Tutorial 7

Introduction

This tutorial demonstrates how to use Stack and Queue in some practical problems.
In Example 01 a stack is used to evaluate a postfix expression.
In Example 02 a queue can be used to reverse a stack.
In the exercise section, students are asked to implement algorithms dealing with base conversion and converting an infix expression to postfix expression.

Examples

1. **Example 01 – Evaluate a postfix expression**

Please implement an algorithm, as well as a program demonstrated the working of the algorithm, to evaluate the value of a postfix expression.
Two classes need to be defined: Class **ArrayStack** contains all necessary operations of Stack. Class **PostfixEvaluation** contains main method and other methods if necessary.

2. Example 02 – StackReversing

This example demonstrates how to reverse a stack using a queue. Consider s is a stack contained character items. A queue q can be used to reverse the order of items in stack s.
Please refer to class ***StackReversing, ArrayQueue, SLLStack*** and ***StackNode*** in the Tutorial Example Code.

Exercises

1. Exercise 1

The base conversion algorithm is used to find the representation in base B of an integer K.
To support the conversion, student should create a class that implements an array stack. Each item of the stack is an integer.

2. Exercise 2

Please implement an algorithm, as well as a program demonstrated the working of the algorithm, to convert an infix expression to a postfix expression.