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| |  |  | | --- | --- | |  | **Programming Fundamentals** | |  | **(CL214)** | |  | **LABORATORY MANUAL** | |  | **Spring 2021** | |  | **C:\Users\Aamer\Desktop\nu-new.png**  **LAB 15** | |  | **OPEN ENDED LAB** | |  | **Engr. Ibrar Khan**  **Engr. Sana Saleh** |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | STUDENT NAME | | ROLL NO | | | SEC | |  | | | | | | | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | | | | | | LAB ENGINEER SIGNATURE & DATE | | | | | | | **MARKS AWARDED: /10** | | | | | | |  | | | | | | | **NATIONAL UNIVERSITY OF COMPUTER AND EMERGING SCIENCES (NUCES), ISLAMABAD** | | | | | | |  | | | | | | | Last Edited by: | Engr. Sana Saleh | | Version: | 4.01 | | | Prepared by: | Engr. Sana Saleh | | Date: | 6 Dec, 2018 | | | Verified by: | Engr. Shahid Qureshi | | Date: | 29 April,2019 | | |

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| **LAB-15** | **Open Ended Lab** |

**TASK:**

**Design a program that can facilitate the academic office in organizing student’s data. A text file is provided to you that contains students' names, roll number, F. Sc, and entry test marks. Read the data from the text file and display it on the console. Add check to ensure that if any student data is missing i.e., if a serial number is skipped in the text file, then ask the user to enter its details. After that, perform the following operations on the extracted data:**

* 1. **A garbage letter i.e., # has been found in the name of many students. Your task is to remove it.**
  2. **Give the user an option to search for a student based on its roll no and name.**
  3. **Insert student at a particular position entered by the user. Remember, you need to update the serial number of all students after insertion.**
  4. **Find the maximum and minimum marks obtained by the students in the entry test.**
  5. **Delete all those student’s data who obtained less than 50% marks in F.Sc. i.e., marks less than 550.**
  6. **Finally store this data in a text file.**

**Note: You can use any method to solve the above problem. You all are encouraged to apply different concepts of programming that we have covered in this course so far. i.e., recursion, template, bitwise operator, linked list, classes, class relationships, and structure.**