Assignment #1 (Group)
Course: CSD201

Part A. (6.0 pts) Write a Java program to do:

- (1.0 pts) Implement class Phone, holding:
  - ID (should be integer, and unique for each Phone object)
  - Name, ex: samsung, iphone, nokia, …
  - Price
  - Amount
  - Year (of product)
  - 1 constructor
- (1.0 pts) Implement class Node, holding a Phone and a Node p_Next. This class also has two constructors:
  - Node()
  - Node(Phone info, Node n_data)
- (4.0 pts) Implement class List with a main function, holding:
  - Node p_Head; and an integer for its size.
  - List()
  - List(Node n_Head)
  - boolean isEmpty()
  - void clear()
  - void show() ⇒print Phone.ID of all Nodes
  - void show2() ⇒print Phone.ID of all Nodes with Year>2020
    ⇒1.0 pts
  - void add_First(Node data)
  - void add_Last(Node data)
  - void add_Node(Node data, int PhoneID) ⇒add node data after the first node with PhoneID, if PhoneID does not exist, add node data at the end of list.
    ⇒1.0 pts
  - void delete_First()
  - void delete_Last()
  - void deleteNode(int PhoneID) /*delete all Nodes holding this ID*/
    ⇒1.0 pts
  - boolean isExisting(int PhoneID) /*to check whether a Phone exist in the list*/
  - int search(string name) ⇒return number of node with name
  - Node MaxValue() ⇒find the node with maximum value (value=price*amount)
    ⇒1.0 pts

Part B. (6.0 pts) Answer the questions:

1. (1.5 pts) Compare: singly linked list, doubly linked list, and circular list.
2. (1.5 pts) What is a stack? Describe and give one example.
3. (1.5 pts) What is a queue? Describe and give one example.
4. (1.5 pts) What is a priority queue? Explain why the priority queue should be used in computer programming.

Part C. Submission

Each group submits only 1 (one) file in zip format (file *.zip), holding:

1. A full list of group members with particular job assignments.
2. A folder holding source code for Part A.
3. A document (*.pdf/docx) for Part B.
4. Name: Class_Group.zip, for example: SE1730_Group1.zip, or SE1717_Group3.zip

Note:

Submit in class ➔ maximum 12 pts.

Submit at home, before 23:59:59 ➔ maximum 10 pts.

----------Good luck----------