

- ❖ Solve the following problems according to given instructions. Copying other students code is strictly forbidden. If you get caught for plagiarism both parties will get zero. Due time to submit the assignment is one week. Another extra week will be given for late submission (3 marks will be deducted for one day late submission; after then 3 marks + 1 marks per day will be deducted)
- ❖ *Define all the necessary function in the class to solve all of the problem. To perform the following task generate the driver (main) file. Upload all of your cpp, h and main file in canvas. If 6th digit of your NSU ID is even solve the problem 2 using array and the problem 3 using linked list; If odd solve the prob2 and prob3 using linked list and array, respectively. i.e NSU ID: 1632080042 ; 6th digit(8) even; so prob2 array based and prob3 linked list based. If the 6th digit is zero(0) consider it as even number.*

1. You are given two sequences of integers arranged in ascending order. Your task is to combine the sequences into one ascending sequence. In order to get full marks, you have to make sure that the time complexity of combining two sequences is $O(N)$. You can safely assume that no integer will be repeated. Input starts with a positive integer m which specifies the number of elements in the first sequence. Next m values are the elements in the first sequence. The next positive integer n specifies the number of elements in the second sequence. Next n values are the elements in the second sequence. The output is the combined sequence.

Input Values:

10 1 5 6 10 14 20 25 31 38 40

12 2 4 7 9 16 19 23 24 32 35 36 42

Expected Outputs: 1 2 4 5 6 7 9 10 14 16 19 20 23 24 25 31 32 35 36 38 40 42

- ❖ *Use Unsorted list (linked list) class to solve above problem*

2. Write a class **studentInfo** that represents a student record. It must have variables to store the student ID, student's name and student's CGPA. It also must have a function to print all the values.

Perform the following task in driver file:

- Create a list of objects of class studentInfo
- Insert 5 student records

15234 Jon 2.6
13732 Tyrion 3.9
13569 Sandor 1.2
15467 Ramsey 3.1
16285 Arya 3.1

- Delete the record with ID 15467
- Retrieve the record with ID 13569 and print whether found or not along with the entire record.

Expected Output:

Item is found
13569, Sandor, 1.2

- Print the list

13569, Sandor, 1.2
13732, Tyrion, 3.9
15234, Jon, 2..6
16285, Arya, 3.1

3. Write a class timeStamp that represents a time of the day. It must have variables to store the number of seconds, minutes and hours passed. It also must have a function to print all the values.

Perform the following task in driver file:

- Create a list of objects of class studentInfo
- Insert 5 time values in the format hhmmss

15 34 23
13 13 02
12 45 43
17 36 25
20 02 52

- Delete the timestamp 12 45 43
- Print the list

15:34:23
13:13:02
12:45:43
17:36:25
20:02:52