**Homework Assignment 6**

Due date: November 4th, 11:55pm EST

**Problem 1**

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| --- |
| **public** **static** <E> **void** enqueue (E item)  {  // Creates a new node  TwoWayNode<E> newTail = **new** TwoWayNode<E>(item);  // Creates a temporary node pointing to the old tail  TwoWayNode<E> tempTail = getTail();    // Points the current tail’s next node to be a new node  getTail().setNext(newTail);  setTail(newTail);  // Sets the new tail's previous node to be the previous tail  getTail().getPrevious() = tempTail;  } // End of the enqueue method  **public** **static** E <E> dequeue ()  {  // Makes a temp node to store a reference to the following node  TwoWayNode<E> tempNode = getHead();    // Points the head to the next node  setHead(getHead().getNext());    // Points the new head's previous node to be null  getHead().getPrevious() = **null**;    // Returns the former head's data value  **return** tempNode.getData();    } // End of the dequeue method |

**Problem 2**

a) 1 2 + 3 \*

Postfix Notation: (1 + 2) \* 3 : Valid 9

b) 1 2 3 + \*

Postfix Notation: Valid 5

c) 1 2 + \* 3

Postfix Notation: (1 + 2) 3\*: Not Valid

d) 1 + 2 \* 3

Prefix & Postfix Notation: Not Valid

e) + 1 \* 2 3

Prefix Notation: Valid 7

f) + \* 1 2 3

Prefix Notation: Valid 5

g) 3 2 1 + 5 \* + 4 −

Postfix Notation: Valid 14

h) 3 + 2 1 \* 5 + 4 –

Postfix Notation: Not Valid

i) - 3 + 2 \* 1 + 5 4

Prefix Notation: Valid -8

j) - 3 + 2 \* 1 5 + 4

Prefix Notation: Not Valid

**Problem 3**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Tree # | Not a Tree | General Tree | Binary Tree | Binary Search Tree |
| 1 |  | X | X | X |
| 2 |  | X | X | X |
| 3 | X |  |  |  |
| 4 |  | X | X |  |
| 5 |  | X |  |  |
| 6 |  | X | X | X |