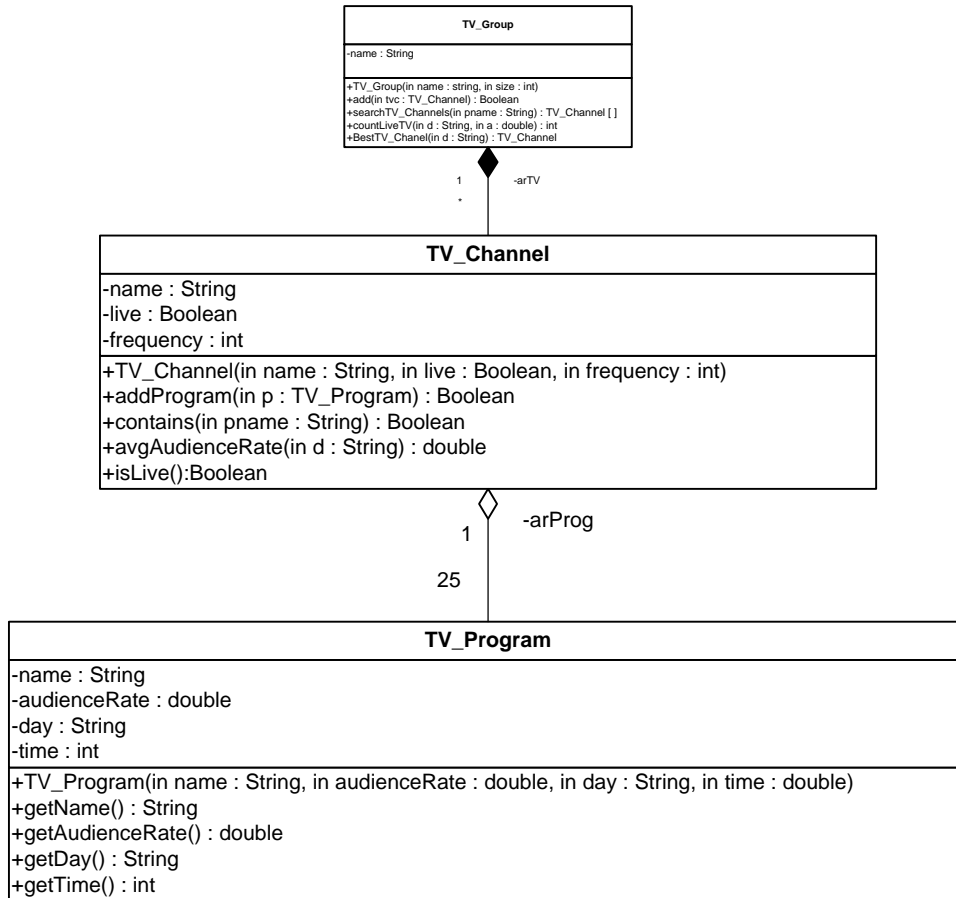




Lab: **Relationship between Classes (Composition)**

Exercise1:



TV_Program class:

o Attributes:

- **name**: the name of the TV program.
- **audienceRate**: the audience rate of the TV program.
- **day**: the day of the week when the TV program is scheduled.
- **time**: the time when the TV program is scheduled.

o Methods:

- **TV_Program** (*name: String, audienceRate: double, day: String, time: int*): constructor
- **getName()**: this method returns the name of the TV program.
- **getAudienceRate()**: this method returns the audience rate of the TV program.

- ***getDay()***: this method returns the day of the TV program.
- ***getTime()***: this method returns the time of the TV program.

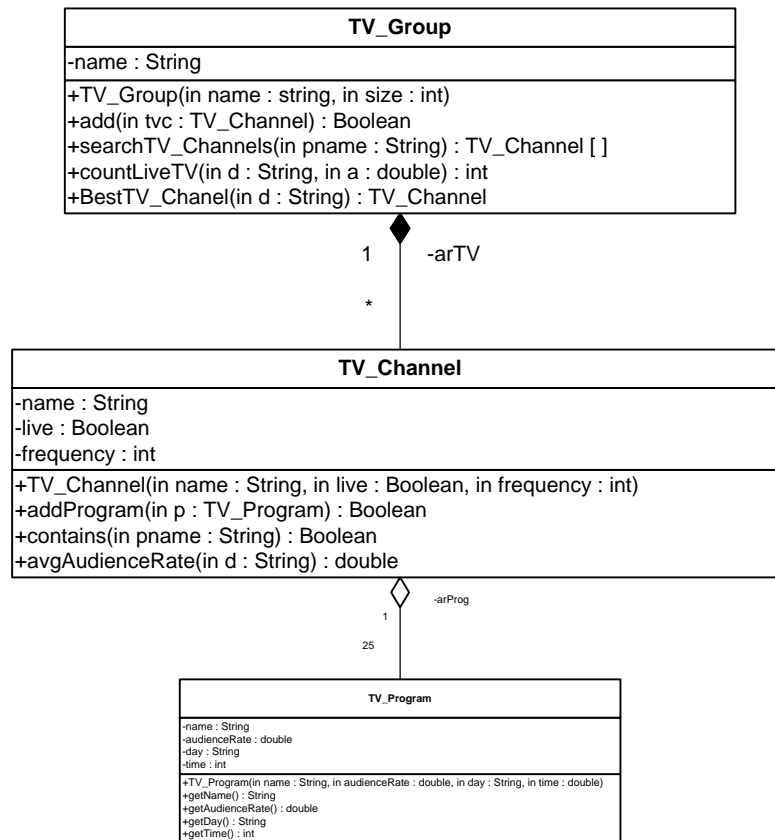
TV_Channel class

- Attributes:
 - ***name***: the name of the TV channel.
 - ***live***: it mentions whether the TV channel is a live TV channel or not.
 - ***frequency***: the frequency of the TV channel.
- Methods:
 - ***TV_Channel (name: String, live: boolean, frequency: int)***: constructor.
 - ***addProgram(p: TV_Program)***: this method adds the TV program ***p*** to the TV channel. It returns *true* if the TV program ***p*** is successfully added. Otherwise, it returns *false*.
 - ***contains (pname: String)***: this method receives a name of program as a parameter. It returns *true* if the TV channel has a TV program which name is ***pname***. Otherwise, it returns *false*.
 - ***avgAudienceRate(d: String)***: this method returns the average audience rate of all TV programs scheduled in the day ***d***.
 - ***isLive()***: this method returns true if TV Channel is live otherwise returns false.

QUESTION: Translate into Java code the class ***TV_Channel***. And ***TV_Program***

Exercise 2:

Let's consider the same class *TV_Channel* described in exercise 1.



TV_Group class:

- Attributes: ----- **name**: the name of the TV group.
- Methods:
 - **TV_Group (name: String, size: int)**: constructor.
 - **add (tvc: TV_Channel)**: this method adds the TV channel *tvc* to the TV group. It returns *true* if the TV channel *tvc* is successfully added. Otherwise, it returns *false*.
 - **searchTV_Channels (pname: String)**: this method returns an array containing all TV channels having a TV program called *pname*.
 - **countLiveTV (d: String, a: double)**: this method returns the number of live TV channels having an average audience rate in the day *d* greater than *a*.
 - **bestTV_Channel(d: String)**: this method returns the TV channel that has the highest average audience rate in the day *d*.

QUESTION: Translate into Java code the class *TV_Group*.

Exercise 3:

Let's consider the same classes described in exercise 1 and 2.

Write a class with a main method doing the following:

- Create the 2 TV programs below:
 - Prog1: name = "Islamic voice", audienceRate = 80, day: "Saturday", time: 21;
 - Prog2: name = "Quran and Sunnah", audienceRate = 70, day: "Sunday", time: 23;
- Create the TV channel "Peace TV", frequency: 13547, live: false.
- Add the TV programs prog1 and prog2 to the TV channel "Peace TV".
- Create a TV group "Islam Every Where".
- Add the TV channel "Peace TV" to the TV group "Islam Every Where".
- Display the number of live TV channels of the TV group "Islam Every Where" having an average audience rate in "**Sunday**" greater than **50**.