BPP Business School

Coursework Cover Sheet

Please use this document as the cover sheet of for the 1st page of your assessment.

Please complete the below table – the grey columns

Module Name	
Student Reference Number (SRN)	
Assessment Title	

Please complete the yellow sections in the below declaration:

Declaration of Original Work:

I hereby declare that I have read and understood BPP's regulations on plagiarism and that this is my original work, researched, undertaken, completed and submitted in accordance with the requirements of BPP School of Business and Technology.

The word count, excluding contents table, bibliography and appendices, is _____ words.

Student Reference Number: _____ Date: _____

By submitting this coursework you agree to all rules and regulations of BPP regarding assessments and awards for programmes.

Please note that by submitting this assessment you are declaring that you are fit to sit this assessment.

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BPP UNIVERSITY SCHOOL OF BUSINESS AND TECHNOLOGY

MSc Management

Programming for Data Analysts

FORMATIVE Coursework Assessment Brief

Submission mode: **Turnitin online access**

1. FORMATIVE General Assessment Guidance

- The deadline for submission is **shown on the submission link. Please note late submissions will**
- **not be marked.**
- You are required to submit all elements of your assessment in one Microsoft Word document, via **The Hub**
- **Assessment area**. Only submissions made via the specified mode will be accepted and hard copies or any other digital form of submissions (such as via email or pen drive etc.) will not be accepted.
- For coursework, the submission word limit is **1,000** words, excluding your list of references. You
- must comply with the word count guidelines. You may submit LESS than **1,000** words but not more. Word Count guidelines can be found on the assessments tab of your module.
- **Do not put your name or contact details anywhere on your submission**. You should only put your student registration number (SRN) which will ensure your submission is recognised in the marking process.
- You are required to use only Harvard Referencing System in your submission. Any content which is already published by other author(s) and is not referenced will be considered as a case of plagiarism.
- *You can find further information on Harvard Referencing in the online library on The Hub (Found in Help & Support)*
- BPP University has a strict policy regarding authenticity of assessments. In proven instances of plagiarism or collusion, severe punishment will be imposed on offenders. You are advised to read the rules and regulations regarding plagiarism and collusion in the General Academic Regulations (GAR) and Manual of Academic Procedures (MOPP) which are available on The Hub in the Academic registry section (Found via Help & Support).
- You should include a completed copy of the **Assignment Cover sheet**. Any submission without this completed Assignment Cover sheet may be considered invalid and not marked.

2. FORMATIVE Assessment Brief

This Formative Assessment Brief covers the first two tasks of your Summative.

2.1. Assessment learning outcomes

LO 1: This assessment is designed to gauge your understanding, skills and application of common data analysis techniques used in business and other organisations today. As such you need to demonstrate your attainment in these areas according to the THREE Module Learning Outcomes (LOs):

LO 1: Critically evaluate the principles of programming and apply them in a business context

LO 2: Critically evaluate the use of code libraries in programming for a business context

LO 3: Construct a programming solution to solve a defined business problem.

2.2. Scenario

Zappy Financial Services (ZFS) is a local company that provides small business loans. Last year, loan applications increased by over 200%, largely because of a concerted online campaign to establish a strong digital presence. Almost all loan applications and business leads are generated from search engines and digital advertisements, reflecting the decision to increase advertising spend on SEO channels such as Google, Facebook, LinkedIn and similar platforms.

Despite a strong digital marketing approach, the current loan application process remains manual. It requires the online completion of information, including gender, marital status, number of dependents, education, income etc. To date, several of these factors have been considered in the approval decision. All applications are reviewed and approved by the loan team which, given the recent increase in volumes, has resulted in skills shortages, longer loan approval times and increased potential operational and control risk. The current operating model constrains further growth. Loan decisions are categorised as either “approved” or “rejected.”

You are employed by ZFS as a lead programmer, and have coding and data analytics knowledge, as well as a deep appreciation for the need to balance business growth with a robust control environment. You will be leading this project and have been tasked with providing a scalable solution – that addresses key resourcing and control risks.

Specifically, the Board has instructed you to develop several partial automation processes that will help the existing loans team, freeing up their time for greater one-on-one customer contact. You need to provide a data-driven solution while working with a variety of key stakeholders each with varying objectives such as marketing, internal audit and compliance.

An in-house database administrator (DBA) was able to compile a PDF of past applications which the loans team are hoping to map to previous loan approval outcomes.
The two files provided by the DBA are:

- A file in PDF format called ‘Loans_Database_Table.pdf’
- An Excel file, called ‘Zappy Loan Data.xlsx’

The first file has been extracted from business loan records from the previous year, and it includes a status field for each application, allowing the business to map inputs to outcomes for a possible supervised machine learning exercise.

The Excel file is maintained by the Sales team, and it is currently being saved in a shared folder. This increases the chance of duplication and missing values.

You will need to reflect the learnings throughout this module and consider the learning outcomes particularly LO 3: Construct a programming solution to solve a defined business problem as you create your answer.

2.3. Research objectives and tasks

1. Load Data into a Notebook (Task 1 of Part1 Summative)

Create a new .ipynb notebook within Google Colab and load the TWO data files provided by the DBA. Extract the two datasets from these two files which contains information about past loan records and combine into one Python DataFrame.

The numeric values stored in each column of the loan dataset are:

- Gender: 1-Male, 2-Female
- Married: 0-Single, 1-Married
- Dependents: 0, 1, 2, 3+
- Graduate: 0-No, 1-Yes
- Self-Employed: 0-No, 1-Yes
- Credit_History: 0-No, 1-Yes
- Property_Area: 1-Urban, 2-Semiurban, 3-Rural

You should use Python to load the information contained within these datasets into memory. You should also add comments to your notebook, explaining the steps taken to load the data, how you treated the PDF and Excel data, the libraries called and the overall procedure. Recall this will be used for training colleagues in future.

2. Create a template for a Business Report (Commence Part 2 Summative)

Set out the main sections for a Business Report that will provide the Business Case and Approach to be taken for the programming solution you will create in Part 1. Indicate the likely content in each section, what points you will make and issues you may want to discuss in the Summative. This can be in bullet form or in sub-headings that you can fill in later when you do the Summative.

Do not attempt to write out the report in full, it is intended as an ***initial outline*** for your Summative Submission. Your overall structure should follow the following main heading naming structure and order though feel free to add sub-headings and associated ***bullet points*** covering ideas and content.

a) **Introduction**: This should cover the current business environment of companies like ZFS, the problems your solution would address, and what impact and benefits your proposed programming solution might have on the business. You should also mention the implications of not doing anything, and the kind of human resources needed. Financial information or resources are NOT required.
b) **Approach**: Describe the approach you would take to implement your solution. i.e., the language, software and tools to be used, explaining the reasons for their choice. Also, describe the steps required in preparing the data and how visualisation will be used. You should provide a critical discussion on the role of code libraries and include a brief discussion of the need for design and test of any written code.
c) **Recommendations for future work:** This should show the proposed route forward including an outline plan. Briefly explain how using the data provided, your solution could be further developed to build a predictive model. A model that can be trained to predict if a new loan application is likely to be approved or rejected. Your recommendation should include a short explanation of the techniques, libraries, tools, and objective function used to evaluate the precision of your recommended predictive model.
d) **Conclusions:** A brief conclusion summarising the main points in the report.
e) **Appendix 1 – Code:** Copy and paste the contents of your programming notebook as Appendix 1**.** This does not contribute towards your word count.
f) **(Further appendices, to support your report):** Again, these do not count towards your word count.

In writing your report, use the insight and knowledge provided in this module but also leverage sound academic research to support your report.
As you develop your work, you should self-evaluate your developing draft against the criteria set out in the Marking Guide below (See Section 5).

3. Report Structure

Guidelines:

- Your report should follow the section naming structure and order set out in the Brief. You should also add your own sub-headings as you see fit to demonstrate your ability to develop structure and content
- Your report should include an auto-generated contents page including section headings and sub-headings. The contents page should also include a page-referenced list all tables, charts and figures provided in our report. Remember to number all pages in your report, for example 'Page 8 of 12'.
- Ensure you develop your discussion in a logical progression: Findings, inferences, conclusions, recommendations
- Do not make general assertions without supporting evidence
- Zero spelling errors and grammatical mistakes
- Cite all your sources in the body of the text and in the Referencing using the Harvard Referencing style http://bpp.libguides.com/Home/StudySupport
- Include a blend of industry research, case studies and academic references.

You should set out your Business Report in one PDF document, according to the following heading structure.

- University Cover Page
- Table of Contents
- Introduction to the report
- Approach – heading only
- Recommendations – heading only
- Conclusions – heading only
- Appendix 1 – Code
- (Further appendices as decided by the student).

You should add sub-headings under this overall structure as you feel fit to demonstrate your ability to develop the section themes and to provide meaningful sub-structure. But you must use this overall structure to provide a consistent framework against which your marker will allocate marks. You will be deducted marks if you do not follow this structure. Also, note that there is NO requirement for producing an Executive Summary.

Total word count: **1,000**. The Cover Page, Table of Contents, References, Appendices, Tables, Charts and Figures do not count towards word count.

The content of the Python Notebook is not included in the word count.

4. Mapping Learning Outcomes to Assessment Tasks

The table below sets out the mapping between the four Module Leaning Objectives and the key tasks in your Summative Assessment which test your achievement against these Learning Objectives.

Learning Outcome	Mapping to Summative Assessment Tasks
LO 1: Critically evaluate the principles of programming and apply them in a business context	Part 2 Not tested in Formative
LO 2: Critically evaluate the use of code libraries in programming for a business context	Part 2 Not tested in Formative
LO 3: Construct a programming solution to solve a defined business problem	Part 1 Load data

5. Marking Guide

Your Summative Assessment is marked out of 100 and counts towards 100% of your module mark. The following table shows the tasks, marks and marking guide that you will use in your Summative, ***so as you develop your Formative work keep in mind the points below. Specifically you should iteratively self-assess your performance against the Marking Guide as you develop your draft submission, in order to evaluate your performance against your target grade.***

Assignment task	Distinction (70-100%)	Merit (60-69%)	Pass (50-59%)	Fail (0-49%)
Part 1 - Construct a Programming Solution –(LO3) – 30 marks	Guidelines: • Load both data files and combine them • Explain the steps taken to load the data, how you treated the PDF data, how you cleaned the data, the libraries called and the overall procedure			
	Student correctly displays a programming solution to solve a business problem and explains in detail the steps taken to achieve the results	Student correctly displays a programming solution to solve a business problem with reasonable explanation and comments.	Student correctly displays a programming solution to solve a business problem	Student fails to display a programming solution to solve the business problem
Part 2 – Report Business Case (Introduction) (LO2) – 20 marks	Guidelines: • Identify the problem you are hoping to address and the workplace context • Define the solution (a high-level description) • State what the benefits will be.			
	Excellent presentation of a business case that can be used to justify the proposed solution.	Good presentation of a business case that can be used to justify the proposed solution.	Satisfactory presentation of business case that can be used to justify the proposed solution.	Weak answer. No justification of the proposed solution.

Assignment task	Distinction (70-100%)	Merit (60-69%)	Pass (50-59%)	Fail (0-49%)
Part 2 – Report Business Case (Approach, Recommendations, Conclusions) (LO1, LO2) – 40 marks	Guidelines: • Explain what steps should be taken to implement the proposed solution • Steps should include cleaning and preparation, design and test • Clear recommendations as to what should be done to enable automation of loan approval			
	Excellent knowledge-base, exploring and analysing data analytics discipline, its theory relating to the use of programming with clear originality, detail and autonomy within a business context. The merits of different predictive models are discussed.	Good knowledge base, exploring and analysing data analytics discipline, its theory relating to the use of programming with some originality, detail and autonomy within a business context. The benefits of predictive modelling are explained	Satisfactory knowledge base; explores and explicitly analyses the data analytics discipline, its theory relating to the use of programming (and relevant code libraries) with some originality and detail within a business context	Inadequate and often implicit knowledge base with some omissions and/or lack of theory relating to the use of programming for data analysts (and relevant code libraries) within a business context.
Report Structure and References (Applies across all LOs tasks) - 10 marks	Follow the guidelines given in Section 3 Report Structure and Referencing			

Assignment task	Distinction (70-100%)	Merit (60-69%)	Pass (50-59%)	Fail (0-49%)
	For a distinction the report will use a consistent approach to headings, tables and graphs. Sources will be correctly cited and there will be a complete set of references in the correct format and in alphabetical order. There is evidence of extensive independent reading and research. Formatting and presentation is professional throughout, as expected in a business or consultancy report.	Referencing has few if any errors. The report is reasonably well presented but could be improved by greater attention to detail. There is evidence of wider reading and research.	Referencing is satisfactory. There are a limited number of references, but the correct format is used, albeit with some errors. There may be some errors in formatting and presentation, but the report is reasonably professional in appearance.	Weak research with inappropriate references. No professional appearance of report