Assigment 05 – Collections
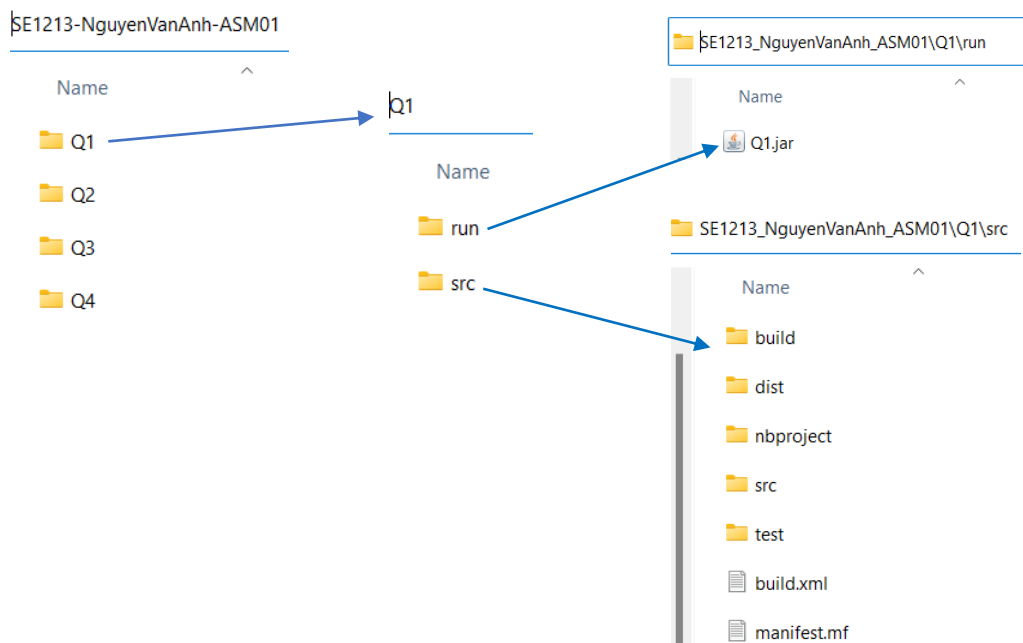## Duration: 70'

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Software Requirements

- Netbean 8.2 or later, JDK 8 or later, Notepad, Command Prompt, WinRAR / WinZip with Windows Explorer (File Explorer) on Windows 7 and above.

Instructions

- Step 1: Students download the given materials from LMS.
- Step 2: Students read questions and prepare answers in the given template.
- Step 3: Prepare to submit the answer:
  - For each question (e.g., question **Q1, Q2, Q3,…**), please create two sub-folders: **run** and **src**.
  - Copy the *.**jar** file into the **run** folder, and the entire project source code file into the **src** folder.
- Step 4: Submit a solution for each question:
  - Create a folder named : RollNumber_FullName_ASM0x (**x : 1, 2, or 3**) that contains folders (created Step 03) as the below figure:

  - Use WinRAR / WinZip tool to compress the **RollNumber_FullName_ASM0x** folder and submit it to LMS

❖ **Importance**:
  - *Do not change the names of the folders specified (or required) in the exam and the name of submit folder in Step 04 must be correct. If you change it (incorrect), the grading software can not find the execute file (.jar) to score, thus the exam result will be 0 .*

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❖ **Question 1: (10 marks)**

Do not pay attention to the real meaning of objects, variables, and their values in the questions below.

Write a class **Vendor** (in the default package of the NetBean) with the following information:

Vendor	Where:

Vendor
- int : id   - String : name   - String : address   - String : phone   - double: sale
+Vendor ()   +Vendor (id:int,name:String,address:String,phone:String, sale:double)   +getId(): int   +getName(): String   +setName(value : String): void   +getAddress(): String   +setAddress(): void   +getPhone (): String   +setPhone(value : String): void   +getSale (): double   +setSale(value : double): void   +toString():String

- Check validation (apply to constructors and setters):
  - check the **name** and **address** are not empty
  - check the **phone** must be started with '0', length is 9 - 10 digits or (0XX)XXXXXXXX, X is digits.
  - check the **sale** from 100 to 5000000
- Vendor () - default constructor (numeric value is 0, string value is empty)
- Vendor(id:int,name:String,address:String, phone: String, sale:double) - constructor, which sets values to id, name, address, phone and sale
- setName(value:String):void - If value invalid then set the name to "No Name"
- getName (): String – return vendor name with title case
- getAddress (): String – return address with title case
- setAddress(value:String):void - If value invalid then set the address to "No Address"
- setPhone(value : String): void – If value is invalid then set phone to "No Phone"
- setSale(value : double): void – If value is invalid then set the sale to 100
- override toString() method to return a string that contains all the information of the Vendor: [id, name, address, phone,sale]. The sale is formatted in three decimal places

Write a class **VendorList** which extends from **ArrayList** (ArrayList is a collection) with the following information :

VendorList
+addVendor(Vendor v):void   +getVendorSaleById (int id): double   +getVendorWithMaxSale (): Vendor   +getTotalSaleAllVendors(): double   +printVendorList():void

Where:

- addVendor(Vendor v): void – add new the vendor to list
- getVendorSaleById(int id): double – find the Vendor by id. If found then return the sale of the Vendor, otherwise return the id with formatted in three decimal places [2.5 marks]
- getVendorWithMaxSale (): Vendor – return the vendor with the highest sale [2.5 marks]
- getTotalSaleAllVendors(): double   – return the total sales of all vendors [2.5 marks]
- printVendorList():void – print out the list of vendors by descending sale, if the vendors have the same sale then sort by name ascending [2.5 marks]

Hints: to declare the VendorList class, you can use the following statement:
public class VendorList extends ArrayList<Vendor> { //….. }

Do not format the result.

The program output might look something like this:

```
#Case 1:

Enter the number of vendor:2
#Vendor 01
Enter id:100
Enter name:van hai
Enter address:quan 1
Enter phone:123
Enter sale:3000
#Vendor 02
Enter id:200
Enter name:anh quan
Enter address:quan 2
Enter phone:(027)01020304
Enter sale:2000
1.Test getVendorSaleById()
2.Test getVendorWithMaxSale()
3.Test getTotalSaleAllVendors()
4.Test printVendorList()
Enter TC(1/2/3/4):1
Enter id:200
OUTPUT:
2000.000
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#Case 2:
Enter the number of vendor:2
#Vendor 01
Enter id:100
Enter name:van hai
Enter address:quan 1
Enter phone:123
Enter sale:3000
#Vendor 02
Enter id:200
Enter name:anh quan
Enter address:quan 2
Enter phone:(027)01020304
Enter sale:2000
1.Test getVendorSaleById()
2.Test getVendorWithMaxSale()
3.Test getTotalSaleAllVendors()
4.Test printVendorList()
Enter TC(1/2/3/4):1
Enter id:500
OUTPUT:
500.000
----------------------------------------------------

#Case 3:

Enter the number of vendor:2
#Vendor 01
Enter id:100
Enter name:van hai
Enter address:quan 1
Enter phone:123
```

Enter sale:3000
#Vendor 02
Enter id:200
Enter name:anh quan
Enter address:quan 2
Enter phone:02701020304
Enter sale:2000
1.Test getVendorSaleById()
2.Test getVendorWithMaxSale()
3.Test getTotalSaleAllVendors()
4.Test printVendorList()
Enter TC(1/2/3/4):2
OUTPUT:
100,Van Hai,Quan 1,No Phone,3000.000

#Case 4:

Enter the number of vendor:2
#Vendor 01
Enter id:100
Enter name:van hai
Enter address:quan 1
Enter phone:123
Enter sale:3000
#Vendor 02
Enter id:200
Enter name:anh quan
Enter address:quan 2
Enter phone:02701020304
Enter sale:2000
1.Test getVendorSaleById()
2.Test getVendorWithMaxSale()
3.Test getTotalSaleAllVendors()
4.Test printVendorList()
Enter TC(1/2/3/4):3
OUTPUT:
5000.0

#Case 5:

Enter the number of vendor:3
#Vendor 01
Enter id:100
Enter name:van hai
Enter address:quan 1
Enter phone:123
Enter sale:3000
#Vendor 02
Enter id:200
Enter name: hoang khai
Enter address:quan 2
Enter phone: (027)01020304
Enter sale:2000
#Vendor 03
Enter id:300
Enter name:anh quan
Enter address:quan 3
Enter phone: 090123456

Enter sale:2000
1.Test getVendorSaleById()
2.Test getVendorWithMaxSale()
3.Test getTotalSaleAllVendors()
4.Test printVendorList()
Enter TC(1/2/3/4):4
OUTPUT:
100,Van Hai,Quan 1,No Phone,3000.000
300,Anh Quan,Quan 3, 090123456,2000.000
200,Hoang Khai,Quan 2,(027)01020304,2000.000