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| **CST 2101 – Business Intelligence Programming**  **Project : Integrated Project** |  | **Due: 11 Jan 2018 – 11:59pm** |
| **Background** |  | **Submission (15 marks)** |
| This assignment is intended to complete a project through the system development life cycle from requirements to implementation. The case is not an actual case but is meant to simulate an organizational requirement.  Organizations around the globe are becoming more aware of their environmental responsibility. At AC, the college “is committed to lowering its ecological footprint by managing such things as: carbon emissions, water consumption, waste, energy, and food consumption.” While new construction is able to integrate “green” methods, the college is not sure what areas should be addressed first in the older building. Since heating/cooling is one of the greatest contributors to carbon emissions, the College would like an analysis of the consistency of the temperature and humidity controls in the older buildings compared to the newer ones.  Using the concept of a WIFI survey the College feels that the system should be developed with the following elements.   * Use a data collection device (Raspberry Pi), to sample temperature and humidity in rooms * Monitor the collection of data on a laptop to identify any data integrity issues during collection. (Blind collection using a device is not acceptable) * Integrate important data elements not collected by the device to enable thorough analysis (e.g. Building, Room, Collection Point, Date/time, Room Occupancy, Collection Device,  Collection Operator) * Store the data from each device in a file or database/repository which can be combined later. * Integrate relevant data from “external” sources such as outside temperature and humidity. * BONUS: Basic reports/analysis should be able to be performed without additional software. (up to 1 bonus marks) |  | You will submit the following files compressed into a 7-zip archive. The archive name will be formatted as follows:  LastName\_FirstName\_CST2101\_Project.7z   1. All Python files for your Raspberry Pi program implementation. 2. All Python files for your Laptop program implementation   Submit it to Blackboard under the Project #3 Integrated Project. |

The assignment will be marked out of 15 using the following guide:

* The submission follows the project instructions. (2 mark)
* The submission provides a functioning intuitive graphical user interface. (2 marks)
* The submission demonstrates the correct use of functions, classes, methods and syntax (including loop, lists etc.) (3 marks)
* The program does not contain any logic or runtime errors. (2.0 marks)
* Proper naming conventions for variables, classes etc. (1.0 marks)
* The output file/table meets the client’s requirements. (1.0 mark)
* Sufficient header and inline documentation. (1.0 mark)
* GUI Design document reflects your GUI (1.0 mark)
* Program Design document flow is easy to read and reflects your general logic (1.0)
* Test plan covers basic functionality and exception handling (1.0 mark)
* BONUS: Creates analytical reports (1.0 mark)

I will assess the submission by capturing two room temperature/humidity measurements as well as a review of all submission documents.

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| Project Area | Requirement |
| General programming | * Must use Python 3, with meaningful naming and lower camel case style. * Must contain header documentation that describes the purpose of the program, the author and the date. * Must contain sufficient inline documentation for others to understand logic. * Must properly use classes, loops and lists in the program. |
| Design - GUI | * Include one or two paragraphs describing how the program will function and meet the client’s requirements. (This is your interpretation of the client’s very broad requirements above so there is lots of room for creativity – but it needs to make sense.) * Must include identification of input and output widgets. * May be designed in Excel. * Must be named **Design\_GUI.<extension>** |
| Development and Testing | * One or two data capture may be used for Testing. * Must create a test plan named **Test\_Plan.<extension>** * No output files need to be submitted. |
| Input | * Must have the ability to allow the user to START and STOP the data collection. * May include other functionality based on YOUR design including but not limited to displaying the temperature/humidity captured. |
| Processing | * Must be able to capture room temperature and humidity * Must be able to capture or append additional date (e.g. Building, Room, Collection Point, Date/time, Room Occupancy, Collection Device,  Collection Operator) |
| Output | * Must create and update a text file or database table * May create reports |