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FACULTY OF ENGINEERING, DESIGN AND TECHNOLOGY  
DEPARTMENT OF COMPUTING AND TECHNOLOGY  
**BACHELOR OF SCIENCE IN COMPUTER SCIENCE (BSCS)**

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COURSE UNIT: SOFTWARE CONSTRUCTUON

LECTURERS: **MR. SIMON FRED LUBAMBO**

YEAR: **THREE**

SEMESTER: **TWO**

ASSIGNMENT THREE: **TEST-DRIVEN DEVELOPMENT.**

### Approach used:

#### Red Phase:

- I began by designing unit tests for a non-existent Calculator class.
- I then focused on covering the core arithmetic operations (addition, subtraction, multiplication, division) and handling potential error cases (division by zero).

#### Green Phase:

- Here I implemented the Calculator class with either instance methods or static methods.
- I ensured all unit tests passed successfully.
- Then I prioritized code clarity and functionality in the initial implementation.

#### Refactor Phase:

- I reviewed the code for readability and optimization opportunities.
- I implemented the following refactoring:
  - Added docstrings for the class and methods to improve documentation
  - Enhanced variable naming (number1, number2) to increase clarity.
  - Adjusted spacing for consistency and adherence to PEP 8 guidelines.

#### Challenges

- **Choosing Between Method Types:** Deciding between instance methods and static methods required an understanding of the implications of statefulness in object-oriented programming.

#### Refactoring Rationale

- **Improved Documentation:** Docstrings provide valuable information about the usage and behavior of the class and its methods, promoting maintainability.
- **Enhanced Readability:** Descriptive variable names and consistent formatting contribute to code that is easier to understand, making collaboration and future modifications less complex.

#### Conclusion

Test-Driven Development (TDD) has proved to be an effective methodology, ensuring that the Calculator class met the specified requirements and promoting a focus on maintainability right from the start.

**END!**