

Programming Languages 2

Lesson 6

Create a project to manage the timetable of trains.

1. Create a project named Trains. The name of the main class is Main.
2. Add a new class to the project with the following attributes:
 - startsFrom
 - destination
 - dep_hour
 - dep_min
 - IC (a logical value to describe if the train is IC or not)
3. Generate getters and setters for all the attributes. Plus add an extra getter that returns the time of departure as a `String`. Use this format: `hh:mm`
Add an extra setter as well. It has a `String` parameter that gets the departure time in the above format, and sets the `dep_hour` and `dep_min` attributes according to it.
4. Add a constructor to the class that gets only one `String` as a parameter. The `String` has to follow this format: `startsFrom@destination@depTime[@IC]`
where `depTime` is a `String` representing the departure time (`hh:mm`), and `[@IC]` means that if the Train is an IC it contains the text `@IC` else it doesn't.
5. Instantiate a new train using the following data: "Debrecen → Budapest Keleti (13:10) IC"
The format text for this train is: "Debrecen@Budapest Keleti@13:10@IC".
Add another train using "Debrecen@Eger@13:30".
6. Add a `toString` method to the Train class. It prints uses the following format:
"Startsfrom - destination <tab> hh:mm[IC]"
Where <tab> means a tab character (`"\t"`) and `[IC]` means that the text " IC" is optional at the end of the `String`.
Examples: Debrecen - Eger 13:25
 Debrecen - Miskolc 14:00 (IC)
7. Print out the two previously instantiated objects to the screen.
8. Create a new text file in the project root named "trains.txt" and fill it with some sample data. You can also download it from the page of the class. Each line of the file contains one `String` containing the needed information to create a new `Train`.
9. Create an `ArrayList` of trains and put all trains described in the file to this `ArrayList`. Follow these steps:
 - Create a new `File` object (`File f = new File("trains.txt");`)
 - Open a `Scanner` on `f` (`Scanner sc = new Scanner(f);`)
 - Read all lines of the file using the `hasNextLine()`, and `nextLine()` methods of `sc`Note that when you open a file, it may happen that it does not exist or can not be opened. In this case Java throws an **Exception**. There are exceptions that you should, and there are that you must handle. The easiest way to handle an exception is to use a `try-catch` block
10. Print out the elements of the `ArrayList` one below the other.