

**INFORMATION TECHNOLOGY**

**GUIDELINES FOR**

**PRACTICAL ASSESSMENT TASKS**

**GRADE 11**

**2019**

**These guidelines consist of 31 pages.**

Copyright reserved Please turn over

Information Technology 2 DBE/PAT 2019

NSC

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | **TABLE OF CONTENTS** |  |
| **1.** | **INTRODUCTION** | | **3** |
| **2.** | **GUIDELINES** | | **4** |
|  | 2.1 | What is the PAT? | 4 |
|  | 2.2 | Mark allocation | 5 |
|  | 2.3 | The topic | 6 |
|  | 2.4 | What you need to be able to do the PAT | 7 |
|  | 2.5 | Malpractice | 7 |
|  | 2.6 | Non-compliance | 7 |
|  | 2.7 | PAT requirements | 8 |
|  | 2.8 | Instructions for Phase 1 | 9 |
|  | 2.9 | Instructions for Phase 2 – Coding and testing | 12 |
|  | 2.10 | ANNEXURE A: Assessment tools | 15 |
|  | 2.11 | ANNEXURE B: Learner declaration – Phase \_\_\_ | 24 |
|  | 2.12 | ANNEXURE C: Declaration of authenticity | 25 |
|  | 2.13 | Guidelines for teachers to provide guidance | 26 |
|  |  | 2.13.1 What are the learners required to do and provide? | 26 |
|  |  | 2.13.2 How will learners go about it? | 26 |
|  |  | 2.13.3 Skills required | 26 |
|  |  | 2.13.4 What must the learners be taught beforehand? | 27 |
|  | 2.14 | Malpractice | 27 |
|  | 2.15 | Learner declaration of authenticity of the PAT | 27 |
|  | 2.16 | Role of the teacher | 28 |
|  | 2.17 | Supervised/Controlled conditions | 29 |
|  | 2.18 | Managing the PAT | 29 |
|  | 2.19 | Evidence of assessment | 29 |
|  | 2.20 | Interview | 29 |
|  | 2.21 | Requirements | 30 |
|  | 2.22 | Non-compliance | 30 |
| **3.** | **CONCLUSION** | | **31** |

Copyright reserved Please turn over

Information Technology 3 DBE/PAT 2019

NSC

1. **INTRODUCTION**

The 17 Curriculum and Assessment Policy Statements subjects which contain a practical component all include a practical assessment task (PAT). These subjects are:

* AGRICULTURE: Agricultural Management Practices, Agricultural Technology

|  |  |  |
| --- | --- | --- |
| • | ARTS: | Dance Studies, Design, Dramatic Arts, Music, Visual Arts |
| • | SCIENCES: | Computer Applications Technology, Information Technology, |
|  |  | Technical Sciences |
| • | SERVICES: | Consumer Studies, Hospitality Studies, Tourism |

* TECHNOLOGY: Civil Technology, Electrical Technology, Mechanical Technology and Engineering Graphics and Design

A practical assessment task (PAT) mark is a compulsory component of the final promotion mark for all candidates offering subjects that have a practical component and counts 25% (100 marks) of the end-of-the-year examination mark. The PAT is implemented across the first three terms of the school year. This is broken down into different phases or a series of smaller activities that make up the PAT. The PAT allows for learners to be assessed on a regular basis during the school year and it also allows for the assessment of skills that cannot be assessed in a written format, e.g. test or examination. It is therefore important that schools ensure that all learners complete the practical assessment tasks within the stipulated period to ensure that learners are resulted at the end of the school year. The planning and execution of the PAT differs from subject to subject.

Copyright reserved Please turn over

Information Technology 4 DBE/PAT 2019

NSC

1. **GUIDELINES**

**2.1** **What is the PAT?**

The practical assessment task (PAT) is a software development project in which you will have the opportunity to demonstrate your software development and programming skills.

The purpose of the PAT is to:

* Work extensively with content knowledge to improve your programming and organisational skills;
* Implement higher-order and critical-thinking skills, formulate strategies and solve problems on different levels; and
* Develop good working practices to prepare you for the real world, such as:

1. Time management o Thorough planning

o Perseverence to achieve and to excel in what you set out in your plan

1. Presentation and marketing of your product

You will need to demonstrate knowledge and understanding of the software development life cycle through analysis, design, coding and testing of your project. You will have to show effective use of the software design tools and techniques which you have studied.

The PAT is divided into TWO phases, as explained below.

Phase 1: Outlines the project task, solution and a possible design of the project

Phase 2: A working, fully documented Delphi application that implements the planned solution

**NOTE: Submission dates – Specific dates will be determined by your subject teacher.**

**Phase 1: No later than the FIRST week of Term 3**

**Phase 2: No later than the SECOND week of Term 4**

**LEARNERS MUST ADHERE TO THE DUE DATES FOR EACH PHASE.**

**NOTE:** You will be required to demonstrate and discuss your application during an interview session.

Copyright reserved Please turn over

Information Technology 5 DBE/PAT 2019

NSC

**2.2** **Mark allocation**

The PAT counts 25% of your final examination mark for Information Technology. It is therefore crucial that you strive to produce work of a high standard.

|  |  |  |
| --- | --- | --- |
| **Phase** | **Development phase** | **Maximum Mark** |
|  |  |  |
| **Phase 1** | Analysis and Design | 48 |
|  |  |  |
| **Phase 2** | Coding and Testing | 70 |
|  |  |  |
| **General** | Final product and impression | 18 |
|  |  |  |
|  | **Total:** | **136** |
|  |  |  |

**NOTE:**

* The PAT mark is a compulsory component of the final certification mark for all candidates registered for Information Technology.

Copyright reserved Please turn over

Information Technology 6 DBE/PAT 2019

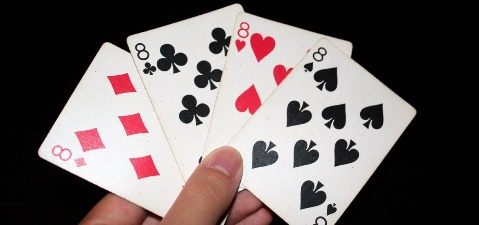
NSC

**2.3** **The topic**

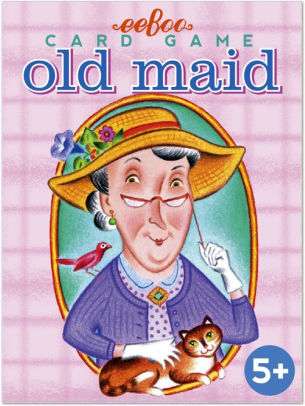
A card game is played with a deck of cards and is normally regarded as a game of chance. Players only know the cards held in their hands as oppose to a game like chess where all the information is clearly visible. A card game might make use of a board for the placement of cards or scorekeeping. The board in this case serves a secondary purpose.

The best-known deck is the 52-card Anglo-American deck which contain the French suits spades, hearts, diamonds and clubs. For games like Yu-Gi-Oh, players compile their own deck and is not limited to a specific number of cards.

Example of card games:



Bridge

Spades 

 Go Fish

Old Maid

Crazy Eights

Rummikub

Poker

Blackjack

Pokémon Trading Card Game

Yu-Gi-Oh! Trading Card Game

Projects in the scenario of card games could include the following:

• Managing gaming tournaments or online gaming tournaments

• Developing a card game for one or more players

• Recording game data for further analysis, e.g. predicting the outcome of a game.

• Trading game cards like Pokémon

*You are not limited to the list of card games or ideas mentioned above, but you need to keep within the overall theme – software with card games as its focus, be it game playing, card trading, tournament organizing, etc. Note that you need to choose data and functionalities in such a way as to develop a well-rounded application related to the topic.*

**NOTE:** Your final program must comprise **one** single project with logically related parts.

Copyright reserved Please turn over

Information Technology 7 DBE/PAT 2019

NSC

**2.4** **What you need to be able to do the PAT**

To be able to do the PAT, you need the following:

* The Delphi IDE (integrated development environment)
* An office suite with the following software: o Word processing software

o Database software

* Storage media to save and backup your work electronically, e.g. a flash drive, rewritable

CD/DVD

**2.5** **Malpractice**

As the PAT is an individual project that is part of your final promotion mark, you may NOT:

* Get help from others without acknowledgement
* Allow others to do programming code for you
* Submit work which is not your own
* Share your work with other learners
* Include work directly copied from books, the internet or other sources without acknowledging it.

The above actions constitute malpractice, for which a penalty will be applied, depending on the seriousness of the offence.

**NOTE:** If you use work from other resources, it may not exceed 10% of the work that you submit.

**2.6 Non-compliance**

You will be given up to a part of Term 4 to submit outstanding work or present yourself for the PAT. Should you fail to fulfil the requirements for the practical assessment task, you will be awarded a zero ('0') for the PAT component of IT.

Copyright reserved Please turn over

Information Technology 8 DBE/PAT 2019

NSC

**2.7** **PAT requirements**

The project must include the following:

* A database connection and database manipulation that entail performing different CRUD (Create, Read, Update and Delete) operations
* A multi-form GUI with good functionality and usability, based on sound HCI principles
* The use of a text file for input/output purposes, e.g. to populate data structures and to provide reports
* Other data structures that will be relevant to your program

**Database**

The database must:

* Have at least TWO linked tables (relational tables implementing referential integrity)
* Contains sufficient data volumes and uses fields of different data types (approximately 5 fields and at least 10 records per table)
* Be accessed and manipulated by the program using code constructs only.

**GUI**

The graphical user interface (GUI) must:

* Have at least THREE forms/screens that allows for navigation between forms depending on the user choices
* Interact with the database and other data structures to provide the necessary input, processing and output
* Comply with relevant HCI principles

**Text files**

Your application must use a text file(s) for input and/or output.

**Other data structures**

Your program must use at least one other data structure relevant to your system. This could include a user-defined ADT (abstract data type), such as arrays and selection components, such as like lists, combo box, etc.

**NOTE:** The mark obtained for your project will be greatly influenced by the quality of the programming code that manipulates the data successfully in order to adhere to the user requirements in the best possible way. Quantity cannot replace variety, effectiveness and quality.

Copyright reserved Please turn over

Information Technology 9 DBE/PAT 2019

NSC

**2.8** **Instructions for Phase 1**

During this phase you have to show that you have done a proper and thorough user requirement analysis. This needs to be done in order to determine who the users are and what the users of the system would require it to do. The following can be used as a guideline:

**Choose a topic from the provided TOPIC list or any related topic.**



**SCENARIO AND SCOPE: DEFINE THE TASK**



Write a brief description (approximately 200 words) in your own words to describe in general terms the problem/task, and how the project will solve the problem.

Your explanation must highlight that:

* You understand the purpose of the task that you have chosen
* Your solution will solve the needs of the task
* You clearly indicate the scope of the project



**USER REQUIREMENTS**



The ***user*** is the target audience and will thus determine the needs and requirements of the program. Determine the clients/users and their requirements.

The aim is to identify the users, user needs, acceptable limitations and processing requirements of the system. Use a table or a use case diagram to explain the role, activity and limitations of each user of the system.



**NAVIGATION/DESCRIPTION OF FLOW DIAGRAM**



Clearly indicate the logical program flow and navigation between screens. Use a flow diagram or any other form of illustration to present a global overview of the project/system.



**DESIGN THE DATABASE**



The aim is to design a relational database to serve as a data source, as well as to manipulate data contained in the database using programming code only.

Show the design of the database, including the tables, relationships, field names, field types and field sizes.

The database should provide data to the program to be processed and create reports.

The Delphi program must be able to manipulate the content of database tables, e.g. update/edit/ delete/add data, provide results of queries, provide reports, etc.

Copyright reserved Please turn over

Information Technology 10 DBE/PAT 2019

NSC



**DESIGN THE GRAPHICAL USER INTERFACE (GUI)**



The aim is to produce a GUI design that considers good human-computer interaction (HCI) principles. Your design should include measures that prevent errors from occurring due to invalid input and that minimise the amount of information a user has to enter.

Use HCI design principles and design a GUI that considers the following:

* The user, type of user and context of the user
* Appropriate components
* User requirements, usability
* Dialogues – must be relevant, simple and clear
* Icon usage and presentation – well selected and relevant, well placed and purposely used
* Colour – appropriate use and combination of colours
* Feedback – neat, clear and well presented
* Helpful error messages
* Exits – clearly marked, placed correctly
* Clearly marked navigation
* Shortcuts
* Flow of information on the screen – top to bottom and left to right
* Sensible use of space on the screen

Provide examples of planned data capture and data entry designs (screen dumps may be used from a prototype of the project but must be annotated) and of planned output design.

Show the GUI design following HCI principles of interface(s), excluding introductory screens.



**DATA DICTIONARY**



**Text files**

Your application must use a text file(s) for input and/or output.

**Other data structures**

Your application must use at least one other data structure relevant to your scenario, such as arrays, selection components like lists, combo boxes, etc.



**SOFTWARE TOOL – INPUT, PROCESSING, OUTPUT (IPO)**

**(FORMAT, DATA TYPES/STRUCTURES, VALIDATION)**



Use an IPO illustration/table to:

* Design the overall solution, considering all constituent parts and the interrelationships between the various parts of the program/system;
* Specify the format, data types, source of input, source of output, validation of input and error checking mechanisms;
* Specify processing that needs to be done and provide algorithm(s)/formulae to show how the processing will be done; and
* Provide a clear description to indicate the input, processing and output requirements of the system for at least TWO of the main interfaces.

Copyright reserved Please turn over

Information Technology 11 DBE/PAT 2019

NSC



**HAND IN**



Hand in a document that contains the following:

* A clear description of the chosen topic;
* User requirements – detailed information stating the role, activities and limitations of each user of the planned system;
* A planned database design;
* A GUI design;
* A data dictionary; and
* The IPO design, including validation and error checking techniques.

Copyright reserved Please turn over

Information Technology 12 DBE/PAT 2019

NSC

**2.9 Instructions for Phase 2 – Coding and testing**

This is where you implement your design by using appropriate software tools (programming language, database software, IDE, etc.) and techniques to construct a solution to the problem.



**DEVELOP THE DATABASE**



Design and construct the database according to the planning document that was developed during Phase 1. Apply appropriate techniques and sound database development rules.

Pay attention to the following:

* Table names should start with the prefix 'tbl', e.g. *tblSuppliers*.
* The use of spaces in field names might affect reading data from fields into the Delphi application.
* The size of text fields must be restricted/limited as the columns in the DBGrid in the Delphi application will be affected by the field size.
* The data types of fields must be well thought out as this information will ultimately connect to components in the Delphi application, e.g. the difference between the Number and AutoNumber data types, the difference between saving a date as text or as a DateTime data type, etc.
* Keep the purpose of the project in mind when setting up fields and tables.
* Ensure that the database connects correctly to the program and interacts with the program in a meaningful and effective way that supports the program once you have written the Delphi code.



**DEVELOP THE GUI**



Develop the GUI according to the planning document that was developed during Phase 1. Use appropriate components to ensure easy use and effective navigation. Follow HCI principles to ensure that the application is user-friendly and provides all necessary requirements for the user(s) to use the program effectively and navigate through the options/functionalities easily.



**WRITE THE CODE**



Write code to develop the program/system according to the planning document that was developed during Phase 1.

Note the following:

* Use good programming techniques and structures.
* Implement effective algorithms and sound defensive programming techniques to produce a robust program.
* Use appropriate structures to satisfy the requirements of the algorithms.
* Use multinested loops and conditional structures.
* The following data structures are compulsory:

o Text file – reading OR writing OR appending o One other data structure: Arrays, List, Combo box

Information Technology 13 DBE/PAT 2019

NSC

* Re-use code, use functions and procedures.
* Use relevant validation procedures and components.
* Develop a good GUI and rename relevant components.
* Input data using the most effective method, e.g. a text file, database, keyboard, components.
* Process the data using the most appropriate methods.
* Generate output of data using the correct components and structures, with formatting where needed.
* Ensure smooth interaction between forms/tabs.
* Correctly manipulate and query the database (**Delphi code only**).

Simple queries: search and display

search against one or more criteria

Complex queries: extract data from two tables/ nested loops

calculating aggregates

further processing of data obtained from the database.

dynamic search



**DOCUMENT THE PROGRAM**



**Project notes for the user:**

These project notes must describe how the user should interact with the program. It can include notes on how to navigate through the program, specific requirements, such as passwords and installation procedures if applicable. The notes must also describe any known bugs or problems. Project notes can be written as part of the help function of the program. Tool tip texts can also be provided.

**Project notes for developers:**

These project notes could include specifications/limitations applicable to the project to ensure that the program is installed and set up correctly, e.g. the connection to the database.

Project notes related to the programming code should be embedded as comments in the code. Document the code so that other programmers will be able to interpret the code and understand the purpose of individual pieces of code. It should also include comments to explain sections of complex code.



**TEST THE PROGRAM/SYSTEM**



Test the program/system using clearly defined typical data, erroneous data and boundary (extreme) data.



**HAND IN**



Hand in:

* The completed Delphi project (Delphi code, text files, database and any other resources required to execute the program successfully) and project notes;
* The declaration of help received (**ANNEXURE B**); and
* The declaration of authenticity (**ANNEXURE C**).

Information Technology 14 DBE/PAT 2019

NSC



**INTERVIEW**



Demonstrate your program and answer questions about the program and the code during an interview session.

Guidelines for the demonstration of the project:

* The teacher will schedule dates and times for demonstrations. About 15 minutes per project will be allowed.
* You should hand in all the documentation before the demonstration takes place – at least ONE week in advance.
* The demonstrations must be done electronically on a computer.
* You must execute your computer program and show all the features of the program to the teacher for evaluation.
* The teacher can require you to execute test procedures to make sure that the entire program is working correctly.
* The teacher can use the mark sheet for Phase 2 as a guideline and allocate marks accordingly during the demonstration.
* As part of the demonstration, the teacher will identify random pieces of the programming code in the project and ask you to explain the purpose and working thereof. This is done to ensure that you did the coding yourself. A similar type of procedure will be followed during moderation. If you cannot explain the code used in the project, no marks can be awarded for the project.
* You must hand in the electronic copy of the project that was demonstrated. The teacher will use this copy to allocate any outstanding marks to finalise the mark.

|  |  |  |
| --- | --- | --- |
| Information Technology | 15 | DBE/PAT 2019 |
|  | NSC |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **2.10** | **ANNEXURE A: ASSESSMENT TOOLS** | | | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |  |
|  | **Phase 1:** | | **Name of learner:** | | |  |  |  |  |  |  |  |
|  | **SCENARIO/SCOPE** | | **4** | **3** |  | **2** | **1** | **0** |  |  |  |  |
|  | **(± 200 words)** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **Scenario and Scope** | | An excellent presentation of | All FOUR points were |  | THREE points were | TWO points were presented | Totally inadequate or not |  |  |  |  |
|  | • Topic is clearly stated | | all FOUR points listed | presented with |  | presented with | with shortcomings | applicable |  |  |  |  |
|  | • Thorough description of what the | |  | shortcomings |  | shortcomings | OR | Poor or no coverage of the | **4** |  |  |  |
|  | problem/task involves (purpose) | |  | OR |  | OR | A good attempt to present | aspects |  |  |  |
|  | • Describe a possible solution for | |  | A good presentation of |  | A good presentation of | ONE of the points | No scope or extremely |  |  |  |  |
|  | the problem/task | |  |  |  |  |  |  |
|  |  | THREE points |  | TWO points |  | vague and unclear |  |  |  |  |
|  | • Brief description of the scope | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |  |
|  | **USER REQUIREMENTS** | | **4** | **3** |  | **2** | **1** | **0** |  |  |  |  |
|  | State WHO the users are. | | • Role, activity and | • Minor shortcomings in the |  | • Shortcomings in | • Major shortcomings in | • Not done or incorrect or |  |  |  |  |
|  |  |  | limitations of at least | discussion of role, activity |  | discussion of role, activity | discussion of role, activity | irrelevant |  |  |  |  |
|  | Role, activity and limitations of | | TWO different types of | and limitations of at least |  | and limitations of users, | and limitations of users |  | **4** |  |  |  |
|  | the users |  | users of the system | TWO different types of |  | e.g. sections left out | • Only ONE user of the |  |  |  |  |
|  |  |  | discussed | users of the system |  | • Only ONE user of the | system discussed |  |  |  |  |  |
|  | (In table format OR a use case | | • Well documented, neat | • Well documented, but |  | system discussed | • Poorly documented – not |  |  |  |  |  |
|  | diagram) |  | and to the point | can improve slightly |  | • Not well documented, but | acceptable |  |  |  |  |  |
|  |  |  |  |  |  | still acceptable |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |  |
|  | **Navigation/Description of flow** | | **4** | **3** |  | **2** | **1** | **0** |  |  |  |  |
|  | **diagram** |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  | **A diagrammatical representation** | | An excellent attempt to | A good attempt to show the |  | A satisfactory attempt to | A poor attempt to show the | No diagram |  |  |  |  |
|  | **of the design and flow of events** | | show the sequence of all | sequence of all steps and |  | show the sequence of steps | sequence of steps and flow | OR | **4** |  |  |  |
|  | **when the program is used** | | steps and flow of events | flow of events when the |  | and flow of events when the | of events when the program | Incorrect, irrelevant or |  |  |  |
|  |  |  | when the program is | program is executed with |  | program is executed with | is executed with major |  |  |  |  |
|  |  |  |  | unsuitable for the |  |  |  |  |
|  |  |  | executed with no | minor shortcomings |  | significant shortcomings | shortcomings |  |  |  |  |
|  |  |  |  | application |  |  |  |  |
|  |  |  | shortcomings |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |

Copyright reserved Please turn over

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Information Technology | | |  | 16 |  |  | DBE/PAT 2019 | | |  |
|  |  |  |  |  | NSC |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
|  | **DATABASE DESIGN** | | | **4** | **3** | **2** | **1** | **0** |  |  |  |
|  | **Database design** | | | All database design | Good database design with | Average database design | Database design done, but | No database |  |  |  |
|  | requirements met | minor shortcomings | with several shortcomings | with limited value | OR | **4** |  |  |
|  | • All fields relevant | | |  |  |  |  | Incorrect |  |  |
|  | • Type and size of fields well | | |  |  |  |  |  |  |  |
|  |  |  |  |  | OR |  |  |  |
|  | Chosen | | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | Irrelevant |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
|  | **The database is:** | | | A well-designed relational | A relational database | A relational database | A poor attempt to normalise | No relational database | **4** |  |  |
|  | • Relational | | | database normalised | normalised with minor | normalised with major | a relational database | Database is not normalised |  |  |
|  |  |  |  |
|  | • Normalised | | | appropriately | shortcomings | shortcomings |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
|  | **GUI DESIGN** | | | **4** | **3** | **2** | **1** | **0** |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
|  | • Design fits to program's | | | Good GUI design; | Satisfactory GUI design; | Limited GUI design; | Poor GUI design; | GUI design not functional |  |  |  |
|  | intended use | | | all of the listed principles | most of the principles (at | most of the principles (at | less than 50% (less than 2) | OR | **4** |  |  |
|  | • Appropriate components | | | applied throughout the | least 4) applied throughout | least 3) applied throughout | of the principles applied | Does not support the |  |  |
|  | • Ease of use, logical flow | | | system, e.g. with data | the system, e.g. with data | the system, e.g. with data |  |  |  |  |
|  |  | intended use at all |  |  |  |
|  | • Clearly marked navigation | | | capturing, output, navigation | capturing, output, navigation | capturing, output, navigation |  |  |  |  |
|  |  |  |  |  |  |
|  | • Friendly dialogue/Help | | |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |
|  | **DATA DICTIONARY** | |  | **4** | **3** | **2** | **1** | **0** |  |  |  |
|  | **(excluding database)** | |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | • Text file(s) | |  | Excellent and relevant | Good description of use of a | Relevant description of use | An attempt to describe the | Not done |  |  |  |
|  | • Choice of any other data | | | description of use of a text file | text file AND at least ONE | of at least ONE data | use of a data structure with | OR Incorrect | **4** |  |  |
|  | structure, e.g. | | | AND at least ONE other data | other data structure | structure | shortcomings |  |  |  |
|  |  |  | |  |  |  |  | OR Irrelevant |  |  |  |
|  | o | Arrays | |  |  |  |  |  |  |  |
|  | o List, combo box, etc. | | |  |  |  |  |  |  |  |  |
|  | **IPO – Software design tool** | | |  |  |  |  |  |  |  |  |
|  | **DATA INPUT** | | | **4** | **3** | **2** | **1** | **0** |  |  |  |
|  | **Input Sources (at least TWO)** | | | Clearly describes all inputs | Minor shortcomings in | Clear description according | Poor attempt to describe | No inputs described |  |  |  |
| • Source of input, such as from | | | | according to all FOUR points | describing all inputs | to THREE points listed | input values | OR |  |  |  |
|  | the keyboard, text file, array or | | | listed | according to all FOUR points | OR |  | Incorrect |  |  |  |
|  | the database | | |  | listed | Major shortcomings in |  |  | **4** |  |  |
|  |  |  |  |  |  |  |
| • Data type | | | |  |  |  |  |  |  |
|  |  | describing all inputs |  |  |  |  |  |
| • Format of the input, e.g. date, | | | |  |  | according to all FOUR |  |  |  |  |  |
|  | gender (M/F) | | |  |  | points listed |  |  |  |  |  |
| • GUI component used | | | |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |

Copyright reserved Please turn over

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Information Technology |  | 17 |  |  | DBE/PAT 2019 | | |  |
|  |  | NSC |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **Input validation** | Clearly describes all points | Clearly describes TWO | Clearly describes ONE | Poor attempt to describe | No validation described |  |  |  |
| • At least FOUR different data | listed | points listed | point listed | validation | OR |  |  |  |
| types validated |  | OR | OR |  | Incorrect |  |  |  |
| • At least FOUR inputs validated |  | Minor shortcomings in | Major shortcomings in |  |  | **4** |  |  |
| including: |  | describing all points listed | describing all points listed |  |  |  |  |
| o Validate for NULL/empty field |  |  |  |  |  |  |  |  |
| AND |  |  |  |  |  |  |  |  |
| o Test if value was selected in |  |  |  |  |  |  |  |  |
| a selection component |  |  |  |  |  |  |  |  |
| • Associated error messages |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **DATA PROCESSING** | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **WHAT** processing will need to be | Clearly lists at least EIGHT | One or two processes not | About 50% of the | Only one or two processes | No processes listed | **4** |  |  |
| done | processes to be done | listed | processes listed | listed |  |  |  |
|  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **HOW** processing will be done – | Clearly describes how at | Clearly describes how | Clearly describes how TWO | Clearly describes how ONE | Processes not described |  |  |  |
| supply algorithms, formulas, etc. | least FOUR processes will | THREE processes will be | processes will be done | process will be done | OR |  |  |  |
|  | be done | done | OR | OR | Incorrect | **4** |  |  |
|  |  |  |  |  |
|  |  |  | An attempt to describe how | A poor attempt to describe | OR |  |  |  |
|  |  |  | FOUR processes will be | TWO or THREE processes | Irrelevant |  |  |  |
|  |  |  | done |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **DATA OUTPUT** | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Output destinations (at least TWO)** | Clearly describes all | Minor shortcomings in | Clearly describes all | Poor attempt to describe | No output described |  |  |  |
| • Data to output. Component/text file/Database | outputs by addressing all | describing all outputs by | outputs by addressing TWO | outputs | OR |  |  |  |
| • Format of the output, e.g. | THREE points listed | addressing all THREE points | points listed |  | Incorrect | **4** |  |  |
|  | listed | OR |  |  |  |
| currency, date |  |  |  |  |  |
| • Output component, such as |  |  | Limited outputs described |  |  |  |  |  |
| dbGrid, rich edit, label, tetc. |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
|  |  |  |  |  | **TOTAL** | **48** |  |  |
|  |  |  |  |  |  |  |  |  |
| **Comments/Feedback:** |  |  |  |  |  |  |  |  |

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Teacher Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Copyright reserved Please turn over

|  |  |  |
| --- | --- | --- |
| Information Technology | 18 | DBE/PAT 2019 |
|  | NSC |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Phase 2:** | **Name of learner:** | |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **PROJECT ASSESSMENT** |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **DATABASE DESIGN** | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Implementation of database** | Database design correctly | Database design correctly | Database design using at | Database design not | Totally inappropriate |  |  |  |
| **design** | implemented, with at least | implemented, with at least 2 | least 2 relational tables, but | relational | OR |  |  |  |
|  | 2 relational tables, suitable | relational tables, suitable | not properly implemented | One table with suitable | Incorrect | **4** |  |  |
|  | fields, data types and sizes | fields, data types and sizes | Errors in fields, data types | fields, data types and sizes | OR |  |  |
|  | Large/Adequate data | Limited volume of data used | and sizes |  |  |  |  |
|  |  | Not used |  |  |  |
|  | volume |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **GUI DESIGN** | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Ease of use/HCI principles** | Excellent – all four aspects | Good – one aspect omitted | Satisfactory – two aspects | Limited – more than two | Poor GUI design |  |  |  |
| • Excellent layout and | applied correctly throughout | or not applied well | omitted or not applied well | aspects omitted or not | Little/No thought given to |  |  |  |
| communication (screen tips, | the program |  |  | applied well | HCI principles |  |  |  |
| feedback, help, etc.) |  |  |  |  |  | **4** |  |  |
| • Most appropriate components |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| • Readable/Relevant input/output |  |  |  |  |  |  |  |  |
| • Excellent use of effects/colour/ |  |  |  |  |  |  |  |  |
| icons/shortcuts/tool tip text, etc. |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |
| **DATA DICTIONARY** | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Variables and components** | Excellent – all four aspects | Good – one aspect omitted | Satisfactory – two aspects | Limited – more than two | Totally inappropriate or |  |  |  |
| • a variety of data types | applied correctly in all | or not used well | omitted or not used well | aspects omitted or not used | incorrectly applied |  |  |  |
| instances |  |  | well |  |  |  |  |
|  |  |  |  |  |  |  |
| • Correct use of local and global |  |  |  |  |  | **4** |  |  |
| variables |  |  |  |  |  |  |  |
| • Proper naming convention of |  |  |  |  |  |  |  |  |
| variables, e.g. iNumber, sName |  |  |  |  |  |  |  |  |
| • Correct prefix for components, |  |  |  |  |  |  |  |  |
| e.g. edt, red, cmb |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

Copyright reserved Please turn over

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Information Technology | |  | 19 |  |  | DBE/PAT 2019 | | |  |
|  |  |  | NSC |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |
| **Data structures used (excl.** | | Excellent and relevant use | Good use of a text file AND | Relevant use of at least | An attempt to use a data | Not done |  |  |  |
| **Database)** | | of a text file AND at least | at least ONE other data | ONE data structure | structure with shortcomings | OR |  |  |  |
| • Text file(s) | | ONE other data structure | Structure |  |  | Incorrect |  |  |  |
|  |  |  |  | **4** |  |  |
| • Choice of any other data | |  |  |  |  | OR |  |  |
| structure, e.g.  Arrays  Lists, combo box, etc. | |  |  |  |  | Irrelevant |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
| **INPUT** | | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Input data** | | Excellent application of all | Minor shortcomings in the | Approximately 50% of the | Limited application of the | No application of the aspects |  |  |  |
| • Sources of input, such | | FOUR aspects listed | application of all FOUR | aspects listed correctly | aspects listed | listed |  |  |  |
|  | aspects listed | applied |  |  |  |  |  |
| as from the keyboard, text file, | |  |  |  |  |  |  |
| array or the database | |  |  |  |  |  | **4** |  |  |
| • Correct data types | |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| • Appropriate format used, e.g. | |  |  |  |  |  |  |  |  |
| date, gender (M/F) | |  |  |  |  |  |  |  |  |
| • GUI component used | |  |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |
| **Validation/Error catching** | |  | |  | | --- | | Validation/error | | catching for relevant input | | Clear and appropriate error | | messages and exception | | handling mechanisms | |  | | |  | | --- | | Validation/error | | catching for relevant input | | Mostly clear and appropriate | | error messages and | | exception handling | | Mechanisms | | |  | | --- | | Limited validation/error | | catching | | Error messages and | | exception handling | | sometimes inappropriate/ | | not meaningful | | |  | | --- | | No effort at validation/error | | catching | | **3** |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |
| **PROCESSING** | | **4** | **3** | **2** | **1** | **0** |  |  |  |
| **Algorithm correctness/** | | All algorithms used are | Appropriate algorithms that | 50% of the algorithms used | Algorithms are mostly | Totally inadequate |  |  |  |
| **Processing** | | appropriate, work correctly | work correctly but ONE | are appropriate, work | inadequate/mostly not | OR | **4** |  |  |
|  |  | and meet all processing | processing requirement not | correctly and meets most | working correctly, | Not working correctly |  |  |
|  |  | requirements | Met | processing requirements | processing requirements not |  |  |  |
|  |  |  |  |  |  |
|  |  |  |  |  | all met |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Information Technology | |  | 20 | | |  |  |  |  |  |  |  |  |  | DBE/PAT 2019 | | |  |
|  |  |  |  | NSC | |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Algorithm efficiency** |  | All algorithms provide the | Most algorithms provide the | |  | Limited efficiency of | |  |  |  |  | Poor efficiency of algorithms | | Totally inadequate | |  |  |  |
|  |  | most efficient solutions | most efficient solutions | |  | algorithms used | |  |  |  |  | used | | OR | |  |  |  |
|  |  | Good programming | Acceptable programming | |  | Few algorithms use good | | |  |  |  | Algorithms do not use good | | Not working correctly | | **4** |  |  |
|  |  | techniques used | techniques used | |  | programming techniques | | |  |  |  | programming techniques | |  |  |  |  |
|  |  | Effective modular design | Limited modular design with | | | Poor modularity with limited | | | | |  | Attempted use of own | |  |  |  |  |  |
|  |  | with correct use of own | correct use of own functions | | | use of own functions and | | |  |  |  | functions and procedures | |  |  |  |  |  |
|  |  | functions and procedures | and procedures | |  | procedures | |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  | | |  |  |  |  |  |  |  |  |  |
| **Relevant and appropriate use of** |  | Excellent use of complex | Works correctly, adds value | |  | Works correctly with minor | | | |  | | An attempt has been made, | | No attempt has been made | |  |  |  |
| **complex code, e.g.** |  | code that works correctly, | to the system | |  | shortcomings | |  |  |  |  | with major shortcomings | |  |  | **4** |  |  |
| Dynamic component |  | adds value to the system |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Relevant/Appropriate:  Passive component/ no event  Active component/ event |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **OUTPUT** |  | **4** | **3** |  |  | **2** | |  |  |  |  | **1** | | **0** | |  |  |  |
| • Layout |  | Excellent application of all | Minor shortcomings in the | |  | Approximately 50% of the | | |  |  |  | Limited amount of aspects | | None of the aspects listed | |  |  |  |
| • Readability/Clarity, eg. columns, |  | FOUR aspects listed | application of all FOUR | |  | aspects listed applied | |  |  |  |  | listed applied correctly | | applied correctly | |  |  |  |
| headings |  |  | aspects listed | |  | correctly | |  |  |  |  |  |  |  |  | **4** |  |  |
| • Formatted, eg. currency |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| • Most appropriate component/ |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| data structure used for output |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Database manipulation (Delphi code ONLY)** | | |  |  |  | **3** |  |  | **2** |  |  |  | **1** |  | **0** |  |  |  |
| Sort records in a table | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Search for data in a table | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  |  |  |  |  |  |  |  |  | | |  | Attempted |  |  |  |  |  |
| Insert a new record to a table | |  |  |  |  |  |  | **3** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Delete a record from a table | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Edit selected fields in a record | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| View all/selected fields/records | | |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Complex selection query such as**: | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
|  | | | |  |  |  |  |  |  |  |  |  |  |  |  |  | |  |
| At least two queries using calculations such as minimum, maximum, sum and average | | | |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| At least one query involving two tables | |  |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| At least one dynamic query using a variable | | |  |  |  |  |  |  |  |  |  |  |  |  |  | **3** |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

Copyright reserved Please turn over

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Information Technology |  | 21 |  |  | DBE/PAT 2019 | | |
|  |  | NSC |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
| **Documentation** | **4** | **3** | **2** | **1** | **0** |  |  |
| **Comments/Notes** | Code clearly annotated to | Code clearly annotated to | Code annotated to explain | Code annotated to explain | No comments |  |  |
| (Explanation of program and code) | fully explain all necessary | explain all necessary parts | most necessary parts | certain parts | OR |  |  |
|  | parts | Explanation shows good | Explanation shows some | Explanation shows little | No project notes |  |  |
|  | Explanation shows | insight | insight | insight |  |  |  |
|  | excellent insight | Project notes present and of | Project notes present and | Inadequate project notes |  | **4** |  |
|  | Extensive project notes | a good standard | of a moderate standard | present |  |  |  |
|  | present and of an excellent |  |  |  |  |  |  |
|  | standard |  |  |  |  |  |  |
|  | Clearly explains working of |  |  |  |  |  |  |
|  | program |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |
|  |  |  |  | **Total (implementation):** | | **70** |  |
|  |  |  |  |  |  |  |  |

Copyright reserved Please turn over

|  |  |  |
| --- | --- | --- |
| Information Technology | 22 | DBE/PAT 2019 |
|  | NSC |  |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **General: Final product and impression** | | | **Candidate name:** | |  |  |  |  |  |
| **Aspect** | **4** | **3** |  | **2** | **1** | **0** |  | **Mark** |  |
|  | Reached initial goal and met | Met at least 80% of the initial | | Met more than 50% of | More than 50% of initial | Almost none of the initial | **4** |  |  |
| **Completeness** | all stated requirements in | requirements |  | requirements | requirements not met | requirements met |  |  |
|  | Phase 1 |  |  |  |  |  |  |  |  |
|  |  |  | |  |  |  |  |  |  |
|  | Useful and can be | Useful as real-life application | | Useful as real-life application | Not ready to be implemented | Not ready to be implemented |  |  |  |
|  | implemented as a real-life | with minor adjustments | | with major adjustments | as real-life application, but | as real-life application |  |  |  |
| **Professional product** | application | Good design and user- | | Good design and user- | has some potential | Poor design | **4** |  |  |
| Well-designed and user- | friendly |  | friendly |  |  |  |  |
|  |  |  |  |  |  |  |
|  | friendly | Contains minimal errors | | Contains several errors |  |  |  |  |  |
|  | Contains no errors |  |  |  |  |  |  |  |  |
|  |  |  | |  |  |  |  |  |  |
| **Creativity** | Product shows a high level of | Product shows an average | | Product shows limited | A poor attempt to display | Total lack of creativity and | **4** |  |  |
| creativity and originality | level of creativity and |  | amount of creativity and/or | creativity and originality | originality |  |  |
|  |  | originality |  | originality |  |  |  |  |  |
|  |  |  | |  |  |  |  |  |  |
|  | Explained all selected code | Explained the selected code | | Unable to explain some of | Unable to explain most of the | Unable to explain any | **4** |  |  |
| **Ability to explain code** | clearly and with confidence | with minor shortcomings | | the selected code adequately | selected code | selected code, no insight |  |  |
|  | Shows excellent insight | Shows insight |  | Shows some insight | Limited insight |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  | Kept to due dates | One of the phases was not | None of the phases on time |  |  |  |
|  |  |  |  | Well-designed phases | on time | Showed no commitment |  |  |  |
| **Attitude and commitment** |  |  |  | Showed exceptional | Showed some commitment |  | **2** |  |  |
|  |  |  | and pride in work done |  |  |  |
|  |  |  |  | commitment and pride in |  |  |  |  |
|  |  |  |  | work done |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  | **Total:** | **18** |  |  |

Copyright reserved Please turn over

|  |  |  |
| --- | --- | --- |
| Information Technology | 23 | DBE/PAT 2019 |
|  | NSC |  |

**Assessment Summary**

|  |  |  |  |
| --- | --- | --- | --- |
| **PHASE** | **FOCUS** | **MAXIMUM MARK** | **MARK OBTAINED** |
| Phase 1 | Analysis and Design | 48 |  |
| Phase 2 | Coding and Implementation | 70 |  |
| General | Final Product and Impression | 18 |  |
| **Total** |  | **136** |  |
| Adjustment % | |  |  |
| Final mark (Total x Adjustment %) | |  |  |

**DECLARATION OF AUTHENTICITY**

I hereby declare that the work assessed is solely that of the learner (except where there is clear acknowledgement and a record of any substantive advice/assistance given to the learner) concerned and was conducted under supervised/controlled conditions to ensure that the work has not been plagiarised, copied from someone else or previously submitted for assessment by anyone.

**Comment/Feedback:**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Teacher name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Teacher signature:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

Copyright reserved Please turn over

Information Technology 24 DBE/PAT 2019

NSC

**2.11 ANNEXURE B: LEARNER DECLARATION**

**Learner declaration – Phase \_\_\_\_**

I understand that work submitted for assessment must be my own.

Have you received help/information from any person to produce this work?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| No | Yes | (Provide details below.) | |  |
|  | |  |  | |
| Help/Information | |  | Nature of the help/information (Provide evidence): | |
| received from (person): | |  |  |  |
|  | | |  |  |
|  |  |  |  |  |
| \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | \_\_\_ / \_\_\_ / 2019 |
| SIGNATURE OF LEARNER | | | | DATE |
|  |  |  |  |  |

Copyright reserved

Information Technology 25 DBE/PAT 2019

NSC

**2.12 ANNEXURE C: DECLARATION OF AUTHENTICITY**

**Declaration of authenticity**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Learner name** |  |  | **ID Number** |  |
|  |  |  |  |  |
| **Grade** | 12 |  | **Year** | 2019 |
|  |  |  |  |  |
| **Subject** |  | Information Technology | | |
|  |  |  |  | |
| Practical Assessment Task (PAT) | |  | **Teacher** |  |
|  |  |  |  |  |

I hereby declare that the contents of this assessment task are my own, original work (except where there is clear acknowledgement and appropriate reference to the work of others) and have not been plagiarised, copied from someone else or previously submitted for assessment by any person.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_ / \_\_\_ / 2019

SIGNATURE OF LEARNER DATE

Copyright reserved

Information Technology 26 DBE/PAT 2019

NSC

**2.13** **Guidelines for teachers to provide guidance**

**2.13.1 What are the learners required to do and provide?**

Learners are required, with appropriate supervision, to:

* Choose an area of interest within the topic/scenario provided
* Formulate a focus question that can be investigated/researched
* Plan, research and carry out the project
* Deliver a report to a specified audience
* Provide evidence of all stages of the project for assessment

**2.13.2 How will learners go about it?**

Learners will:

* Plan and complete an individual project, applying a range of programming and software engineering skills and strategies to meet the objectives as set out by the PAT requirements
* Identify questions to ask
* Obtain, critically select and use selected information from a range of sources, process and analyse data, apply it relevantly and demonstrate understanding of appropriate linkages, connections and complexities of the topic and focus question
* Select and use a range of skills, including design tools and algorithms, solve problems, take decisions critically, creatively and flexibly, to produce a software solution
* Evaluate outcomes, both in relation to PAT requirements and own learning and performance
* Use appropriate communication skills and media to present evidence in an appropriate format

**2.13.3 Skills required**

Learners must be able to:

* Do a complete user requirement analysis which includes a complete description of the role, activities, requirements and limitations of at least TWO different users of the planned system
* Bring together information to suit the content and purpose
* Apply decision-making and problem-solving skills
* Extend planning, research, critical thinking, analysis, synthesis, evaluation and presentation skills
* Develop confidence in applying the content, programming and software engineering principles and techniques they have studied
* Develop and apply skills creatively, demonstrating initiative and enterprise
* Seek advice and support when needed

Copyright reserved

Information Technology 27 DBE/PAT 2019

NSC

**2.13.4 What must the learners be taught beforehand?**

The taught elements include:

* Application software and ICT skills that will enhance the production of the report and the development of the project covering analysis and execution
* Solution development content and skills, including the ability to define a task
* Project management skills, including time, resource and task management

**2.14** **Malpractice**

Learners may NOT:

* Get help/guidance from other persons without acknowledgment (complete **ANNEXURE B** for EACH phase)
* Allow others to do the programming code for their project
* Submit work which is not their own
* Lend work to other learners
* Allow other learners access to, or the use of, their own independently-sourced source material (this does not mean that candidates may not lend their books to another candidate, but candidates should be prevented from plagiarising other learners' research)
* Include work copied directly from books, the internet or other sources without acknowledgement and attribution
* Submit work typed or word-processed by another person

These actions constitute malpractice, for which a penalty will be applied.

If malpractice is identified, the assessment authorities must be notified and details of any work that is not the learner's own must be recorded.

**2.15** **Learner declaration of authenticity of the PAT**

For each phase, learners complete a declaration (**ANNEXURE B**) for the work done during that specific phase. All substantive advice/help given to the learners should be recorded as part of the phase documents.

After completing the PAT, learners should sign the declaration of authenticity (**ANNEXURE C**) to confirm that the work submitted is their own.

Copyright reserved

Information Technology 28 DBE/PAT 2019

NSC

**2.16** **Role of the teacher**

The teacher will teach the information management content, skills and strategies prior to the project.

While managing the project and supervising the learners, the teacher will:

* Conduct an initial planning review to discuss the topic/scenario, requirements, objectives and development of the project
* Agree on the focus question (learners should record the guidance given as part of the Phase 1 documents, e.g. where appropriate, record their own initial question with clear evidence of the guidance and the final question)
* Give regular feedback to learners, e.g. to formulate a focus question that is suitable and manageable
* Assess the work of the learners at the end of each phase using the standardised assessment tool and record feedback given
* Endorse each learner's assessment by signing the assessment tools for each phase, including a final declaration that the evidence submitted for assessment is the unaided work of the learner
* Confirm the evaluation based on continuous observation and feedback, as well as an interview session to provide a final judgement regarding independent work, insight and problem-solving
* Make the assessment of the work of the learners following any standardising and internal moderation procedures required

The teacher will assess the potential project (task definition and scope) against the following checklist:

* Is the focus area suitable for the project?
* Does the focus question allow the learner to investigate and to access the higher-level concepts and skills in the assessment objectives, e.g. to plan, research, analyse, evaluate and explain, rather than simply describe and narrate?
* Are the focus question and proposed action clear and focused on an issue which can be managed within the time frame and available resources?
* Do the focus and proposed action indicate that the learner will be capable of investigating and researching the topic and carrying out the activity or task independently and within appropriate ethical or methodological guidelines?
* Is the learner likely to face difficulties understanding the task and issues associated with the focus question?

The teacher will authenticate the PAT:

* The teacher will confirm on the assessment tool that the work assessed is solely that of the learner concerned and was conducted under supervised/controlled conditions.
* The teacher will sign the assessment tool of each phase.

Copyright reserved

Information Technology 29 DBE/PAT 2019

NSC

**2.17** **Supervised/Controlled conditions**

The PAT must be managed in such a manner to be able to confirm that the work assessed is solely that of the learner concerned.

**2.18** **Managing the PAT**

Teacher must plan their work schedule according to the time allocated for the PAT in the CAPS document for Information Technology (teaching plan for Grade 12).

There are different possible approaches to managing the PAT:

**Option 1:**

* The teacher could dedicate a portion of the time on a weekly basis to the PAT while simultaneously continuing with normal teaching to complete the Grade 12 curriculum in the rest of the week.
* If teachers choose this option, they should start with the PAT process towards the end of the first term, completing one phase per term.

**Option 2:**

* Teachers could dedicate a continuous period of time to the PAT, e.g. the last week(s) of each term, also completing one phase per term.

**2.19** **Evidence of assessment**

Evidence presented for assessment must show how the individual learner has met the assessment objectives and criteria and include the planning, feedback and progress of the project.

The evidence for assessment will include the following:

* The project product, including the documentation/report (content only, without the cover page, table of contents, references, graphics), design documents, final program (fully documented) and other evidence (for each phase)
* The completed learner assessment tool (for each phase)

**2.20** **Interview**

Guidelines for the evaluation of the project:

* Schedule dates and times for demonstrations. Allow about 15 minutes per project.
* Take in all the documentation before the demonstration takes place – at least one week in advance – and evaluate the documentation before the demonstration session.
* Learners should demonstrate their projects electronically on the computer.

Copyright reserved

Information Technology 30 DBE/PAT 2019

NSC

* During the demonstration session learners should execute test procedures to show that the entire program is working correctly.
* Use the mark sheet for Phase 2 as a guideline and allocate marks accordingly during the demonstration.
* As part of the evaluation, identify random pieces of programming code in the project and ask the learner to explain the purpose and working of the randomly selected code. This is done to ensure that the learner did the coding him-/herself. A similar type of procedure will be followed during moderation. If a learner cannot explain the code used in the project, a mark of zero should be awarded for the project.
* Make sure that the learner hands in the electronic copy of the project that was demonstrated. Use this copy to allocate any outstanding marks in order to finalise the mark.

**2.21** **Requirements**

**(National Protocol for Assessment Grades R–12, Chapter 3)**

Practical assessment task components must:

* Comprise assessment tasks that constitute the learner's PAT mark as contemplated in Chapter 4 of the IT CAPS
* Include a mark awarded for each assessment task (phase), as well as a consolidated mark
* Be guided by assessment components as specified in Chapter 4 of the IT CAPS
* Be available for monitoring and moderation
* Be evaluated, checked and authenticated by the teacher before being presented as the learner's evidence of performance

**2.22** **Non-compliance**

**(National Protocol for Assessment Grades R–12, Chapter 3)**

The absence of a PAT mark in IT, without a valid reason, will result in the candidate not being resulted for the subject.

**The candidate will be given up to the first week of Term 3 to submit outstanding work or present him-/herself for the PAT. Should the candidate fail to fulfil the outstanding PAT requirements, such a learner will be awarded a zero ('0') for the PAT component for IT.**

In the event of a learner not complying with the requirements of the PAT, but where a valid reason is provided:

* He or she may be granted another opportunity to be assessed in the assigned tasks, based on a decision by the head of the assessment body.
* The learner must, within three weeks before the commencement of the final end-of-year examination, submit outstanding work or present him-/herself for the PAT.
* Should the learner fail to fulfil the outstanding PAT requirements, the mark for the PAT component will be omitted and the final mark will be adjusted for promotion purposes in terms of the completed tasks.

Copyright reserved

Information Technology 31 DBE/PAT 2019

NSC

Valid reasons in this context include the following:

* Illness, supported by a valid medical certificate, issued by a registered medical practitioner
* Humanitarian reasons, which include the death of an immediate family member, supported by a death certificate
* The learner appearing in a court hearing, which must be supported by written evidence
* Any other reason that may be accepted as valid by the head of the assessment body or his or her representative
  1. **CONCLUSION**

Upon completion of the practical assessment task learners should be able to demonstrate their understanding of the industry, enhance their knowledge, skills, values and reasoning abilities, as well as establish connections to life outside the classroom and address real-world challenges. Furthermore, the PAT develops learners' life skills and provides opportunities for learners to engage in their own learning.

Copyright reserved