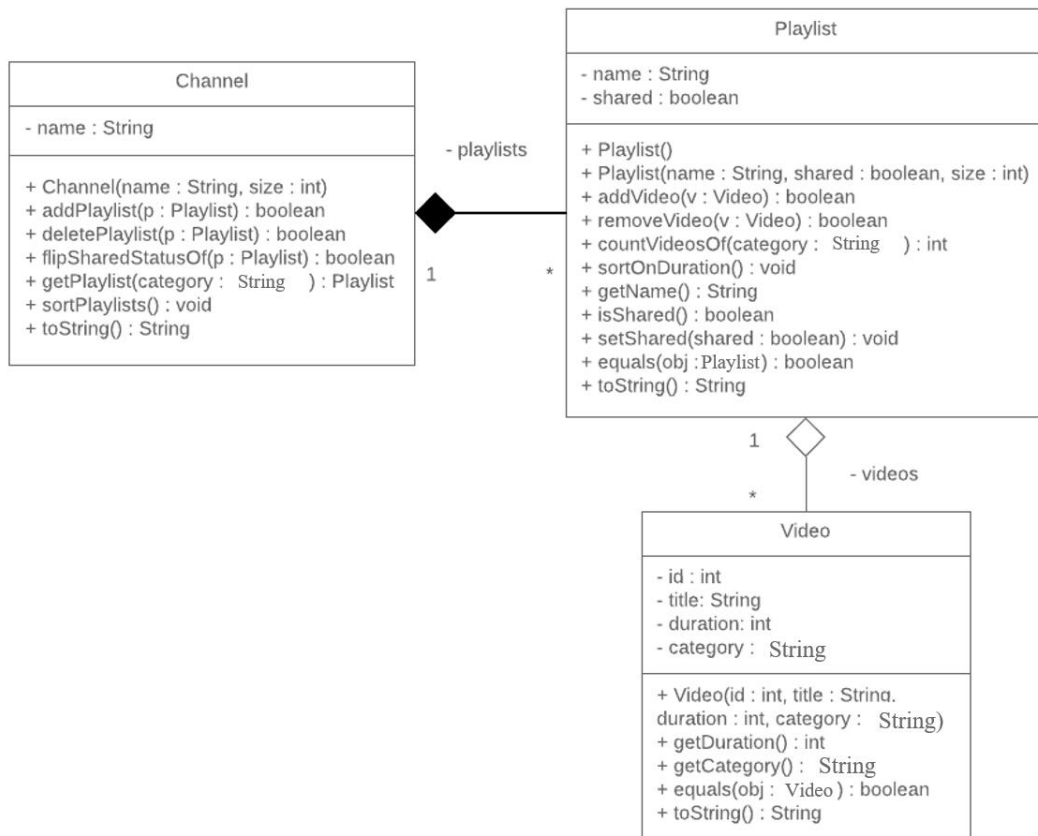


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Exercise 1: Create the classes along with the functionality given in the following UML Diagram. To understand the problem, please refer to the description given after the diagram.



Video Class:

• Attributes:

- ***id***: the ID of the video
- ***title***: the title of the video
- ***duration***: the duration of the video in seconds
- ***category***: the category of the video

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- **Methods:**

- ***Video(id:int, title:String, duration:int, category:String)***: constructor
- ***getDuration()***: returns the duration in seconds of the video
- ***getCategory()***: returns the category of the video
- ***equals(obj:Video)***: compares two objects of type Video based on their *id* and returns the result of the equality
- ***toString()***: this method returns a string representation of the video

Playlist Class:

- **Attributes:**

- ***name***: the name of the playlist
- ***shared***: the sharing status of the playlist; true if it's public and false if it's private

- **Methods:**

- ***Playlist()***: default constructor for an empty playlist
- ***Playlist(name:String, shared:boolean, size:int)***: constructor
- ***addVideo(v:Video)***: adds a video to the playlist if there's space and the video wasn't added before
- ***removeVideo(v:Video)***: removes a video from the playlist if it's there while maintaining the order of the playlist
- ***countVideosOf(category:String)***: returns the number of videos of a certain category currently in the playlist
- ***sortOnDuration()***: sorts the videos in the playlist ascendingly based on the duration
- ***getName()***: returns the name of the playlist
- ***isShared()***: returns the shared status of the playlist
- ***setShared(shared:boolean)***: sets the value of the shared status of the playlist
- ***equals(obj:Playlist)***: compares two objects of type Playlist based on their *name* and returns the result of the equality
- ***toString()***: this method returns a string representation of the playlist

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Channel Class:

- Attributes:
 - *name*: the name of the channel
- Methods:
 - *Channel(name:String, size:int)*: constructor
 - *addPlaylist(p:Playlist)*: adds a playlist to the channel if there's space and the playlist wasn't added before
 - *deletePlaylist(p:Playlist)*: removes a playlist from the channel if it's there by replacing it with the last playlist in the channel
 - *flipSharedStatusOf(p:Playlist)*: flips the shared status of a playlist if it's there in channel
 - *getPlaylist(category:String)*: returns the playlist in the channel having the most videos of a certain category if possible
 - *sortPlaylists()*: sorts all videos in each playlist in the channel ascendingly based on duration
 - *toString()*: this method returns a string representation of the channel