INSTRUCTIONS - PRACTICAL EXAM – CSD203

PLEASE READ BEFORE STARTING YOUR EXAM

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Software Requirements

- PyCharm, 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.

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Question 1: (5 marks)

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

a. **f1()**: Insert at the beginning of the current list a new Beverage which code = NEWNODE, brand = '7-Up', unit = 'Carton of 24 cans', volume = '330ml', price = 168.0

Expected result:
NEWNODE, 7-Up, Carton of 24 cans, 330ml, 168.000
PS021, Pepsi, Carton of 24 bottles, 390ml, 175.000
MD033, Mirinda, Carton of 24 cans, 320ml, 168.000
SP005, Schweppes, Carton of 24 cans, 320ml, 220.000
2C017, Coca-Cola, Carton of 24 bottles, 600ml, 218.000
MD020, Mirinda, Carton of 24 bottles, 390ml, 175.000

b. **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.

Expected result:
PS021, Pepsi, Carton of 24 bottles, 390ml, 175.000
MD033, Mirinda, Carton of 24 cans, 320ml, 168.000
SP005, Schweppes, Carton of 24 cans, 320ml, 220.000
NEWNODE, Sprite, Carton of 24 bottles, 390ml, 112.000
2C017, Coca-Cola, Carton of 24 bottles, 600ml, 218.000
MD020, Mirinda, Carton of 24 bottles, 390ml, 175.000

c. **f3()**: Find the **last** node in the linked list that has Beverage**'s** brand start with 'M', if such a node is found, then set the price of Beverage in this node to 999.0

Expected result:
PS021, Pepsi, Carton of 24 bottles, 390ml, 175.000
MD033, Mirinda, Carton of 24 cans, 320ml, 168.000
SP005, Schweppes, Carton of 24 cans, 320ml, 220.000
2C017, Coca-Cola, Carton of 24 bottles, 600ml, 218.000
MD020, Mirinda, Carton of 24 bottles, 390ml, 999.000

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

Expected result:
MD033, Mirinda, Carton of 24 cans, 320ml, 168.000
MD020, Mirinda, Carton of 24 bottles, 390ml, 175.000
2C017, Coca-Cola, Carton of 24 bottles, 600ml, 218.000
SP005, Schweppes, Carton of 24 cans, 320ml, 220.000

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

Expected result:
PS021, Pepsi, Carton of 24 bottles, 390ml, 175.000
SP005, Schweppes, Carton of 24 cans, 320ml, 220.000
2C017, Coca-Cola, Carton of 24 bottles, 600ml, 218.000

Notes:

- *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.