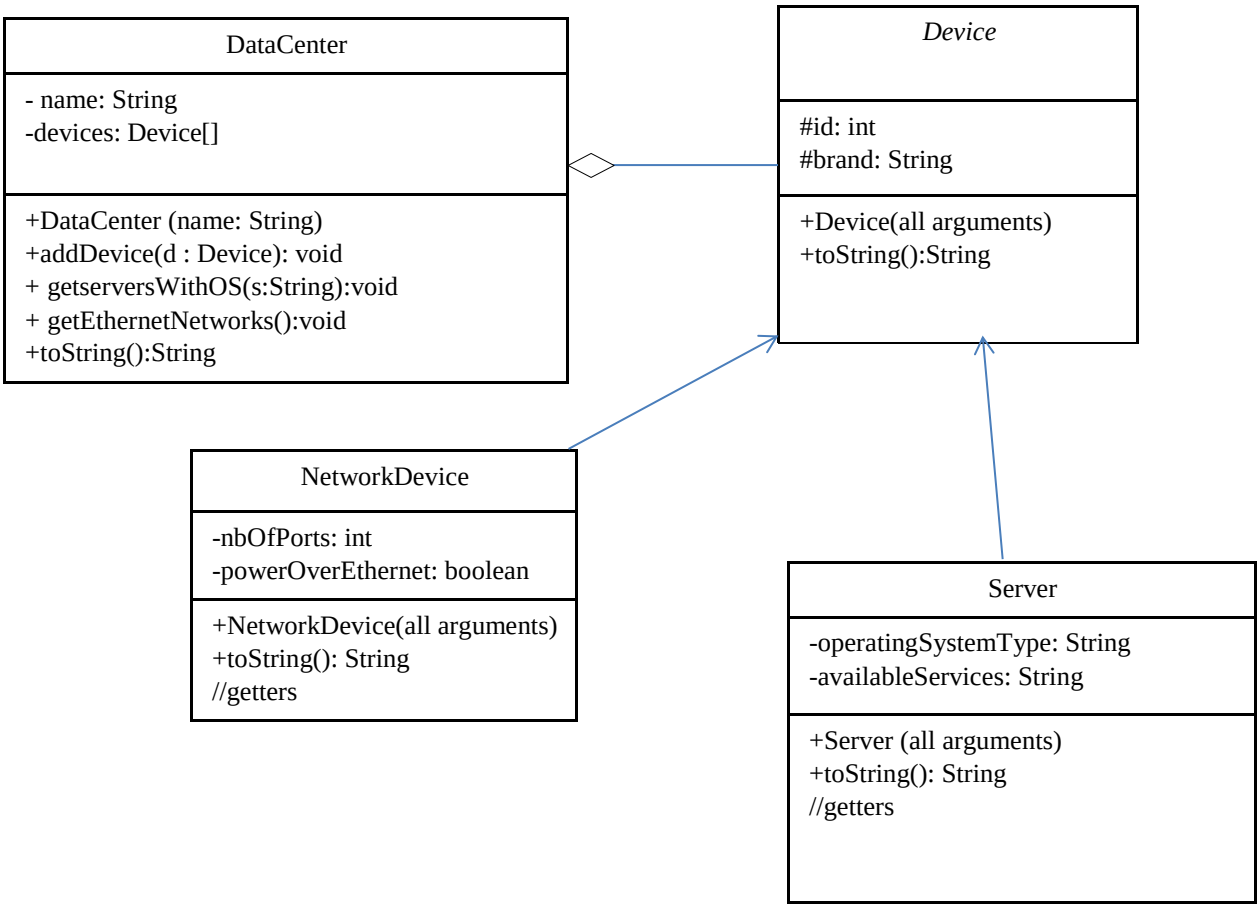
Al Maaref University
Faculty of Sciences
Department of Computer Science
CSC 320 – Data Structures: Lab1

Guidelines:

- **Make sure to submit your files to Google Classroom before the deadline**. Otherwise your work won't be considered for grading.
- **Submit only the java files on Google classroom.**

Q1: Implement the below classes:



A. Device Class (An Abstract Class)

- The *toString* method returns a String of the form *"Id:…,Brand: …. ".*

B. Server Class

- It has two private attributes:
    - *operatingSystemType*: the type of the installed operating system (ex: Linux Windows, etc)
    - *availableServices*: it is a string that contains all the installed services. It is of the following form : *Service1:Service2:Service3.*

      Example: *DHCP:DNS:MailService:WebService*
- The *toString* method returns a string with the following format:

  Example: Server: Id:123, Brand: Lenove, OperatingSystem: Windows, Services : DHCP, DNS, Mail

C. NetworkDevice Class

- It has two private attributes:
    - *nbOfPorts*: indicates the number of ports as integer of a certain network device
    - *powerOverEthernet*: returns Boolean (true or false) whether a network device has power over Ethernet.
- Constructor with all args included
- toString method to print the network device in the form:

  Netork Device: Id:123, Brand: tplink, nb of ports: 4, OverEthernet : true

D. DataCenter Class

- The method *addDevice* takes a *Device* Object and adds it to the array. The addition should be in such a way that servers are always added before the other network devices.
- The method *getserversWithOS* displays information of Server Objects with certain operating system type.
- The method getEthernetNetworks prints out all network devices that are powered over Ethernet.

- The *toString* method returns a String containing information about all the Device Objects in the devices array.

Q2 :

Write a driver class (application) that:

1- Creates a *DataCenter* object.
2- Adds to the DataCenter object some network devices and Servers. Try adding in different ways to check that servers are always before network devices.
3- Displays information about all the **Servers** given a specific operating system that is taken from the user.
4- Displays all network devices that are powered over Ethernet.