*Ho Chi Minh University of Technology*

*Faculty of Computer Science an Engineering - Computer Science Major*

*Course: Discrete Structure for Computing*

--------------------o0o--------------------



**HK212**

**Assignment Report  
Co- Lecturer**: Nguyễn Tiến Thịnh - Nguyễn Văn Minh Mẫn

**Class**: CC01 - **Group**: 3

|  |
| --- |
| Team member |

|  |  |  |
| --- | --- | --- |
| **No.** | **Name** | **Student ID** |
| 1 | Vũ Châu Duy Quang | 2153730 |
| 2 | La Cẩm Huy | 2153379 |
| 3 | Đỗ Lâm Ngọc Thức | 2153143 |
| 4 | Nguyễn Vĩnh Huy | 2152597 |

**TABLE OF CONTENT**

[I. Theories Recall 3](#_Toc11818)

[1. Mathematical Theories: 3](#_Toc19283)

[ Prefix notation: 3](#_Toc29536)

[ Postfix notation: 3](#_Toc1998)

[ Infix notation: 3](#_Toc17206)

[2. Computing Theories: 3](#_Toc2969)

[ Graph theory: 3](#_Toc21644)

[ Tree - Binary Tree: 3](#_Toc7566)

# Theories Recall

## Mathematical Theories:

### Prefix notation:

A parenthesis-free notation for forming mathematical expressions in which each operator precedes operands.

Ex: 6+5 can be written in Prefix notation: + 6 5

### Postfix notation:

A parenthesis-free notation for forming mathematical expressions in which each operator follows its operands.

Ex: 7\*2 can be written in Post fix notation: 7 2 \*

* **Infix notation:**

A parenthesis-free notation for forming mathematical expressions in which each operator is in between its operands. This is also know as the way we normally use to express functions or calculations.

## Computing Theories:

* **Graph theory:**

Graph theory is the study of graphs, which are mathematical structures used to model

pairwise relations between objects.

* **Tree - Binary Tree:**

Tree structure or a tree is an undirected graph in which any two vertices are connected by exactly one path

A binary tree is know as a tree data structure in which each node has at most two children,

which are often called as the left child and the right child.

# **Idea and execution**

1. **Problems:**

P1: Write a function receive a constant string which is:

1. An infix arithmetic notation expression. Return another string which is it’s prefix notation
2. An infix arithmetic notation expression. Return another string which is it’s postfix notation
3. A prefix or postfix arithmetic notation expression. Return the value of the expression.

P1: Write a function receive a constant string which is:

1. An infix logical notation expression. Return another string which is it’s prefix notation
2. An infix logical notation expression. Return another string which is it’s postfix notation
3. A prefix or postfix logical notation expression. Return the value of the expression.
4. **Idea:**
5. The main idea the solve the problems listed