Diagram

Description automatically generated

Diagram

Description automatically generated

Diagram, schematic

Description automatically generated

Diagram

Description automatically generated

Diagram, engineering drawing

Description automatically generated

Diagram, engineering drawing

Description automatically generated

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| **Functionality** | **Implementation** | **Tests** |
| Add | Adds object into priority queue based off numerical value of input to determine priority. | Add integers 5, 1, 3, and 8 to priority queue using .add(). Check if fails |
| Get size | Returns integer representing number of objects in the queue | Checks if size of queue is 4 using .size(). |
| Remove | Removes and returns a specific object within priority queue | Removes integer 3 using .remove(3). Check if fails.  Check if size of queue is 3 |
| Peek first | Returns head of queue | Check if returned value is equal to integer 1 using peekFirst(). |
| Poll | Removes and returns head of queue | Checks if returned value from .poll() is integer 1. Checks if size of queue is 2. |
| Check if empty | Returns Boolean value which indicates if queue is empty or not | Checks if queue is empty using isEmpty(). .poll() is called twice to empty queue. Check if queue is empty again. |

1. i)

In-fix: 30 + 12 \* 3 + 2

Post-fix: 30 12 3 \*+ 2 +

|  |  |  |
| --- | --- | --- |
| **Token** | **Postfix** | **Stack** |
| 30 | 30 | 30 |
| 30 12 | 12 | 30 12 |
| 30 12 3 | 3 | 30 12 3 |
| 30 12\*3 | \* | 30 36 |
| 3+12\*3 | + | 66 |
| 3+12\*3 2 | 2 | 66 2 |
| 3+12\*3+2 | + | 68 |

In-fix: (30+12) \* 3 + (4+5)\*7

Post-fix: 30 12 + 3 \* 4 5 + 7 \* +

|  |  |  |
| --- | --- | --- |
| **Token** | **Postfix** | **Stack** |
| 30 | 30 | 30 |
| 12 | 12 | 30 12 |
| 30+12 | + | 42 |
| 30+12 3 | 3 | 42 3 |
| (30+12)\*3 | \* | 126 |
| (30+12)\*3 4 | 4 | 126 4 |
| (30+12)\*3 4 5 | 5 | 126 4 5 |
| (30+12)\*3 4+5 | + | 126 9 |
| (30+12)\*3 4+5 7 | 7 | 126 9 7 |
| (30+12)\*3 (4+5)\*7 | \* | 126 63 |
| (30+12) \* 3 + (4+5)\*7 | + | 189 |