SACAI

GUIDELINES FOR PRACTICAL ASSESSMENT TASK

GRADE 12

2016

INFORMATION TECHNOLOGY

EXTERNALLY MODERATED AND APPROVED BY UMALUSI

SOUTH-AFRICAN COMPREHENSIVE ASSESSMENT INSTITUTE
SUID-AFRIKAANSE KOMPREHENSIEWE ASSESSERINGSINSTITUUT

THESE GUIDELINES CONSIST OF 15 PAGES

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WHAT IS PAT?

The PAT is a software development project in which you will have an opportunity to demonstrate your software development and programming skills. PAT is a simulation of developing software for a client – thus keep a real application in mind when developing your own project.

The project consists of the following:

Phase 1: A report where you discuss research done on the project a description of the purpose and scope or your own project – derived from the user /client requirements and needs ANDa basic algoritm of a possible solution – no details!
Phase 2: The system design.
Phase 3: A fully documented working Delphi/Java program.

General notes

- PAT counts 25% of your final mark for IT.
- PAT is compulsory.
- PAT needs to be completed and submitted not later than three weeks before the start of the Grade 12 final exam.

Mark allocation

Phase	**Development Phase**	**Maximum Mark**
Phase 1	Analysis	25
Phase 2	Design	45
Phase 3	Coding and testing (50) Complexity level (30)	80
General	**Final product and impression**	20
Total:		**170**

Time frame (for handing in work at CENTRES)

Phase 1 : 25 March 2016
Phase 2 : 27 May 2016
Phase 3 : 30 September 2016

What you will need to complete the PAT?

- *Delphi* programming software, including a GUIDE (Integrated Development Environment)
- An office suite with the following software:
  - Word processing software
  - Spreadsheet software
  - Database software
- HTML editor (e.g. Notepad++) and web browser (e.g. Internet Explorer, Chrome or Firefox).
- Internet access to:
  - find data and information
  - administer electronic questionnaires, e.g. use e-mail to send questionnaires to respondents and receive completed questionnaires from respondents.
- Access to other sources such as printed media (e.g. magazines, newspapers, brochures, textbooks) or other electronic material (e.g. e-books, e-articles)
- Access to facilities to convert hard copies to electronic documents, e.g. scanner, digital camera, smartphone
- Storage media to store and backup your work electronically, e.g. flash drive, rewritable CD/DVD

TOPIC – A software system for a hobby club

As a member of your sport/hobby club of your choice you have to develop an information system to assist the club in all the administration/marketing matters of the club. A sport/hobby club's information system will look a lot like any organization's system.

Choose any excisting organizations and do research on how their information system works and all the requirements for the system.
E.g. see http://www.handicomp.com/Default.aspx?text=Club%20Systems&button=4 for information systems of a golf club.

- The system you develop could support your sport/hobby club in activities such as keeping track of:
    - Their members
    - Sport related events
    - Fundraising events
    - Awareness campaigns
    - Distribution of income to non-profatible organisations / other clubs
    - Any functionality applicable to a sports club – be creative!
- Your system *must* include a database.
- Your system *must* consist of only one program with related sub-programs or parts.
- The following general programming aspects will be assessed:

    - Graphical user interface
    - Input/output management
    - Defensive programming
    - Level of programming skills
    - User defined functions/procedures/classes
    - Programming outside CAP specifications
    - Functionality of the program
    - Internal documentation

DOCUMENT OUTLINE FOR PHASE 1

1. **Focus question**
   Formulate a focus question that can be researched.
2. **Key areas of an existing club system (Research)**
   Identify and describe existing systems ─ select at least three to be able to identify weaknesses and strengths in the systems.
   Possible sub-headings:
   - Comparison between different systems – similarities and differences.
   - General purpose of the system/s
   - Functionality of the system/s
3. **Summary of research**
   Write a summary of your research to show that you understand how a system for a hobby club is supposed to work.
4. **Scenario for own project**
   Write a paragraph (± 150 words) to state the purpose of your project – *what is it going to do* and who are *possible users?*
5. **User requirements for own project**
   Describe what the user expects from the program – what does he want the program to do?
6. **Possible solution ─ just the outline, no details**
   Flow chart / algorithm and use Case Diagram
7. **Limitations**
   Identify possible problems/different requirements that can arise during the development of the system.
8. **Acceptance tests**
   How are you going to test if the program works?
9. **Bibliography/References**

***Examples*:**

Internet (APA-method)
Murphy, I. (no date). *Basic Facts*. Retrieved 4 February 2013, from: http://www.mywebsite.co.za/stats.html

Internet (Harvard-method)
Word Education Foundation (2 October 2010). *Subjects for a modern high school.* Available from: http://www.wef.org.uk/articles/page1.html . (Accessed 4 February 2013)

Books (APA-/Harvard-method):
Smith, D. (2009). *Education for the 21st Century*. Cape Town: Pinnacle Publishers.
Jones, A & Smith, D. (2010). *A relevant 21st Century Curriculum*. London: Maxwell Press.

Electronic Encyclopaedia (APA-/Harvard-method):
'Oxygen'. Discovering Earth [CD]. Educational Media Corporation.
Pyke, Nicholas. *Secondary Education*. Microsoft Encarta 2007 [CD]. Microsoft Corporation.

LEARNER NAME:		**ID NUMBER:**	
Grade	12	**Year**	2016
Subject		Information Technology	
Practical Assessment Task (PAT) **Phase 1**		**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 anyone.

_____ ___/___/2016

SIGNATURE OF STUDENT DATE

_____ ___/___/2016

SIGNATURE OF TEACHER DATE

DOCUMENT OUTLINE FOR PHASE 2

1. Database design

Design the tables for the database: 3 or more related tables

TABLE NAME		
Field name	**Field type**	**Field size**

2. Relationship between tables

State how the relationship between tables is established.

3. Database manipulation

Describe and motivate how the manipulation of the data in the database will contribute to the solution of the program

4. GUI design: (not in Delphi)

State the different screens/forms in the program and all the components on the screens, as well as the navigation between the different screens/components.

TOE chart

SCREEN HEADING		
Task	**Object/component**	**Event**

5. Data structures

Variables and other structures e.g. arrays, text files, record etc

Structure/Variable name	Data type	Purpose

6. OOP principles

Design user defined classes.

CLASS NAME
Properties: **-** Property name: data type
Methods: **+** function/procedure name(parameters)

7. IPO design

Input	Processing	Output

Input (variable)	Component	Data type

Output (variable/message)	Component	Data type

8. Validation

How will the program ensure data integrity?

Input/output	Method of validation

9. Test data

State the data that you will use to test your program as well as the expected outcome for each (set of) test data (value).

Data	Expected outcome

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_____ ___/___/2016

SIGNATURE OF STUDENT DATE

_____ ___/___/2016

SIGNATURE OF TEACHER DATE

REQUIREMENTS FOR PHASE 3

Develop the database, GUI and code the program using documents in phase 1 and phase 2.

Make sure your program includes the following:

- Loops and nested loops (for, repeat, while)
- If- and case statements
- User defined methods (functions/procedures with parameter passing)
- Dynamically created components
- Arrays
- Text files
- Database handling (tables and queries)
- Internal documentation (comments to explain different parts of the program)
- Help/Tutorials

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Grade	12	**Year**	2016
Subject		Information Technology	
Practical Assessment Task (PAT) **Phase 3**		**Teacher:**	
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_____ SIGNATURE OF STUDENT		___/___/2016 DATE	
_____ SIGNATURE OF TEACHER		___/___/2016 DATE	

The marking rubrics are based on the DBE PAT of 2014 / used as DBE PAT of 2014 guideline to keep the same standard. Phase 3 Rubric is the same as the DBE PAT of 2014.

GUIDELINES FOR TUTORS/TEACHERS

Learner requirements

- Choose an area of interest within the topic provided
- Formulate a focus question
- Plan, research and carry out the project
- Deliver a report
- Provide evidence of all stages of the project for assessment.

Learner skills

Learners must be able to:

- Research the topic and document research findings properly including citations
- Provide a complete user requirement analysis which includes a complete description of the role, activities, requirements and limitations of the different users of the planned system
- Apply decision-making and problem-solving skills
- Extend planning, research, critical thinking, analysis, synthesis, evaluation and presentation skills
- Apply the content, programming and software engineering principles and techniques they have studied creatively
- Seek advice and support when needed.

Malpractice

Learners must not:

- Get help/guidance from others without acknowledgment
- 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
- Include work copied directly from books, the internet or other sources without acknowledgement
- Submit work typed or word-processed by another person.

Learner pre-knowledge

- Application software and ICT skills
- Solution development content
- Project management skills including time, resource and task management
- The format and structure of accepted research reports with all sources cited and referenced

Role of the teacher

The teacher will manage the project and supervise the learners in the following manner:

- Conduct an initial planning review to discuss the topic, requirements, objectives and development of the project
- 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
- Sign the assessment tools for each phase
- Sign a final declaration that the evidence submitted for assessment is the unaided work of the learner
- Confirm their evaluation based on continuous observation and feedback as well as a debriefing session to provide a final judgement regarding independent work, insight and problem-solving
- Confirm on the assessment tool that the work assessed is solely that of the learner concerned and was conducted under supervised/controlled conditions.

Debriefing

Guidelines for the evaluation of the project:

- Learners should demonstrate their projects electronically on the computer.
- During the demonstration session learners should execute test procedures to show that the entire program is working correctly.
- Take in all the documentation before the demonstration takes place – at least one week in advance – and evaluate the documentation before the demonstration session.
- Use the mark sheet for Phase 3 as a guideline and allocate marks accordingly during the demonstration.
- As part of the evaluation, identify random pieces of programming codes in the project and ask the learner to explain the purpose and working of the randomly selected code. 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.

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.

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

Practical Assessment Task components must:

- Comprise assessment tasks that constitute the learners' PAT mark as contemplated in Chapter 4 of the Curriculum and Assessment Policy Statement for IT (DBE) as well as in Section B (*SACAI CAPS document*)
- Include a mark awarded for each assessment task (phase) and a consolidated mark
- Be guided by assessment components as specified in Chapter 4 of the Curriculum and Assessment Policy Statement for IT (*See also SACAI CAPS guidelines and Examination Guidelines)*
- Be available for monitoring and moderation
- Be evaluated, checked and authenticated by the teacher before being presented as the learner's evidence of performance

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 learner not being resulted.
- The learner will be given three weeks before the commencement of the final end-of-year examination to submit outstanding work or present himself or herself for the PAT (*as discussed with **SACAI***). Should the learner 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 *only* on a decision by the Head of the assessment body (**SACAI**).
    - The learner must, within three weeks before the commencement of the final end-of-year examination, submit outstanding work or present himself or herself for the PAT (*as discussed with **SACAI***).
    - 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.

- Valid reason in this context includes the following:

    - Severe illness, supported by a **valid medical certificate**, issued by a registered medical practitioner
    - Humanitarian reasons, which includes 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 as may be accepted as valid by the head of the assessment body or his or her representative

In the event of a learner failing to comply with the Practical Assessment Task requirements of a particular subject, and where valid reasons are provided, the evidence of such valid reasons must be included with the evidence of learner performance.