**Homework week 3**

**Complexity analyses**

1. Sort the following functions in the ascending order of Big O notation:

|  |  |  |
| --- | --- | --- |
| 4nlogn + 2n | 210 | 2logn |
| 3n+100logn | 4n | 2n |
| n2 + 10n | n3 | nlogn |

1. Given an integer number *n*, your task is to write two different algorithms in pseudo-codes to calculate 2n, and evaluate the complexity of the algorithms.
2. Your task is to write operations of queue data structure in pseudo-codes using an array, then evaluate the complexities of the operations.
3. Your task is to write operations of queue data structure in pseudo-codes using a linked list, then evaluate the complexities of the operations.
4. Your task is to write operations of stack data structure in pseudo-codes using an array, then evaluate the complexities of the operations.
5. Your task is to write operations of stack data structure in pseudo-codes using a linked list, then evaluate the complexities of the operations.