**INSTRUCTIONS -** **PRACTICAL EXAM – CSD203**

**PLEASE READ BEFORE STARTING YOUR EXAM**

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**Software Requirements**

* PyCharm, Notepad, Notepad++, Command Prompt, WinRAR / WinZip (or compress to ZIP file of Windows), Windows Explorer (File Explorer) on Windows 7 and above.

**Students are ONLY Allowed to use:**

* The materials like sample codes and program examples are stored on computer only.

**Instructions**

* Step 1: Students download the given materials from PEA Client.
* Step 2: Students read questions and prepare answers in the given template.
* Step 3: Submit a solution for each question:
  + The result is one folder for each question (Q1,Q2), which contains **.py** source files.

Example:

**+ Folder “Q1” only contains Q1.py for question 1**

**+ Folder “Q2” only contains Q2.py for question 2**

* + For each question, you must submit one folder as above to PEA Client.
* **Importance:** 
  + *Solutions will be marked by Automated Marking software.*
  + *The use of tools other than those allowed in the above section whether intentionally or unintentionally, is considered a violation of the exam rules, and the mark is 0*
  + *Do not: change the names of the folders, files, and struct (format) of .py files specified in the exam. If you change it, the marking software can not find the execute file (.py) or the program output to mark, thus the score will be 0*
  + *Do not: edit given statements in the main function. If you change, the marking software can not mark and the score will be 0.*
* ***Notes 01:*** 
  + *Do not edit given statements in the* ***main*** *function*
  + *You can create new functions if you think they are necessary.*
  + *Carefully read the instructions in each question to complete the practical exam.*
* ***Notes 02:*** 
  + *The input and expected result in the questions are only used to test your codes.*
  + ***The input and expected result in the real testcases (for marking) are different.***
  + ***Do not hardcode with the given expected result.***

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**Question 1: (5 marks)**

**The given file Q1.py already contains statements to implement a simple program to monitor SoftDrink objects using singly linked list structure. You should write statements to the following functions**:

1. **f1()**: Insert at the beginning of the current list a new SoftDrink which code = NEWNODE, brand = '7-Up', amount = 12, volume = '330ml', price = 8

**Input**: size = 5

**Expected result**:

**NEWNODE, 7-Up, 12, 330ml, 8.000**

PS021, Pepsi, 10, 390ml, 10.000

MD033, Mirinda, 45, 320ml, 12.000

SP005, Schweppes, 8, 320ml, 10.000

2C017, Coca-Cola, 20, 600ml, 15.000

MD029, Mirinda, 14, 390ml, 18.000

1. **f2()**: Write your code to insert a new\_node (given in the file) after the **third** node (which index is 2) of the current list.

**Input**: size = 5

**Expected result**:

PS021, Pepsi, 10, 390ml, 10.000

MD033, Mirinda, 45, 320ml, 12.000

SP005, Schweppes, 8, 320ml, 10.000

**NEWNODE, Sprite, 15, 390ml, 12.000**

2C017, Coca-Cola, 20, 600ml, 15.000

MD029, Mirinda, 14, 390ml, 18.000

1. **f3()**: Find the **last** node in the linked list that has **SoftDrink's brand start with 'M'**, if such a­­ node is found, then set the price of SoftDrink in this node to 999.

**Input**: size = 5

**Expected result**:

PS021, Pepsi, 10, 390ml, 10.000

MD033, Mirinda, 45, 320ml, 12.000

SP005, Schweppes, 8, 320ml, 10.000

2C017, Coca-Cola, 20, 600ml, 15.000

**MD029, Mirinda, 14, 390ml, 999.000**

1. **f4()**: Remove the first node, then sort the linked list in an **ascending** order according to SoftDrink's **price**.

**Input**: size = 5

**Expected result**:

SP005, Schweppes, 8, 320ml, 10.000

MD033, Mirinda, 45, 320ml, 12.000

2C017, Coca-Cola, 20, 600ml, 15.000

MD029, Mirinda, 14, 390ml, 18.000

1. **f5()**: **Delete** all nodes in the linked list with SoftDrink's **brand = 'Mirinda'**.

**Input**: size = 5

**Expected result**:

PS021, Pepsi, 10, 390ml, 10.000

SP005, Schweppes, 8, 320ml, 10.000

2C017, Coca-Cola, 20, 600ml, 15.000