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| **DATA ANALYTICS UNIT 3 OUTCOME 1**  **SCHOOL-ASSESSED COURSEWORK** | | | | | | | |
| **Performance descriptors** | | | | | | | |
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| **Unit 3**  **Outcome 1**  On completion of this unit the student should be able to interpret teacher-provided solution requirements and designs, extract data from large repositories, manipulate and cleanse data, conduct statistical analysis and develop data visualisations to display findings. | | **DESCRIPTOR: typical performance in each range** | | | | | |
| **Key skill** | **Very low** | **Low** | **Medium** | **High** | **Very high** |
| interpret solution requirements and designs | Interprets functional requirements. | Interprets functional and non-functional requirements.  Some requirements are interpreted accurately to develop database, spreadsheet and data visualisations solutions. | Interprets functional and non-functional requirements and designs, including:   * layout diagrams * data dictionaries.   Some requirements and designs are interpreted accurately to develop database, spreadsheet and data visualisations solutions. | Interprets functional and non-functional requirements and designs, including:   * query designs * IPO charts * mock-ups or storyboards.   Most requirements and designs are accurately interpreted to develop database, spreadsheet and data visualisations solutions. | Interprets all functional and non-functional requirements and designs.  All requirements and designs are accurately interpreted to fully develop database, spreadsheet and data visualisations solutions. |
| identify, select, extract and validate relevant data from large repositories using database software | Identifies and selects data from large data repositories.  Uses database software to:   * create database tables using data types and field sizes * identify input data for validation. | Uses database software to:   * extract data from large data repositories into database tables * create queries that select data from the database * validate data using one of the following checks: * existence * type * range. | Uses database software to:   * create relationships between database tables * create queries that sort and filter data from the database * validate data using two of the following checks: * existence * type * range. | Uses database software to:   * create queries using SQL functions * validate data and checks the reasonableness of all input data using all the following checks: * existence * type * range. | Uses database software to:   * create queries using Boolean operators * validate all relevant input data and checks the reasonableness of all input data. |
| use the APA referencing system to acknowledge intellectual property | Lists data from data repositories. | Outlines data from data repositories, including the title of each repository and the date sourced. | Applies referencing to data using the APA referencing system, including the author and source.  Some errors exist. | References data from large data repositories using the APA referencing system to acknowledge intellectual property.  Minor errors exist. | References all data sources correctly, and in alphabetical order, for large data repositories using the APA referencing system to acknowledge intellectual property. |
| manipulate and cleanse data using spreadsheet software | Uses spreadsheet software to:   * identify data for manipulation and cleansing * create worksheets * identify input data for validation. | Uses spreadsheet software to:   * import data from database software using a range of data types * apply a range of appropriate formats to data * validate data using one of the following checks: * existence * type * range. | Uses spreadsheet software to:   * apply conditional formatting * filter data using criteria * sort data using one field/column * manipulate data using formulas * validate data using two of the following checks: * existence * type * range.   Some errors exist with data and/or calculations. Few errors have been corrected. | Uses spreadsheet software to:   * link between worksheets * sort data using multiple fields/columns * validate data using all the following checks: * existence * type * range.   Minor errors exist with data and/or calculations. Some errors have been corrected. | Uses spreadsheet software to:   * format all data and charts for export to data visualisations * validate all relevant input data and checks the reasonableness of all input data.   All errors with data and/or calculations have been identified and corrected. |
| conduct statistical analysis to identify trends, relationships and patterns | Lists manual calculations to be used for statistical analysis.  Identifies trends in the data. | Calculates values using formulas to be used for statistical analysis.  Creates charts to enable statistical analysis.  Outlines trends and patterns in the data. | Calculates descriptive statistics using formulas and describes each statistic.  Creates relevant charts that accurately depict the data.  Describes trends and patterns in the data and charts produced. | Calculates descriptive statistics related to the measures of variability and the spread of the data.  Examines the statistics and describes its relevance.  Describes the shape and skew of the data and charts correctly.  States the relationships between data variables. | Calculates all relevant descriptive statistics correctly and accurately.  Explains reasons for the shape and skew of data accurately.  Calculates Pearson’s correlation co-efficient and uses the value to show the relationship between data variables. |
| select, justify and apply functions, formats and conventions to create effective data visualisations | Identifies functions and formats to create data visualisations that incorporate text and images. | Applies functions and formats to create data visualisations that incorporate text, images, symbols and charts. | Uses functions, formats and conventions to create data visualisations that incorporate a range of relevant chart types.  Outlines why the types of data visualisations were used. | Uses functions, formats and conventions to create effective data visualisations that explain identified trends, relationships and patterns.  Explains why the types of data visualisations were used. | Uses and justifies functions, formats and conventions to create effective data visualisations that clearly communicates and displays all findings.  Justifies the use of the types of data visualisations selected. |
| develop and apply suitable testing techniques to software tools used | Lists test data for database queries or spreadsheet formulas. | Outlines test data for database queries and spreadsheet formulas in a testing table.  The testing table is incomplete. | Identifies test data for database queries, spreadsheet formulas and data visualisations in a testing table with expected results stated.  Identifies input data to test validation checks.  Some errors exist. | Classifies test data for database queries, spreadsheet formulas and data visualisations using testing tables.  Compares test results displaying both expected and actual results.  Documents suggested actions for rectifying errors in the testing tables.  Minor errors exist. | Reports and displays evidence of test data for database queries, spreadsheet formulas and data visualisations  Documents the actions taken for failed tests using testing tables that compares both expected and actual results.  No errors exist. |

KEY to marking scale based on the Outcome contributing 100 marks

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| Very Low 1–20 | Low 21–40 | Medium 41–60 | High 61–80 | Very High 81–100 |