-MM-DDThh:mm   (e.g. 2019-05-27T09:05)  **PE:1.2/1.3/1.4/1.5/2.2**  **PE:1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6** |
| 1. Data from measurements must be stored in a file called “env\_data.csv” on a new line for   each measurement in the following format (an example file is included in the assessment  folder on Blackboard):   * temperature, * humidity, * pressure, * timestamp   (e.g. 23.58,65.81,1013.42,2019-05-27T09:05)  **PE:1.2/1.3/1.4/1.5/2.2**  **1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6** |
| 1. once the program is exit, it should print the content of the “env\_data.csv” file to the Terminal   **PE:1.2/1.3/1.4/1.5/2.2**  **1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6** |
| 1. Program must contain reasonable documentation.   **Programs with no documentation and comments will require resubmission.**  **PE:3.3**  **3.3** |
| 1. **Testing your code:**   In addition to the above requirements, you must also write a brief paragraph detailing how you tested your program (i.e. debugging).  You may use dot points for formatting purposes; your brief must be at least four sentences explaining your testing methodology.    (e.g. running the program without timer delays to check core functionality).  **PE:3.1/3.2/3.3;**  **3.1/3.2/3.3;** |

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| **ACTIVITY 2** |
| 1. Using the data in the table below, create a program that prints the data in tabular format and shows the total population growth over the given years   **PE:1.2/1.3/1.4/1.5/2.2/3.3**  **PE:1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6/3.3** |
| 1. Explain the relevant specifications used in the Program (Example: which package need to import? Which function using in your program?)   **PE:1.2/1.3/1.4/1.5/2.2/3.3**  **PE:1.3/1.4/1.5/1.6/2.2/2.3/2.4/2.6/3.3** |
| |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Population Per Continent (in millions)** | | | | | | | | | | Year | 1750 | 1800 | 1850 | 1900 | 1950 | 2000 | 2050 | Total Growth | | Africa | 106 | 107 | 111 | 133 | 221 | 767 | 1766 |  | | Asia | 502 | 635 | 809 | 947 | 1402 | 3634 | 5268 |  | | Australia | 2 | 2 | 2 | 6 | 13 | 30 | 46 |  | | Europe | 163 | 203 | 276 | 408 | 547 | 729 | 628 |  | | North America | 2 | 7 | 26 | 82 | 172 | 307 | 392 |  | | South America | 16 | 24 | 38 | 74 | 167 | 511 | 809 |  | |

**ACTIVITY 3**

Log for problems. Please Use the (**Debugging Table**) for **Any problems, including errors and bugs when developing coding.**

**Debugging Table (Must be filled)**

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| **Any problems, including errors and bugs** | **Solutions** | **Date** |
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**Table 1**