T Level Technical Qualification in Digital Business Services

Occupational specialism assessment (OSA)

Data Technician

Assignment

Mark scheme

v1.1: Specimen assessment materials
September 2021
603/6902/4

Internal reference: DBS-0002-03

T Level Technical Qualification in Digital Business Services
Occupational specialism assessment (OSA)

Data Technician

Mark scheme

Assignment

Contents

Marking guidelines

General guidelines

You must apply the following marking guidelines to all marking undertaken throughout the marking period. This is to ensure fairness to all students, who must receive the same treatment. You must mark the first student in exactly the same way as you mark the last.

The mark scheme must be referred to throughout the marking period and applied consistently. Do not change your approach to marking once you have been standardised.

Reward students positively giving credit for what they have shown, rather than what they might have omitted.

Utilise the whole mark range and always award full marks when the response merits them.

Be prepared to award 0 marks if the student's response has no creditworthy material.

Do not credit irrelevant material that does not answer the question, no matter how impressive the response might be.

If you are in any doubt about the application of the mark scheme, you must consult with your team leader or the chief examiner.

Guidelines for using extended response marking grids

Extended response marking grids have been designed to award a student's response holistically for the relevant task or question and should follow a best-fit approach. The grids are broken down into levels, with each level having an associated descriptor indicating the performance at that level. You should determine the level before determining the mark.

Depending on the amount of evidence that the task produces, the grids will either be a single, holistic grid that covers the range of relevant performance outcomes (POs), and will require you to make a judgement across all the evidence, or they will consist of multiple grids, that will be targeted at specific POs, and will require you to make a judgement across all the evidence in relation to that particular grid in each case, therefore making multiple judgements for a single task to arrive at a final set of marks. Where there are multiple grids for a particular task, it is important that you consider all the evidence against each of the grids, as although the grids will focus on particular POs, awardable evidence for each grid may come from across the range of evidence the student has produced for the task.

When determining a level, you should look at the overall quality of the response and reward students positively, rather than focussing on small omissions. If the response covers aspects at different levels, you should use a best fit approach at this stage and use the available marks within the level to credit the response appropriately.

When determining a mark, your decision should be based on the quality of the response in relation to the descriptors. Standardisation materials, marked by the Chief Examiner, will help you with determining a mark. You will be able to use exemplar student responses to compare to live responses, to decide if it is the same, better or worse.

You are reminded that the indicative content provided under the marking grid is there as a guide, and therefore you must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks.

Task 1

How the evidence produced for this task relates to the PO mark schemes

The following is a list of the evidence produced for this task, which references the POs where this evidence is expected to be relevant for marking:

- selected datasets relevant to the project brief (PO3)
- a single written proposal covering all 3 parts of task 1 (parts A (PO1), B (PO3) and C (PO5)) which includes the information described in the instructions

PO1: Source, organise and format data securely in a relevant way for analysis

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that: • demonstrates excellent identification of relevant wide-ranging data sources, ensuring the information generated fully meets the needs of the business within the scenario • identifies an exceptional variety of data sources that could be used to formulate trends and patterns • includes clearly formatted tables and charts to an appropriate number of significant figures
3	9–12	The student provides a response to the task that: • demonstrates good identification of suitable data sources. Information meets the needs of the business within the scenario • identifies a good variety of data sources that could be used to formulate trends and patterns • includes reasonably formatted tables and charts to an appropriate number of significant figures
2	5–8	The student provides a response to the task that: • demonstrates sufficient identification of suitable data sources. Information meets some of the needs of the business within the scenario • identifies a reasonable variety of data sources identified and selected • includes adequately formatted tables and charts
1	1–4	The student provides a response to the task that: • demonstrates minimal identification of suitable data sources. Selected data meets few of the needs of the business within the scenario • identifies a limited variety of selected data sources • includes untidy tables and charts
0	0	No creditworthy material.

Indicative content

Marks should be allocated for the following indicative content, plus any other suitable responses a student may produce which are relevant to the grading bands against this performance outcome:

- marks should be allocated where the student's proposal highlights identified objectives and tasks required to meet the stated goals – this should include sources of data selected from the internet research requirement appropriate to the task, cited within the proposal with an accompanying explanation as to why they are appropriate, as explained in part A of task 1 – for example, marks can be allocated for how well a student responds to each of the following:
    - the forecast of the smart-home device market
    - the internet of things (IOT) industry - with a focus on devices for the consumer market
    - the popularity of smart-home devices by age
    - the most popular smart-home devices

Market research will consist of historical figures or projections from a credible source. Credible sources will reference where data is from and articles will be dated. Opinions should only be considered if they are written by industry experts. Wikipedia and other pages which can be contributed to by the public should not be referenced unless the original source is referenced.

Sources for research could include the following, but note that this is not an exhaustive list, and research in its nature may include sources that have not been listed here. Where this is the case, and the research is relevant and meaningful, and meet the requirements outlined above, it should be awarded credit as appropriate.

Potential research sources:

- https://www.fortunebusinessinsights.com/industry-reports/methodology/internet-of-things-iot-market-100307
- https://www.statista.com/outlook/279/156/smart-home/united-kingdom
- https://www.mordorintelligence.com/industry-reports/global-smart-homes-market-industry
- https://www.theecoexperts.co.uk/smart-home/statistics

The data should be presented in tables or graphs, and some metrics could be:

- revenue
- spending
- usage

However, as long as their work is relevant to these areas of coverage, marks should be awarded.

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	7–8	The student provides a response to the task that shows: • the relevant data meets the needs of the business within the scenario and the proposal clearly relates to the business objectives and client goals • thorough understanding of the business scenario problems, which is fully relevant to the business within the scenario • a completely correct identification of all the datasets
3	5–6	The student provides a response to the task that shows: • identification and application of data meets the needs of the business within the scenario, and sufficiently relates to the business objectives and client goals • good understanding of the business scenario problems, which is mostly relevant to the business within the scenario • a mostly correct identification of all the datasets
2	3–4	The student provides a response to the task that shows: • information meets some of the needs of the business within the scenario and adequately relate to the business objectives and client goals • some understanding shown of the business scenario problems, which may meet some of the client's needs • a somewhat correct identification of all the datasets
1	1–2	The student provides a response to the task that shows: • information selected meets few of the needs of the business within the scenario and has little relevance to the business objectives • a lack of understanding of the problems and/or objectives of the scenario • identification of one or two correct datasets
0	0	No creditworthy material.

Indicative content

Marks should be allocated for the following indicative content, plus any other suitable responses a student may produce which are relevant to the grading bands against this performance outcome.

The student should select data from the datasets provided which relate to the business objectives within the scenario. The list below explains which datasets are suitable and should therefore be selected. Marks should be awarded for recognising relevant datasets as described in the grade bands, but not allocated individually for each correct identification as described below:

- ages_sctr.csv – this dataset is appropriate for the business objectives as it shows age demographics

- ann.txt – this dataset cannot be used as there is no key to map the actions
- homeC.csv – this dataset is not relevant to the objectives
- number_of_bedrooms.csv – this dataset is appropriate for the business objectives as it shows house size demographics
- number_of_rooms.csv – this dataset is appropriate for the business objectives as it shows house size demographics
- population.csv – this dataset cannot be used as there are no column headers
- rawdata.txt – this dataset cannot be used as there is no key to map the actions
- REFIT_BUILDING_SURVEY.csv – this dataset is irrelevant
- ukpostcodes.csv – this dataset is only valid with an explanation of how they would use spatial data
- CLIENT_DATA_FINANCE – this dataset does not help the business objectives
- CLIENT_DATA_PERSONAL – this dataset is appropriate for business objectives as it shows customer characteristics
- CLIENT_DATA_SALES – this dataset is appropriate for business objectives as it shows internal sales figures
- CLIENT_PRODUCTLIST – this dataset is appropriate for business objectives as it links the products with the other internal data
- marks should be allocated for how closely the student classifies the data specific to the business objectives within the scenario – any valid reasoning which can be related to the business objectives should be credited

The student can provide their written proposal in a variety of styles and should be awarded marks where they provide a rationale of their approach to source and identify sources of data, as part of the research required by part A of this task (this is different to PO1 where the student must show **why** they selected specific data from their research). Here they should be awarded marks for **how** they selected the provided datasets in relation to solving the business problem.

The student should be awarded marks if they have shown that they understand the value of data to the client's business, particularly in relation to the scenario brief and the client's objectives, such as:

- age demographics
- house size demographics
- customer characteristics
- historical sales figures

PO5: Apply legal, ethical and professional principles when manipulating data

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • excellent and extensive identification of suitable data processing regulations and guidelines in line with the datasets showing excellent awareness of which regulations should be used in the context of the provided datasets • thorough understanding of security controls and data handling both generally and specific to the scenario, with appropriate and detailed recommendations included in the proposal
3	9–12	The student provides a response to the task that shows: • good identification of data processing regulations and guidelines in line with the datasets showing good awareness of some regulations which should be used in the context of the provided datasets • good understanding of security controls and data handling both generally and specific to the scenario, with appropriate recommendations included in the proposal
2	5–8	The student provides a response to the task that shows: • adequate identification of most suitable regulatory and data handling regulations showing some awareness of some regulations in the context of the provided datasets • sufficient understanding of security controls and data handling both generally and specific to the scenario, with some recommendations included in the proposal
1	1–4	The student provides a response to the task that shows: • minimal identification of current regulatory and data handling regulations or legal considerations • little understanding of security controls and data handling either generally or specific to the scenario, with few recommendations included in the proposal
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

The student's proposal references issues which are likely to include:

- correct definitions for:
  - GDPR

- The Data Protection Act 2018

Marks should be awarded for inclusion and explanation of the key principles of data security, such as:

- lawfulness, fairness and transparency
- purpose limitation
- data minimisation
- accuracy
- storage limitation
- integrity and confidentiality

How they will ensure that those regulatory needs are met could include:

- regular checks with removal of inaccurate data and non-relevant data
- encrypting the data

students may make reference to security measures such as firewalls and passwords, which are less relevant to the protection of the data itself, but can be awarded some credit Potential security risk controls could include:

- encryption, hashing or any other relevant control

Marks should also be awarded where student identifies that credit card information is highly sensitive.

Task 2

How the evidence produced for this task relates to the PO mark schemes

The following is a list of the evidence produced for this task, which references the POs where this evidence is expected to be relevant for marking:

- single joined data set (PO1, PO2 and PO3)
- decision log of processes and steps taken as described in the instructions for both parts A and B (PO1, PO2 and PO3)

PO1: Source, organise and format data securely in a relevant way for analysis

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • exceptional use of data cleansing and validation of data (parts A and B), recognising most or all of the errors in the dataset • thorough understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • exceptional use of data manipulation and transformation (parts A and B) with correct formulae used in context
3	9–12	The student provides a response to the task that shows: • effective use of data cleansing and validation of data (parts A and B), recognising many of the errors in the dataset • clear understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • good use of data manipulation and transformation (parts A and B) with mostly correct formulae used
2	5–8	The student provides a response to the task that shows: • acceptable level of data cleansing and validation of data (parts A and B), recognising some of the errors in the dataset • adequate understanding of the appropriateness of the data for meeting the specified business scenario and objectives (part A) • some use of data manipulation and transformation (parts A and B) with some correct formulae used

Band	Mark	Descriptor
1	1–4	The student provides a response to the task that shows: • limited use of data cleansing or validation of data (parts A and B) • basic understanding of the appropriateness of the data which will be used for the specified business scenario (part A) • limited use of data manipulation and transformation (parts A and B) with few correct formulae used
0	0	No creditworthy material.

Indicative content

Students should be awarded marks for recognising the following data cleansing points for each dataset:

- ages_sctr:
  - column names are messy
  - mean age is clearly wrong
- number of bedrooms:
  - column names are messy
  - there are duplicate values for postcode sector
- number of rooms:
  - column names are messy
  - postcode sector is populated with both lowercase and uppercase characters
- prices:
  - the students should recognise that they should filter the data to only include postcodes BS and KT as the other data is irrelevant
  - the students need to reformat the postcode so they can aggregate by postcode sector prices_housetype_key is used to determine the housetype within the data
  - prices_part_1:
    - there are no column names
  - prices_part_2:
    - the file format is inconsistent with prices_part_1. The students must change the file extension
  - prices_part_3:
    - there is no data in this file. The students must use the column names for prices_part_1 and prices_part_2

The final dataset should show the student recognises the above points and students should only be penalised a mark for each error they fail to recognise.

Postcode sector should be formatted consistently with task 2 part B.

All data cleansing should be evidenced by appropriate code or formulas.

This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all performance outcomes where they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae, and can be awarded credit accordingly if their outcome is successful. All equivalents in other software and languages should be equally credited. Some example Excel formulae include:

- INDEX(…)
- MATCH(…)
- VLOOKUP(…)
- AVERAGE(…)
- SUM(…)
- COUNT(…)
- UPPER(…)
- LOWER(…)
- UNIQUE(…)
- LEFT(…)
- LEN(…)
- RIGHT(…)
- SUMMARISE(…)

PO2: Blend data from multiple sources

Band	Mark	Descriptor
4	16–20	The student provides a response to the task that shows: • data sets are blended into a clean, unified structure that is verified and free from error • exceptional use of data manipulation, taking into account how the information will be usable for future tasks • thorough understanding of the identification of appropriate data within data sets for blending purposes • exceptional identification of keys
3	11–15	The student provides a response to the task that shows: • data sets are blended into a unified structure with minimal errors or omissions • effective use of data manipulation • good identification of appropriate data within data sets to blend • good identification of keys
2	6–10	The student provides a response to the task that shows: • data sets are blended into a unified structure with some errors and omissions • reasonable use of data manipulation completed • adequate understanding and ability to identify appropriate data within data sets to blend • sufficient understanding of keys
1	1–5	The student provides a response to the task that shows: • a basic attempt made to blend the data sets but unsuccessfully achieved a unified structure • limited use or evidence of data manipulation • basic understanding and ability to identify appropriate data within data sets to blend • minimal understanding of keys
0	0	No creditworthy material.

Indicative content

Students should be awarded credit for their blending of data as part of the creation of the single joined dataset in part A, and their identification of keys as part of their response to part B (although they do not need to blend this data as part of part B).

PART A

Students should be awarded marks if they have aggregated the data from the prices dataset by postcode sector. They should provide code in how they did this. They should calculate aggregate statistics for house type. Marks should be substantially awarded if they provide a single dataset at postcode area or postcode district level.

The final dataset should look similar in content and appearance to the single dataset which will be provided (by NCFE) for students to work with for task 3.

The single datasets should be at postcode sector level and include data from each public dataset (for example, not the datasets prefixed with CLIENT). If the student has created custom columns, they should appear in this final dataset.

Students should also be awarded marks if they have recognised the correct primary keys in each dataset:

- prices – transaction ID
- other public dataset – postcode sector

All data joining should be evidenced by appropriate code or formulas.

This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all performance outcomes where they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae, and can be awarded credit accordingly if their outcome is successful. All equivalents in other software and languages should be equally credited. Some example Excel formulae include:

- INDEX(…)
- MATCH(…)
- VLOOKUP(…)
- AVERAGE(…)
- SUM(…)
- COUNT(…)
- UPPER(…)
- LOWER(…)
- UNIQUE(…)
- LEFT(…)
- LEN(…)
- RIGHT(…)
- SUMMARISE(…)

PART B

Students should be awarded marks if they recognise that the database is at third normal form (3NF) as it meets the conditions of second normal form (2NF) and there is no transient dependency.

They should correctly identify the keys in the internal data as so. Each key should have a valid explanation:

- client data personal:
    - customer ID – primary key
    - first name – no key
    - last name – no key
    - gender – no key
    - IP address – no key. Although unique, it is not necessarily a key as in the real world an IP is not always unique per customer
    - date of birth – no key

  - postcode – foreign key
  - house number – no key
- client data sales:
  - sales date – no key
  - transaction ID – primary key
  - product ID – foreign key
  - customer ID – foreign key
  - quantity – no key
- client data finance:
  - customer ID – primary key
  - credit card number – alternate key
  - cardtype – no key
  - expiry – no key
  - security code – no key
- product list:
  - product ID – primary key
  - product – alternate key
  - description – no key
  - type – no key
  - suitable for – no key

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	13–16	The student provides a response to the task that shows: • excellent knowledge of general data principles • excellent data manipulation skills with minimal or no errors • excellent application of a data validation template with entry restrictions and correct data formats
3	9–12	The student provides a response to the task that shows: • good knowledge of general data principles • good data manipulation skills with some minor errors • good application of a data validation template with mostly correct data formats
2	5–8	The student provides a response to the task that shows: • adequate knowledge of general data principles • sufficient data manipulation skills but with one or 2 major errors • adequate application of a data validation template with some correct data formats
1	1–4	The student provides a response to the task that shows: • minimal knowledge of general data principles • few data manipulation skills with major errors • minimal understanding of a data validation template
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

PART A

In the joined dataset, students should be awarded marks if they recognise that postcode sectors with NAs are not applicable to the business context and that postcode sectors with a small number of sales should be ignored. This number is subjective and should be backed with good reasoning but no less than 20.

Any calculations should be credited provided they could provide insight to the business and loosely help with the business objectives.

Some example calculation methods could include **but not limited to**:

- percentage

- mean
- sum

This list of example formulae is not exhaustive and is provided as a guide. It should be used as a reference across all POs where they are required. The list is not provided with an expectation that a student would use any particular number or range of the formulae, but rather credit should be awarded for appropriate use to meet the requirements of the brief. A student may reach their conclusion without using any of these formulae, and can be awarded credit accordingly if their outcome is successful. All equivalents in other software and languages should be equally credited. Some example Excel formulae include:

- INDEX(…)
- MATCH(…)
- VLOOKUP(…)
- AVERAGE(…)
- SUM(…)
- COUNT(…)
- UPPER(…)
- LOWER(…)
- UNIQUE(…)
- LEFT(…)
- LEN(…)
- RIGHT(…)
- SUMMARISE(…)

PART B

Students should be awarded marks if they have completed the following:

- postcode sector should be formatted consistently with part A
- date of birth should be transformed to age – as this is historical data, exceptional students will recognise that they should calculate years from the latest sale date, not the date of the assessment
- data validation template should include correct formats for each variable (numeric, character):
    - primary key should have a unique entry restriction

Task 3

How the evidence produced for this task relates to the PO mark schemes

The following is a list of the evidence produced for this task, which references the POs where this evidence is expected to be relevant for marking:

- a dashboard for your client containing detailed information, including trends and patterns you have identified, which help the client towards their business objectives (PO4, PO6)
- a written log containing decisions about selected data to represent, insights and how it relates to the clients' brief (PO3, PO4, PO6)
- evidence that an appropriate statistical test has been completed (PO3)

Note: In this task students are not required to clean and blend the data – but can do so to help with their dashboard creation. We have already credited the data blending in task 2 so no additional credit is awarded. The datasets provided are all clean. The individual datasets are provided as some students may prefer to make a dashboard using automatic relationships from the base datasets as opposed to a single file. If the students are unable to complete task 2 then they need a single dataset so they can complete task 3, which has been provided.

PO3: Analyse structured and unstructured data to support business outcomes

Band	Mark	Descriptor
4	7–8	The student provides a response to the task that shows: • excellent use of statistical methods; trends and patterns in data identified, fully relevant to the business objectives • exceptional understanding of an evaluation metric with relevant conclusions drawn from it • exceptional understanding of selected statistical test which clearly shows why it is appropriate for the context
3	5–6	The student provides a response to the task that shows: • good use of statistical methods; trends and patterns identified within the data • good understanding of an evaluation metric with conclusions drawn from it which may have some relevance • good understanding of selected statistical test with a basic understanding of the context
2	3–4	The student provides a response to the task that shows: • adequate use of statistical methods and algorithms; trends and patterns identified in data • sufficient understanding of an evaluation metric but not necessarily with any relevant conclusions drawn • sufficient understanding of selected statistical test but not in the context of the brief

Band	Mark	Descriptor
1	1–2	The student provides a response to the task that shows: • minimal use of statistical methods and algorithms; trends and patterns in data minimally identified • minimal understanding of an evaluation metric, with no conclusion drawn • basic understanding of selected statistical test
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

Students will use statistical methods to identify trends or patterns in the data, for example:

Regression

- There should be a brief explanation that regression is used to fit a line to the data.

Correlation

- There should be a brief explanation that a correlation test is used to determine the strength of the correlation.

Evaluation metrics may include:

- Regression - mean absolute error (MAE) or relative mean absolute error (RMSE). Both should be minimised to infer a stronger correlation. Both evaluation metrics are acceptable
- Pearson's r or R2 - Pearson's r should be in the range -1 to 1. The absolute value determines the strength of the correlation. R squared is the coefficient of determination which also shows the strength of correlation but will be affected more by outliers in the data. It has a range between 0 to 1. Both evaluation metrics are acceptable

Conclusions drawn will focus on the evaluation metric and how it relates back to. Students are not marked on the evaluation metric being correctly calculated but the explanation and conclusions they draw from it.

PO4: Interpret data and communicate a result appropriate to the audience

Band	Mark	Descriptor
4	16-20	The student provides a response to the task that shows: • dashboard layout and appearance is excellent and very clearly and effectively presented • excellent choice of appropriate visualisation type which accurately reflects sound and relevant interpretation of the data relevant data • log comprehensively details information on selected techniques
3	11-15	The student provides a response to the task that shows: • dashboard layout and appearance is good with clear and reasonably effective presentation • good choice of appropriate visualisation type which accurately reflects good and mostly relevant interpretation of the data relevant data • log clearly details information on selected techniques
2	6-10	The student provides a response to the task that shows: • dashboard layout and appearance is adequate with some effective presentation used • satisfactory choice of appropriate visualisation type which somewhat accurately reflects reasonable and somewhat relevant interpretation of the data relevant data • log sufficiently details information on selected techniques
1	1–5	The student provides a response to the task that shows: • dashboard layout and appearance is basic and at the lower end of the band is unclear and ineffective • minimal choice of appropriate visualisation type which may not always accurately reflect relevant interpretation of the data relevant data • log details minimal information on selected techniques
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome:

Students should be credited on their ability to interpret and tell a story through the data .

Selected communication techniques for this outcome relate specifically to the relevant inclusion of suitable visualisations and their aesthetics. The dashboard should include pivot tables and pivot charts which could consist of:

- filters
- sliders
- tables

The following layout should be adhered to:

- titles and axes should be capitalised where appropriate
- variable names should not include acronyms unless very obvious
- there should not be too many visualisations on 1 screen
- it should not include any technical terms

The log has appropriate content and detail on the visualisation techniques selected, such as:

- pie charts should not be used with too many unique values
- bar charts should only include numeric data
- filters should be used to switch quickly between categorical variables
- sliders should be used only for numeric variables

PO6: Discover, evaluate and apply reliable sources of knowledge

Band	Mark	Descriptor
4	10-12	The student provides a response to the task that shows: • excellent evaluation of the sources, through comprehensive explanation behind the choice of underlying data behind visualisations backed by sound logic and reasoning • comprehensive explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been substantially fulfilled
3	7-9	The student provides a response to the task that shows: • good evaluation of the sources, through good explanation behind the choice of underlying data behind visualisations backed by some good logic and reasoning • clear explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been fulfilled to a good standard
2	4-6	The student provides a response to the task that shows: • some evaluation of the sources, through adequate explanation behind the choice of underlying data behind visualisations backed by some logic and reasoning which is not always effective • adequate explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been sufficiently fulfilled
1	1–3	The student provides a response to the task that shows: • limited evaluation of the sources, through basic explanation behind the choice of underlying data behind visualisations with poor reasoning • basic explanation of how the visualisations are appropriate to the client's objectives • visualisation requirements have been minimally fulfilled
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

Students should be credited for their conclusions which must match the trends and insights that the data is showing, and reflect an effective evaluation of the data in order to effectively communicate the conclusions.

A decision-making log which accounts for the student's reasoning and rationalisation on the selection of, visualisations such as:

- high level sales statistics by various customer attributes such as
  - age

- gender
- location

- the popularity of different products by age
- appropriate demographics of areas they may wish to target – this may include
  - average house price
  - size of the houses
  - the age distribution of a neighbourhood
  - the distribution of property type
- any other visualisations which are backed by a valid business reason

Students should mention:

- a correct explanation of the insights each visualisation provides
- an appropriate explanation of how the visualisations are appropriate to the client's objectives

Task 4

How the evidence produced for this task relates to the PO mark schemes

The following is a list of the evidence produced for this task, which references the POs where this evidence is expected to be relevant for marking:

- a screen presentation with voice recording to include:
  - visualisations of completed analysis showing observed trends and patterns via the use of graphs and charts (PO4, PO6)
  - recorded accompanying narrative with explanations, insights and purpose of visualisations, all aligned to the client brief (PO4, PO6)

Note: in this task the PO4 mark scheme is focussed on the outward communication of the data 'story' to an audience, whereas the PO6 mark scheme is focussed on the ability of the student to reach a relevant and meaningful conclusion, for example, that what the student is saying is backed up by the data.

PO4: Interpret data and communicate a result appropriate to the audience

Band	Mark	Descriptor
4	16–20	The student provides a response to the task that shows: • excellent presentation technique to communicate results clearly and effectively • exceptional use of communication formats targeted specifically for the client • a comprehensive ability to interpret data in a way that fully aligns to a specific business context
3	11–15	The student provides a response to the task that shows: • good presentation technique to communicate results with some effectiveness • good use of communication formats targeted specifically for the client • a good ability to interpret data in a way that substantially supports a specific business context
2	6–10	The student provides a response to the task that shows: • satisfactory presentation technique to communicate results but may not always be effective • adequate use of communication formats targeted specifically for the client • a satisfactory ability to interpret data which mostly supports a specific business context
1	1–5	The student provides a response to the task that shows: • basic presentation technique to communicate results which may not communicate the message • poor use of communication formats targeted specifically for the client • a limited ability to interpret data which may or may not support a specific business context

Band	Mark	Descriptor
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome:

The presentation follows the different steps through which the raw data becomes meaningful, represented in graphics and presented visually for the business scenario, telling the story using data points.

The presentation should be presented clearly and professionally demonstrating the ability to:

- inform
- reflect
- question
- develop a narrative
- draw a conclusion
- provide recommendations
- convey technical insights in an accessible way

The students should communicate their interpretations with confidence. They should use their dashboard to convey key insights to the audience.

For this performance outcome they are being marked on their ability to deliver insights and conclusions using data and visualisations. The students are not being marked on the commercial viability of the conclusions themselves, but marks must be awarded on the ability to interpret and tell a story through the data and convey a conclusion.

PO6: Discover, evaluate and apply reliable sources of knowledge

Band	Mark	Descriptor
4	10–12	The student provides a response to the task that shows: • excellent use of critical thinking that is applicable for a digital business context with recommendations that address all the business objectives and more • highly sophisticated use of evaluation techniques which support the digital business context • thorough understanding of the appropriateness of the selected information and its legitimate use
3	7–9	The student provides a response to the task that shows: • good use of critical thinking that is applicable for a digital business context with recommendations that address most of the business objectives • good use of evaluation techniques to support the digital business context • good understanding of the appropriateness of the selected information and its legitimate use
2	4–6	The student provides a response to the task that shows: • some evidence of critical thinking that is applicable for a digital business context with recommendations that address one of the business objectives • reasonable use of evaluation techniques to support the digital business context • adequate understanding of the appropriateness of the selected information and its legitimate use
1	1–3	The student provides a response to the task that shows: • minimal evidence of critical thinking that is applicable for a digital business context and will have little relevance to the business objectives • limited use of evaluation techniques to support the digital business context • limited understanding of the appropriateness of the selected information and its legitimate use
0	0	No creditworthy material.

Indicative content

The following list should be used to assist in determining the band achieved within the performance outcome being marked. It should be used as a guide, and markers must credit any other suitable responses a student may produce. It is not a requirement either that students must cover all of the indicative content to be awarded full marks for this outcome.

The presentation will match specific business needs and requirements. The explanations should relate back to the business objectives.

The students should state if they agree or disagree with what the client said about their business evidenced by data and visualisations.

For this performance outcome, the students are being marked on the quality of their conclusions which must match the trends and insights that the data is showing. Students are not being marked on the quality of their dashboard. There are many valid conclusions that the students can provide. For example a student may decide that the client should stock their security products with a ratio of X:Y because their visualisation shows the house distribution of postcode area XX has a ratio of P% detached and semi-detached houses: Q% flat+s.

Marks should be awarded where they ultimately recommend:

- a postcode sector where the client should locate each of their new shops with reasoning
- a plan to increase sound system sales
- how they should stock each shop with their security products

Any additional valid recommendation should be credited.

Performance outcome grid

Task	PO1	PO2	PO3	PO4	PO5	PO6	Total
1	16		8		16		40
2	16	20	16				52
3			8	20		12	40
4				20		12	32
Total marks	32	20	32	40	16	24	164
% Weighting	19.5%	12%	19.5%	24%	10%	15%	100%

Document information

The T Level Technical Qualification is a qualification approved and managed by the Institute for Apprenticeships and Technical Education.

Owner: Head of Assessment Design

Change History Record

Version	Description of change	Approval	Date of Issue
v1.0	Post approval, updated for publication.		December 2020
v1.1	Branding and formatting final updates. NCFE rebrand.		September 2021