



COM7024

Programming for Data Analytics

Assignment

Date for Submission: Please refer to the timetable on ilearn

**(The submission portal on ilearn will close at 14:00 UK time
on the date of submission)**



Assignment Brief

As part of the formal assessment for the programme you are required to submit a **Programming for Data Analytics** assignment. Please refer to your Student Handbook for full details of the programme assessment scheme and general information on preparing and submitting assignments. The assignment brief will specifically give details and instructions for the assignment. No examination, or details of, are included within this module.

Module description: Coursework 100%

Description: The assignment is given as one extended task to be answered individually, unless multiple components have been given. Task 1.1 has been designed to check your understanding of Data Analytics programming methodologies for critical analysis, through a real-world mini Data Analytics project. All of which will be written in Python

Task 1.2 is designed to give you the opportunity to demonstrate your reporting skills, comprehensively written in an easily understandable manner, based upon your Data Analytics study.

A clear, concise analysis for all Tasks are to be given within the submission, complimented with screenshot evidence of all processes and results. You are to submit a single Word document for all tasks and your code for Task 1.1 is to be included within an appendix so that it can be checked and verified it is working correctly. Your student ID number must be clearly defined upon the uploaded file.



Learning Outcomes:

	Coursework
Demonstrate a critical understanding of the concepts and principles of programming and programming paradigms. LO 1	X
Employ relevant tools, programmatic techniques, and features to prepare, manipulate and analyse data.. LO 2	X
Critically evaluate the preliminary results of manipulating and analysing data LO 3	X
Graduate Attribute Digitally Literate Evaluate and apply digital tools and/or services while critically reflecting on opportunities for developing novel digital capabilities. Identify, select, plan for, use, modify and evaluate digital applications and strategies to enhance the achievement of aims and desired outcomes... LO 4	X

All Learning outcomes must be met to pass the module.



Guidance

Your assignment should include: a title page containing your student number, the module name, the submission deadline and the exact word count of your submitted document; the appendices if relevant; and a reference list in (see referencing section for more information). You should address all the elements of the assignment task listed below. Please note that tutors will use the assessment criteria set out below in assessing your work.

You must not include your name in your submission because Arden University operates anonymous marking, which means that markers should not be aware of the identity of the student. However, please do not forget to include your STU number.

Maximum word count: 3000 words

Please refer to the full word count policy which can be found in the Student Policies section here: [Arden University | Regulatory Framework](#)

The word count includes everything in the main body of the assessment (including in text citations and references). The word count excludes *numerical data in tables, figures, diagrams, footnotes, reference list and appendices. All other printed words ARE included in the word count.*

Students who exceed the wordcount up to a 10% margin will not be penalised. Students should note that no marks will be assigned to work exceeding the specified limit once the maximum assessment size limit has been reached.



Assignment Task

Task 1.1 – Data Analytics in Python

You are a data scientist analyst for a large European real estate company. The estate manager has requested that you perform exploratory data analysis, using Python, on a large Parisian housing data set (*Paris_housing_Data_Set_2 [4050].csv*). The purpose of the study is to determine basic analytics to help predict future possible housing market trends within Paris with the initial focus being on the *number of bedrooms* and *price* variables, plus a further study on whether there is a correlation between *number of floors* and *total square foot*.

You are to correctly import the Paris Housing data set and, once you have ensured all date types are correct, perform an initial basic statistical test on all variables. Initial process now completed, perform all appropriate pre-processing methodologies, which you deem necessary and then perform a further basic statistical test to demonstrate improvements from the pre-processing stage.

Based upon the highlighted variables above, further perform what you determine are appropriate investigations, with graphical representation, on the focused variables mentioned above, so that a meaningful study can be presented to your estate manager. Full reasoning and justification is to be given for each screenshot section of code for all processes.

(70 Total marks)

(LO's:1, 2 & 3)

(1800 Word Equivalence for the code)



Task 1.2 – Report Writing

Write a clear and concise insightful report to your estate manager defining your investigation. Your report will include all relevant analysis methodologies undertaken, full reasoning for your chosen analysis techniques and recommendations.

(30 Total marks)
(LO's 3, 4)

A clear, concise analysis for all Tasks is to be given within the submission, complimented with screenshot evidence of all processes and results. You are to submit a single Word document for all tasks and your code for Task 1.1 is to be included within an appendix so that it can be checked and verified it is working correctly. Your student ID number must be clearly defined upon the uploaded file.

End of questions

As technology and platforms may change, your module tutor will provide you with up-to-date details.



Formative Feedback

To receive formative

You have the opportunity to submit a draft assignment to receive formative feedback

The feedback is designed to help you develop areas of your work and it helps you develop your skills as an independent learner.

If you are a distance learning student, you should submit your work, by email, to your tutor, no later than 2 weeks before the actual submission deadline. If you are a blended learning student, your tutor will give you a deadline for formative feedback and further details.

Formative feedback will not be given to work submitted after the above date or the date specified by your tutor - if a blended learning student.

Referencing Guidance

You **MUST** underpin your analysis and evaluation of the key issues with appropriate and wide ranging academic research and ensure this is referenced using the Choose an item. system(s).

Follow this link to find the referencing guides for your subject: [Arden Library](#)



Submission Guidance

Assignments submitted late will not be accepted and will be marked as a 0% fail.

Your assessment can be submitted as a single Word (MS Word) or PDF file, or, as multiple files.

If you chose to submit multiple files, you must name each document as the question/part you are answering along with your student number ie Q1 Section A STUXXXX. **If you wish to overwrite your submission or one of your submissions, you must ensure that your new submission is named exactly the same as the previous in order for the system to overwrite it.**

You must ensure that the submitted assignment is all your own work and that all sources used are correctly attributed. Penalties apply to assignments which show evidence of academic unfair practice. (See the Student Handbook which is available on the A-Z key information on iLearn.)

A clear, concise analysis for all Tasks are to be given within the submission, complimented with screenshot evidence of all processes and results. You are to submit a single Word document for all tasks and your code for Task 1.1 is to be included within an appendix so that it can be checked and verified it is working correctly. Your student ID number must be clearly defined upon the uploaded file.



Assessment Criteria (Learning objectives covered - all)

Level 7 is characterised by an expectation of students' expertise in their specialism. Students are semi-autonomous, demonstrating independence in the negotiation of assessment tasks (including the major project) and the ability to evaluate, challenge, modify and develop theory and practice. Students are expected to demonstrate an ability to isolate and focus on the significant features of problems and to offer synthetic and coherent solutions, with some students producing original or innovative work in their specialism that is potentially worthy of publication by Arden University. A clear appreciation of ethical considerations (as appropriate) is also a prerequisite.		
Grade	Mark Bands	Generic Assessment Criteria
Distinction	80%+	Outstanding analysis of key issues and concepts/. Outstanding development of conceptual structures and argument, making consistent use of scholarly conventions. Outstanding <i>research skills, independence of thought, an extremely high level of intellectual rigour and consistency, exceptional expressive / professional skills, and outstanding creativity and originality.</i> Outstanding <i>academic/intellectual skills. Work pushes the boundaries of the discipline and demonstrates an awareness of relevant ethical considerations. Work may be considered for publication by Arden university.</i>
	70-79%	Excellent analysis of key issues and concepts/. Excellent development of conceptual structures and argument, making consistent use of scholarly conventions. <i>Excellent research skills, independence of thought, an extremely high level of intellectual rigour and consistency, exceptional expressive / professional skills, and substantial creativity and originality.</i> <i>Excellent academic/intellectual skills. Work pushes the boundaries of the discipline and demonstrates an awareness of relevant ethical considerations. Work may be considered for publication by Arden university..</i>
Merit	60-69%	Very good level of competence demonstrated. High level of theory application. Very good analysis of key issues and concepts. Development of conceptual structures and argument making consistent use of scholarly conventions. Some evidence of original thought and a general awareness of relevant ethical considerations.
Pass	55-59%	A good performance. A good knowledge of key issues and concepts. Fairly descriptive, with some analysis of existing scholarly material, and some argument development. Limited evidence of original thought. Some awareness of relevant ethical considerations. Good professional skills (where appropriate).
Pass	50-54%	A satisfactory performance. Basic knowledge of key issues and concepts. Generally descriptive, with restricted analysis of existing scholarly material and little argument development. Use of scholarly conventions inconsistent. The work lacks original thought. Limited awareness of relevant ethical considerations. Satisfactory professional skills (where appropriate).

Marginal Fail	40-49%	<i>Limited research skills impede use of learning resources and problem solving. Significant problems with structure/accuracy in expression. Very weak academic professional skills. Limited use of scholarly conventions. Errors in expression and the work may lack structure overall</i>
Clear Fail	39% and below	<i>A poor performance in which there are substantial gaps in knowledge and understanding, underpinning theory and ethical considerations. Little evidence of research skills, use of learning resources and problem solving. Major problems with structure/ accuracy in expression. Professional skills not present. Very weak academic professional skills. No evidence of use of scholarly conventions.</i>

Rubric Task 1: Data Analytics in Python (70 Marks)

Criteria	Outstanding 80% - 100%	Excellent 70% - 79%	Very Good 60% - 69%	Good, Pass 50% - 59%	Marginal Fail 40% - 49%	Clear Fail 0 – 39%
Task 1 Data Analytics in Python (70% Marks Overall)	Demonstrates a strong understanding of the processes involved in conducting data analysis using Python. Data importing, pre-processing, and descriptive statistics have been performed accurately. Proper coding conventions are followed, and all processes and solutions are implemented correctly.	An excellent understanding of the processes involved when conducting a data analysis in python. Data importing, pre-processing and descriptive statistics have been performed accurately. Correct coding conventions have been applied. Processes are correct.	Very good understanding of most of the processes involved when conducting a data analysis in python. Data importing, pre-processing and descriptive statistics have been performed accurately. Coding conventions have been applied. Processes are mostly correct and justified.	A good understanding of most processes involved when conducting a data analysis in python. Some Data importing, pre-processing and descriptive statistics have been performed adequately. Coding conventions have been mostly applied. Some processes are correct and justified.	A basic understanding of the processes involved when conducting a data analysis in python. Minimal Data importing, pre-processing and descriptive statistics have been performed fairly. Minor coding conventions have been applied. Processes and solutions have been given, yet incorrect.	A limited understanding of the processes involved when conducting a data analysis in python. No pre-processing and statistical investigation has been completed with minor errors. No or partial Coding conventions have been applied and no processes are evident

Rubric Task 1.2: Report Writing (30 Marks)

Criteria	Outstanding 80% - 100%	Excellent 70% - 79%	Very Good 60% - 69%	Good, Pass 50% - 59%	Marginal Fail 40% - 49%	Clear Fail 0 – 39%
Task 1.2	An outstanding report. All analysis results	An excellent report. Analysis results	A very good report. Most Analysis results have	A good report. Some Analysis results have	A basic report. Some Analysis results	A poor report. No Analysis has been given.



Report writing (30% Marks Overall)	have been given and are correct, therefore inferring the correct Data Analytical methodologies. All results are fully reasoned and justified. No gaps are shown within the analysis.	have been given and correct, therefore inferring the appropriate data analytical methodologies. Results are reasoned and justified.	been given, therefore mostly inferring some form of data analytical methodology. Most of the Results are reasoned with and justified. Minor gaps are shown within the analysis.	been given, therefore inferring some form of data analytical methodology. Some of the Results are reasoned with and justified. Gaps are shown within some of the analysis.	have been given, yet incorrect. Some of the Results are reasoned with and justified, but incorrect. Frequent gaps are shown within the analysis.	No Results are reasoned with or justified. Major Gaps throughout the analysis.
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Note: All sub-tasks are considered to be equally weighted. Where grades are awarded across multiple sub-tasks, the marker will allocate grades appropriately.

e.g. If the task contains a part a) and b) they are considered together (as each relates to different aspects of the learning outcomes) and, a poor response to the second part would reduce the overall grade awarded, even if the response to the first part is of a high standard,