Hacettepe University Department of
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| **Identity Number** | : 21328155 |
| **Course** | : BBM203 PROGRAMMING LAB. |
| **Experiment** | : Assignment 2 |
| **Subject** | : Data Structures and Algorithms (Stack, C++) |
| **Advisors** | : Asst. Prof. Dr. Adnan ÖZSOY, R. A. Cemil ZALLUHOĞLU |
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| **Main Program** | : ncalc |

# 1. Introduction

In this experiment,we are responsible from learning stack data structre.Aım of experiment is calculating mathematical expressions using stack.

# 2. Software Using Documentation

## 2.1.Software Usage

This program takes one input file and four output file.Read the input file line by line and parse them with space character.Sequentially calls this methods;

calculator:Calculate result of suffix expressions

set:Convert suffix to infix

infix2postfix:Convert infix to postfix

infix2prefix:Convert infix to prefix

| Input | Outputs |
|---|---|
| | + 5 / 7 - 6 * 2 3 (prefix) |
| | 5 + 7 / ( 6 - 2 * 3 )(infix) |
| 5 7 6 2 3 + / - * | 5 7 6 2 3 * - / + (postfix) |
| | NaN (result) |

# 3. Software Design Notes

## 3.1.Description of the Program

### 3.1.1.Problem

 I think problem is creating the stack data structure with own my skills.Push and pop functions are simple but gettop and getstack functions are really difficult.

### 3.1.2.Solution

 Big part of my solution is researching stack structure and field of stack and functions.

### 3.1.3.Algorithm

1.Read File.

  1.1.Read file name from command line arguments

  1.2.Fill the command array with lines.

2.For each expression in the input file

  2.1.Calculate the expression.

    2.1.1.Write result to outputfile

  2.2.Convert suffix to infix

    2.2.1.Write result to outputfile

  2.3.Convert infix to postfix

    2.3.1.Write result to outputfile

  2.4.Convert infix to prefix

    2.4.1.Write result to outputfile

3.Close all files.

## 4. Software Testing Notes

### 4.1.Bugs and Software Reliability

My program calculates maximum five expression.Because I declared array static.

My stacks are static their sizes are 200.

### 4.2.Comments

This experiment is very instructive about stack and c++ class concept.Additionally,calculating mathematical expression is complement of learning stack data structure.

In the beginning of assignment sheet,advisor of the assignment should specify the which libraries and data structures are forbidden.

# REFERENCES

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