

## Assignment

<b>Faculty Name:</b>	Information Technology
<b>Module Code:</b>	ITOO311
<b>Module Name:</b>	Object-Oriented Systems Analysis and Design Semester 1
<b>Module Leader:</b>	Mr Ayo Akindolani
<b>Copy Editor:</b>	Mr Kevin Levy
<b>Total Marks:</b>	80
<b>Submission Date:</b>	14/04/2020 – 17/04/2020

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This module is presented on NQF level 7.

Mark deduction of 5% per day will be applied to late submission, up to a maximum of three days.

Assignments submitted later than three days after the deadline or not submitted will get 0%. <sup>1</sup>

This is an individual assignment.

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**This assignment contributes 20% towards the final mark.**

### Instructions to Student

1. Remember to keep a copy of all submitted assignments.
2. All work must be typed.
3. Please note that you will be evaluated on your writing skills in all your assignments.
4. All work must be submitted through Turnitin<sup>2</sup> and the full Originality Report should be attached to the final assignment.

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<sup>1</sup> Under no circumstances will assignments be accepted for marking after the assignments of other students have been marked and returned to the students.

<sup>2</sup> Refer to the PIHE Policy for Intellectual Property, Copyright and Plagiarism Infringement, which is available on myLMS.

5. Each assignment must include a cover page, table of contents and full bibliography, based on the referencing method applicable to your faculty as applied at Pearson Institute of Higher Education.
6. Use the cover sheet template<sup>3</sup> for the assignment; this is available from your lecturer.
7. Students are not allowed to offer their work for sale or to purchase the work of other students. This includes the use of professional assignment writers and websites, such as Essay Box. If this should happen, Pearson Institute of Higher Education reserves the right not to accept future submissions from a student.

## **Assignment Format**

Students must follow the requirements when writing and submitting assignments as follows:

- Use Arial, font size 10.
- Include page numbers.
- Include a title page.
- Print submissions on both sides of the page.
- Write no more than the maximum word limit.
- Ensure any diagrams, screenshots and PowerPoint presentations fit correctly on the page and are referenced.
- Include a table of contents.
- Use the accurate referencing method throughout the assignment.
- Include a bibliography based on the applicable referencing method at the end of the assignment.
- Include the completed the Assessment/Project Coversheet (available on *myLMS*).
- Check spelling, grammar and punctuation.
- Run the assignment through Turnitin software.

## **Essential Embedded Knowledge and Skills Required of Students**

- Report-writing skills
- Ability to analyse scenarios/case studies
- Understanding of subject field concepts and definitions
- Ability to apply theoretical knowledge to propose solutions to real-world problems
- Referencing skills

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<sup>3</sup> Available on *myLMS*.

## Resource Requirements

- A device with Internet access for research
- A desktop or personal computer for typing assignments
- Access to a library or resource centre
- Prescribed reading resources

## Delivery Requirements (evidence to be presented by students)

- A typed assignment<sup>4</sup>
- A Turnitin Originality Report

## Minimum Reference Requirements

At least five references for first year, ten references for second year and fifteen references for third year.

Additional reading is required to complete this assignment successfully. You need to include the following additional information sources:

- Printed textbooks/e-books
- Printed/online journal articles
- Academic journals in electronic format accessed via PROQUEST or other databases
- Periodical articles e.g. business magazine articles
- Information or articles from relevant websites
- Other information sources e.g. geographic information (maps), census reports, interviews

### Note

- It is crucial that students reference all consulted information sources, by means of in-text referencing and a bibliography, according to the applicable referencing method.

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<sup>4</sup> Refer to the Conditions of Enrolment for more guidance (available on myLMS).

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## Section A

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### Learning Objective

This assignment provides scenarios and questions to students to conduct research and apply their knowledge of the following sub-topics of object-orientated systems analysis and design:

- Introduction to object-oriented systems analysis and design (AC: 1.1)
- Systems development lifecycles (AC: 1.1)
- Classes and objects (AC: 3.1)
- Object interaction (AC: 2.2, 3.2)
- Models and diagrams (AC: 2.3)
- Use case diagrams and requirements (AC: 1.3)
- Generalization and specialization (AC: 1.2)
- Class diagrams (AC: 4.3)
- Activity and state diagrams (AC: 2.1)
- Object reuse (AC: 3.3)

### Scope

Students are expected to conduct sufficient research and use a broad range of credible academic and industry sources to form well-rounded arguments when answering the assignment questions.

### Technical Aspects

Refer to the “Instructions to Students” section on page 1.

### Marking Criteria

Students should study the mark allocation carefully for each question and ensure that their answers reflect what is expected of them for each question.

Study the scenario and complete the question(s) that follow:

**Start Up Bank**

A start-up bank situated in Johannesburg has just 50 full time employees. The bank has managed to pick up 1 000 000 customers across the globe by depending heavily on technology to provide key services to its customers. The bank is thriving because it ensures that each customer's account (savings, cheque or credit card) is accessible and manageable anywhere in the world – by the account holder and account manager. It is banking simplified!

The key element in the success of this bank is this:

- It has employed an additional 4000 part time staff (1000 marketers and 3000 account managers) All part time staff work remotely.
- With no focus on brick and mortar (traditional banking experience) for its customers, there are little or no overhead costs involved when it comes to buildings and maintenance.

Source: Akindolani, AA. (2020)

1.1 With the aid of diagrams and citing examples from the scenario above, differentiate between the following terms:

- a. A class and an object (4 Marks)
- b. Subclass and superclass (4 Marks)
- c. Generalisation and specialisation (4 Marks)

**[Sub Total 10 Marks]**

1.2 With appropriate Illustration, describe the phases of the Waterfall lifecycle used in systems development. (10 Marks)

1.3 List two criticisms levelled against the Waterfall lifecycle used in systems development. (2 Marks)

1.4 Discuss why the concept of reuse is not always appropriate for systems development. Use your own example to support your discussion. (6 Marks)

End of Question 1

Study the scenario and complete the question(s) that follow:

**Medical Unlimited**

Medical Unlimited (the brainchild of a group of young philanthropic medical professionals) is interested in setting up a mobile medical unit that provides free medical services for students.

The mobile medical unit will require a patient record and scheduling application that will be used by the medical staff (doctors/nurses) and receptionists working there. The receptionists will use the system to capture new patient information when first-time patients visit the doctor. Receptionists will also be responsible for scheduling all appointments.

Nurses on the other hand will use the system to keep track of the results of each visit including diagnosis, medications, prescription and treatment. Multiple medications may be prescribed during each visit. The nurses can also access the information to print out a history of patient visits.

The doctors will primarily use the system to view patient history. The doctors may enter some patient treatment information and prescriptions occasionally, but most frequently they will let the nurses enter this information. The system must require login details from all users.

Source: Akindolani, A.A (2018)

- 2.1 Create a class diagram for Medical Unlimited that clearly shows **generalisation** and **specialisation** associations. (No attributes or operations are required.) (15 Marks)
- 2.2 Create a use-case diagram that illustrates the above requirements. (Where possible, add “extends” and “includes” relationships.) (15 Marks)
- 2.3 Create an activity diagram that depicts the flow between the system and the receptionist. (20 Marks)

End of Question 2

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## Section B

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### Plagiarism and Referencing

Pearson Institute of Higher Education places high importance on honesty in academic work submitted by students, and adopts a policy of zero tolerance on cheating and plagiarism. In academic writing, any source material e.g. journal articles, books, magazines, newspapers, reference material (dictionaries), online resources (websites, electronic journals or online newspaper articles), must be properly acknowledged. Failure to acknowledge such material is considered plagiarism; this is deemed an attempt to mislead and deceive the reader, and is unacceptable.

Pearson Institute of Higher Education adopts a zero tolerance policy on plagiarism, therefore, any submitted assessment that has been plagiarised will be subject to severe penalties. Students who are found guilty of plagiarism may be subject to disciplinary procedures and outcomes may include suspension from the institution or even expulsion. Therefore, students are strongly encouraged to familiarise themselves with referencing techniques for academic work. Students can access the PIHE Guide to Referencing on *myLMS*.