

CMPS 258 – PROGRAMMING LANGUAGES – SPRING 2021
WEEK 7 ASSIGNMENT – PART 2

You have been provided with a `Main.java` file that implements two classes `Audio` and `Video` that represent two different types of playable objects. Both classes contain a method `playbackTime` that returns how long it takes to listen to the audio object or watch the video object. You are to implement polymorphic class methods in the class `Main` that manipulate these objects. Make sure to use the most general type of polymorphism for implementing each method. It is okay if the method works in other scenarios, as long as it works in the scenarios specified.

You are not allowed to add or modify fields and methods in the `Audio` and `Video` classes, but you are allowed to modify the class declarations if you need to. The code also contains test code in the main function that is expected to work for a correct solution. Do not modify this test code.

1. Implement a polymorphic function `selectRandom` that takes a `List<Audio>` object and selects and returns a random `Audio` object from the list, or takes a `List<Video>` object and selects and returns a random `Video` object from the list. You can use the Java function `Math.random()` to generate a random numbers between 0 and 1.
2. Implement a polymorphic function `playbackTimeWithSpeed` that accepts either an `Audio` or a `Video` object and a second parameter `speed` and returns the play back time of the object scaled by the provided speed.
3. Implement a polymorphic function `totalPlaybackTime` that takes a `List<Audio>` object or a `List<Video>` object and returns the total playback time of all the objects in the list.

Assessment

Solutions should be:

- Correct
- In good style, including indentation and line breaks
- Written using features discussed in class

Submission Instructions

Submit your `Main.java` file via Moodle. Do not submit any other files or compressed folders.