 Data Structures and Algorithm | Jan 2021​

# Assignment 5 | 22nd January 2021

**For any doubts regarding the assignment, ask questions in the** [**Dat**](https://community.letsupgrade.in/group/dsaes0121b2)​ [**a**](https://community.letsupgrade.in/group/dsaes0121b2)

[**Structures and Algorithms**](https://community.letsupgrade.in/group/dsaes0121b2) **Group**​ ​ **in the Community.**​

**Submit Assignments by** ​ **26**​ **th January 2021 11:59 PM**

## Assignment Submit Form: [https://forms.gle/bJBQwoRVk4P8SR4T](https://forms.gle/bJBQwoRVk4P8SR4T8)​ [8](https://forms.gle/bJBQwoRVk4P8SR4T8)

**Submit assignments in Appropriate Dropdowns.**

**Question 1**

Name 5 sorting algorithms, also write their time complexities(best, average, worst).

**Question 2**

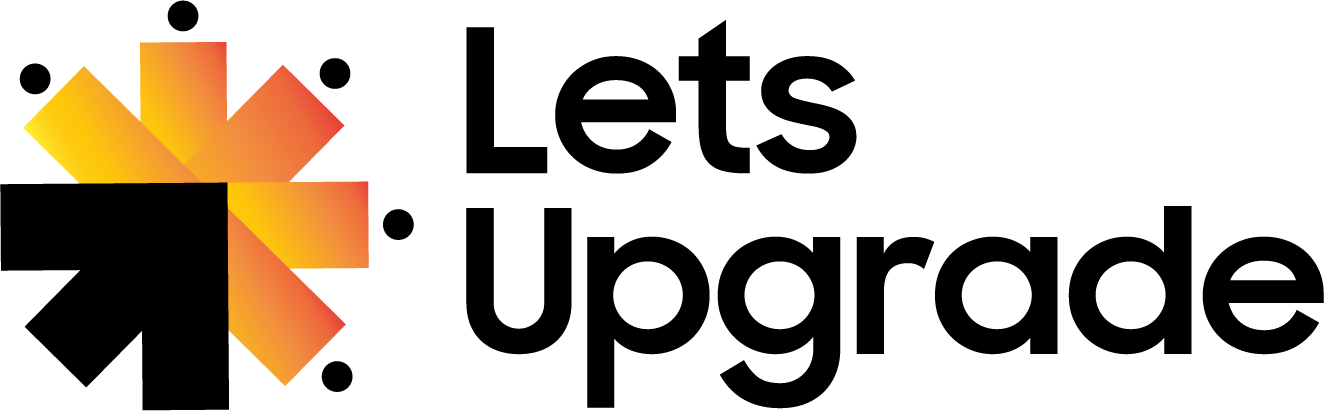
Implement selection sort algorithm using Python.

**Question 3**

Implement pop operation of the stack

**Question 4**

Implement dequeue operation of the queue

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## FAQs

**Q. When do I submit the Assignments and how?**

1. The assignments for the week should be submitted by 26th January 2021 i.e.Tuesday 11:59 PM IST.
2. You need to submit the answers in Document Format

**Q. Where do I get class links for the next session?**

1. All sessions will be Live on our Youtube Channel. Subscribe to LetsUpgrade​​[YouTube Channel](https://www.youtube.com/channel/UCWUDiLzQZr4VDHNyMsVYn-g)​[.](https://www.youtube.com/channel/UCWUDiLzQZr4VDHNyMsVYn-g)

You'll also get an email with the link to the live session.

1. It will be also updated in the Community Group in the pinned post.

**Q. I have some doubt, who do I ask?**

A. Post your Queries on the community, someone will help you out.

**Q. How can we know if my assignment is verified or not? And is it successfully submitted or not?**

A. You will receive a mail for your successful submission.

ANSWER:

QUESTION 1:

|  |  |  |  |
| --- | --- | --- | --- |
| Algorithms | Best | Average | Worst |
| Selection sort | Ω(n^2) | θ(n^2) | O(n^2) |
| Merge sort | Ω(n log(n)) | θ(n log(n)) | O(n log(n)) |
| Heap sort | Ω(n log(n)) | θ(n log(n)) | O(n log(n)) |
| Quick sort | Ω(n log(n)) | θ(n log(n)) | O(n^2) |
| Bubble sort | Ω(n) | θ(n^2) | O(n^2) |

QUESTION 2:

**# Python program for implementation of Selection**

**# Sort**

**import sys**

**A = [64, 25, 12, 22, 11]**

**# Traverse through all array elements**

**for i in range(len(A)):**

**# Find the minimum element in remaining**

**# unsorted array**

**min\_idx = i**

**for j in range(i+1, len(A)):**

**if A[min\_idx] > A[j]:**

**min\_idx = j**

**# Swap the found minimum element with**

**# the first element**

**A[i], A[min\_idx] = A[min\_idx], A[i]**

**# Driver code to test above**

**print ("Sorted array")**

**for i in range(len(A)):**

**print("%d" %A[i**