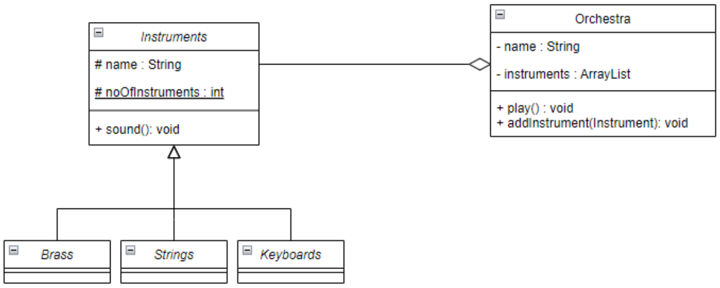
SE311 SPRING 2021-2022 / 18-03-2022
Lab Work 2 UML Practice and Open Closed Principle
Goal: Remembering Class Diagrams and Demonstration of OCP through an example.

UML Practice

1. In this part of the lab, your task is to implement the code for the class diagram given below.



- Please don't forget to add get/set methods and proper constructors for the classes. They are omitted for simplicity.
- noOfInstruments: Number of instrument instances.
- **sound():** prints out the sound of the instrument or you may just print the name of the instrument.
- **play():** calls *sound()* method of each instrument in order.

2. In your main, please instantiate 2 different instruments from each subtype and add them to the Orchestra. Print the noOfInstruments and then call play().

Note: Save the finished version of your code. You will use it in the next week.

Demonstration of OCP

1. We have discussed Open Closed Principle using computer parts example in the lecture. However, we have only analyzed code excerpts, not the whole program. In this lab you will be asked to give a full implementation demonstrating the OCP. You are going to provide the following classes:
   `PricePolicy`
   `Part`
   `Motherboard, Memory, HardDisk`
2. You are also going to write a function called **`totalPrice`**
3. Write a main to test your program
   a. Create an array of parts which makes up a computer
   b. Calculate the price of the computer
4. Demonstrate the Open-Closed Principle by
   a. extending the software using a new part called **`OpticalDisk,`**
   b. creating a new price policy and update **`HardDisk`** and **`Memory`** objects using new price policies.
5. In your program list classes/modules/functions that do not change even though the parts get different prices by adding a comment to the source file.

Hint: Copy and paste the source code lines from the week2's slide. This saves some amount of typing.