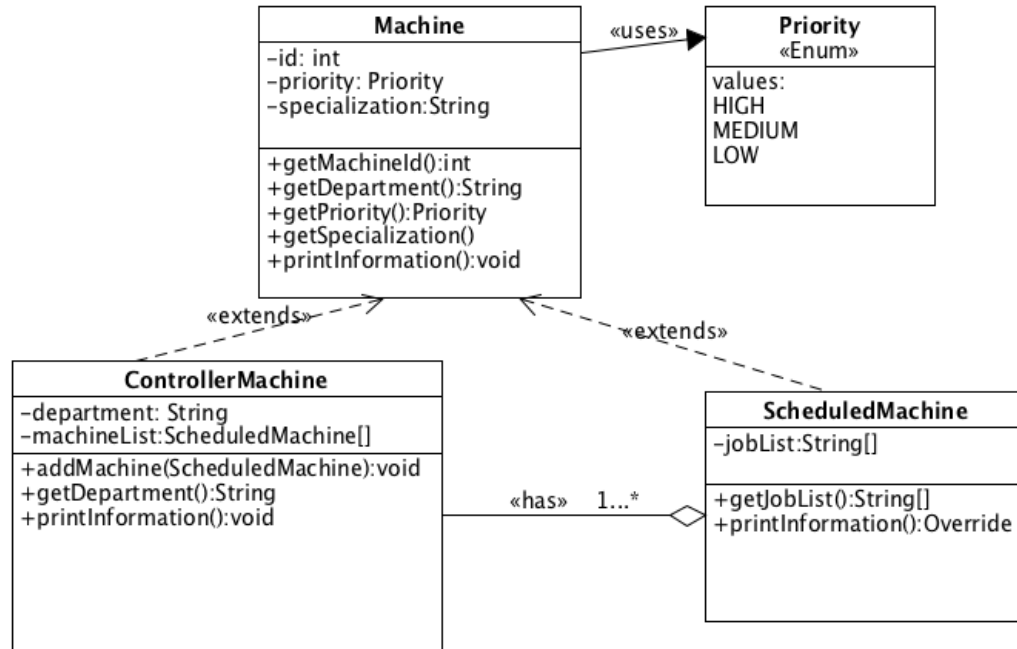**IT 524 / Fall 2020 – Machines Exercise**

UML diagram given below, please write required code:

a) Create the classes, fields and methods as described in the diagram above.
- All class types must have a non-default constructor, do not use any default constructors.
- All fields of all types are read only, thus no setters are used. Fields must be set through non-default constructors
- id field of Machine type must be a generated unique value. Thus, in the Machine type constructor DO NOT get an integer value as parameter to set id.

b) Create a mechanism to generate id of Machine type:
- Machine IDs are calculated to ensure uniqueness, and you must restrict public write access to this field so that the IDs are always unique.
- Hint: Get use of static fields and methods.

c) printInformation() method returns void, and calls System.out.println() to display field values in the console.
- Machine's prints out id, priority and specialization.
- Overridden printInformation() in ControllerMachine class prints out all fields coming from Machine and the department field, also prints "Type: Controller Machine".
- Overridden printInformation() in ScheduledMachine prints out all fields coming from Machine and all the jobs listed the jobList String array with their orders (1-Cutting, 2-Pressing, etc), also prints "Type:Scheduled Machine"

d) addMachine(ScheduledMachine) method in ControllerMachine class adds a ScheduledMachine instance into the array of ScheduledMachines called "machineList". Only 3 scheduled machines can be added to a controller machine. If a machine added successfully prompt "Machine Inserted", if capacity full prompt "Controller machine capacity full".

Hints:

- Download and use MainClass from Sucourse.

- You must achieve the following output when main() is run:

```
Machine inserted
Machine inserted
Machine inserted
Controller machine capacity full
---------------
Type:Controller Machine
ID:1, priority:HIGH, specialization:CNC
Department:Pre Production
Scheduled Machines:
Type:Scheduled Machine
ID:2, priority:MEDIUM, specialization:Metal Cutting
Jobs:
1- Cut Part X
2- Blend Part Y
3- Cut Part Z
4- Part Z Final
Type:Scheduled Machine
ID:3, priority:MEDIUM, specialization:Plastic Folding
Jobs:
1- Part ZHG
2- Fold Part YXS
3- Blend Co3Yu
4- Part Z Fold
Type:Scheduled Machine
ID:4, priority:MEDIUM, specialization:Quality Control
Jobs:
1- Control ZHG
2- Control Part YXS
3- Control Co3Yu
4- Control Z Fold
```