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|  | Faculty of Computing, Engineering and Science |  |

**Assessment Cover Sheet and Feedback Form** 2020-21

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| Module Code:  IS4S761 | Module Title:  Principles of Computing | | Module Team:  David Kidner |
| Assessment Title and Tasks:  Coursework 1: Python Programming | | | Assessment No.  1 |
| Date Set:  **23-Oct-20** | | Submission Date:  **11-Dec-20** | Return Date:  **08-Jan-21** |

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| ***Part A: Record of Submission (to be completed by Student)*** | |
| **Extenuating Circumstances**  If there are any exceptional circumstances that may have affected your ability to undertake or submit this assignment, make sure you contact the Advice Centre on your campus prior to your submission deadline. | |
| **Fit to sit policy**:  The University operates a fit to sit policy whereby you, in submitting or presenting yourself for an assessment, are declaring that you are fit to sit the assessment. You cannot subsequently claim that your performance in this assessment was affected by extenuating factors. | |
| **Plagiarism and Unfair Practice Declaration:**  By submitting this assessment, you declare that it is your own work and that the sources of information and material you have used (including the internet) have been fully identified and properly acknowledged as required[[1]](#footnote-2). Additionally, the work presented has not been submitted for any other assessment. You also understand that the Faculty reserves the right to investigate allegations of plagiarism or unfair practice which, if proven, could result in a fail in this assessment and may affect your progress. | |
| **Details of Submission:**  Note that all work handed in after the submission date and within 5 working days will be capped at 40%[[2]](#footnote-3). No marks will be awarded if the assessment is submitted after the late submission date unless extenuating circumstances are applied for and accepted (Advice Centre to be consulted).  **Work should be submitted as a digital copy (Zip file entitled 30123456.zip where 30123456 is your enrolment number) by 23:59 on 11th December 2020 to Blackboard.** You are responsible for checking the method of submission. | |
| **You are required to acknowledge that you have read the above statements by writing your student number (s) in the box:** | Student Number(s): |

**IT IS YOUR RESPONSIBILITY TO KEEP RECORDS OF ALL WORK SUBMITTED**

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| **Marking and Assessment** |
| This assignment will be marked out of 100%  This assignment contributes to 50% of the total module marks.  **Assessment Task:**  Using the Crime Data available on the **https://data.police.uk** website, you are tasked with writing a PYTHON program (or a set of Python programs if you prefer) which Reports, Analyses, and Visualises these datasets.  You are advised to work through the introductory Coursework Tutorial on Blackboard (entitled ***PYTHON CW Tutorial 1.docx***) which will introduce you to the Crime Data (and how these data can be used in Microsoft Excel and Access). By understanding the nature of the crime datasets, you will be able to formulate some ideas as to what might be worth investigating, analysing and visualising in Python).  The Coursework is open-ended, in that it is entirely up to you which datasets you use (e.g.1. South Wales Police; Gwent Police; Metropolitan Police; etc. – or multiple police force data); (e.g.2. August 2020; Summer 2020; 2019; 2017-2019; pre- and post-lockdown 2020 or combinations of these). However, it is expected that you will use data from more than one month OR more than one Police Force.  The coursework is open-ended in terms of what you do with the data, but you will be assessed in terms of:   1. The Reporting of the Data Sets (for example, being able to give an overview of the data by month/season/year/Police Force; such as total crimes; break down of crimes; comparison of crimes; or other attributes such as location or outcomes); 2. The Analysis of the Data Sets (Extension of (a) above, but will consider further statistical reporting of the data, such as normalised results by total crime (% of all crime), or even population (crimes per 1,000 people). You may need to source additional data to help you with this. In addition, you may wish to test some hypotheses as part of your analysis, e.g. is crime increasing through time? Is burglary more prevalent in Summer or Winter? Does South Wales Police data correlate with other Police force data for the same time frame? What crimes increased or decreased during the Pandemic Lockdown?). 3. The Visualisation of the Data Sets (for example, using matplotlib to re-inforce the analysis you have undertaken; e.g. appropriate graphs or visualisation strategy appropriate to the message you wish to get across. As a specific example, the Pie Charts of the breakdown of crimes for August 2020 might be compared between South Wales and the Metropolitan Police). 4. Advanced Analysis and/or Visualisation. You may wish to explore for yourself some of the other capabilities of Python using the many freely available libraries/extensions. This could be advanced statistical or numerical modelling; or the use of the basemap extension of matplotlib to produce some crime maps; or even crime heat or hotspot maps; or the development of a graphical user interface (e.g. TkInter) for your software. 5. Documentation of your work and annotation of your code. All of your work must be fully documented in a Word or PDF file; and all of your code and datasets must be supplied in a folder so that they can be tested by your tutor. For example, the documentation should focus on each aspect of your software which you wish to highlight, e.g. if your program tests a hypothesis, then clearly state what it is; how you went about testing and implementing this; and the results, including any graphs. If you have used any additional libraries or extensions, then the documentation should clearly state this (and the source / implementation instructions), so that it can be re-created by your tutor. Make sure that all datasets used for any code are also highlighted in the documentation. Or any pre-conditions as to the pathname for a file. All of your code must be fully annotated, especially the “neat” or complex features. The results of your code should also be fully presented in your documentation, in case the code cannot be executed. High resolution graphical output should be used. However, if you refer to output such as PDFs or animations, these can be included separately in your submission, but include the pathname to the output.   All of your work should be submitted via Blackboard as one compressed ZIP folder (not RAR or any other non-standard compression). The ZIP folder should be given your enrolment number, e.g. 30123456.zip.  You will not be assessed specifically on the optimal quality of your code – just the ability to get an algorithm to do what you wanted it to do, whether it be 10 or 20 lines of code. However, the use of functions might help to simplify your code, e.g. a function to read a complete CSV dataset for any month or any police force and return the data as a series of lists. |
| **Learning Outcomes to be assessed** (as specified in the validated module descriptor [https://icis.southwales.ac.uk/](https://icis.southwales.ac.uk/studentmodules/12879/studentmodulespecifications) ):  1) To demonstrate a comprehensive understanding of current developments in computer technology, programming and database systems and to apply appropriate practices, tools and techniques to produce a solution to a problem where there are many interacting factors.  2) Given a set of system requirements, to determine and use appropriate strategic, practical and conceptual techniques to design, produce and evaluate a solution to these requirements. |
| *Provisional mark only: subject to change and / or confirmation by the Assessment Board* |

# Marking Scheme:

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| **Criteria:** | **Marks Possible:** | **Marks Attained:** |
| 1. **Data Reporting** | **20** |  |
| 1. **Data Analysis** | **20** |  |
| 1. **Data Visualisation** | **20** |  |
| 1. **Advanced Analysis/Visualisation** | **20** |  |
| 1. **Report Documentation &**   **Code Annotation** | **20** |  |
| **TOTAL** | **100** |  |

Full written feedback will be e-mailed to the student within 20-Working Days.

1. University Academic Integrity Regulations [↑](#footnote-ref-2)
2. Information on exclusions to this rule is available from Campus Advice Shops [↑](#footnote-ref-3)