JAVA PROJECT - PROBLEM DESCRIPTION

You are required to automate part of a music festival. The problem has the following requirements, which must be dealt with:

1. The festival consists of a name, the city where it will be held, and the list of scheduled artists, some of whom will already be confirmed and others not yet. Artists can be of two types: groups or soloists. All artists have a unique stage name and a musical genre. Additionally, for all artists performing at the festival, it is important to know if they are one of the main artists of the festival (headliner), the ticket price for their concert (in euros), the approximate duration of the performance (in minutes), and the maximum permitted audience capacity for their performance (in thousands of people). In the case of soloists, it will be necessary to record if they require a private dressing room and their manager's phone number. In the case of groups, it is important to know the number of members and if during the performance a stand for the sale of official merchandise will be set up. These stands will sell t-shirts with an average price of 25€, and a 15% discount applicable to attendees of previous editions of the festival.
2. Those interested in attending the concerts of artists performing at the festival (hereinafter referred to as attendees) can purchase tickets (up to a maximum of 7), if they are registered in the system. Attendees' names, ID, credit card number, and whether they have attended previous editions of the festival are recorded. There is a special type of attendee, who has additional benefits, such as access to exclusive areas and dressing rooms, called “VIP Attendee”. These attendees will have a VIP card number. Attendees can only purchase tickets for confirmed concerts, and each ticket will have a unique identifier.
3. The festival has a discount policy applicable to ticket purchases. Attendees of previous editions of the festival receive a 10% discount on the current purchase. VIP attendees receive an additional 15% discount.
4. The festival organization hires an external security company, which can change annually or according to the event's needs. This company will be responsible for managing access control to the stages, monitoring the venues, and access to exclusive areas. This company will be characterized by a name and the amount it charges for each security guard assigned to the event.

5. The management system must allow the following **queries**: [In queries where it is necessary to search for attendees, it will be done by DNI]

    1. Show the information of all the artists scheduled to participate in the festival [A file with this information will be provided to the student].
    2. Suppose the security company "Evento Seguro S.L." charges 250€ for each security guard assigned to the festival. Assuming the participation of all scheduled artists is confirmed and their capacities are filled, and we want to have one security member for every 500 attendees, two to watch each merchandise stand, and one to control access to each soloist's private dressing room, show how much the festival's security service would cost.
    3. Registered attendees can check the cost of a ticket to a specific concert (whether confirmed or not). The system will calculate if any discount is applicable, and if so, the percentage and the final ticket price will be displayed as a result of the query. [Only the prices before and after applying the discount, as well as the applicable percentage, are calculated and displayed on the screen, without actually purchasing the ticket].

4. Estimate the amount of money (in euros) that an attendee who wants to attend the performances of all confirmed headliner artists and buy a t-shirt at each concert with merchandise for sale would spend.
5. Purchase a ticket to a specific concert. [If the attendee is not registered, meaning they are not in the file provided to you, their information should be requested. This information does NOT need to be added to the file].
6. Show all the information of the tickets that a specific attendee has purchased. [The search for the attendee will be done by DNI]
7. Show the information of the concerts with merchandise stands for which a VIP attendee has purchased tickets.

All interactions with the system must take place by means of an options menu.
The initial information regarding the artists and attendees are provided in the files "Artistas.txt" and "Asistentes.txt", which can be found by accessing the Virtual Campus.

The programme should not make distinctions between lower-case and upper-case letters.

It is necessary to catch at least, the following **exceptions**:

1. If the files do not exist.
2. If the selection of the options menu is not within the interval of valid options. In this case, it should be possible to request that option again without having to leave the programme.
3. If, when one expects to receive numerical data, one receives non-numerical data.
4. If one wishes to buy more than 7 tickets.

Resits of Pracical Exams: Extraordinay Evaluation

The deadline for submission will be **June 22 at 23:55**, although it is recommended to submit before that date. The professor will decide when the defense of the practice will take place, which will be held during office-hours.

In this call, the submission and correction of the practice will be individual, regardless of whether it was done in pairs in the regular call.

In this call, students must:

- Correct all the errors detected in the ordinary project.

Include two new queries:

8. Show information about all the artists scheduled at the festival who require a private dressing room.
9. Consult the number of tickets to rock or metal concerts purchased by a specific attendee.
10. The application must allow the registration of new artists in the festival, who must be included in the "Artistas.txt" file. o When registering a new artist, it must be verified that they are not already registered in the festival. In that case, the system will request a new artist name until a correct one is entered (without exiting the program or returning to the options menu).
11. Exceptions must be handled and captured for the following situations:
    1. When registering a new artist, it must be verified that the number of artists does not exceed 15; a warning will be shown if such a circumstance occurs.

2. In cases where a phone number is requested, it must be verified that its format is 9 digits (without spaces or separators). The entry of a phone number in an incorrect format will be captured with an exception.

SESSIONS AND MILESTONES

We will have three important milestones:

- **First milestone: On March, 3 (the week of).**
- **Second milestone: On March 24 (the week of)**
- **Last mislestone: On May 8 at 23:55. The java program should work with implemented exceptions.**

1st Session (On February 17)

- Teacher: Presentation of lab sessions (regulations, rules, assessment, etc.). Details of java program to be designed and implemented. Mention that it is necessary to read the information about the Artists and the Attendees from the provided files (available on the Virtual Campus). Remember in this session how to read a sequential text file. The students will be provided with the reading code for the Fichero “Asistentes.txt" file.

- Students: Part 1: Underline the candidate classes and discuss if they may be final classes.

2nd Session (On February 24).

- Teacher: Continue with the discussion about candidate classes.
- Students: Make a UML diagram for each class and begin with relationships between classes (if it was taught in theory).
    - In next session, students must have made the UML diagrams (Milestone 1).

3rd Session (On March 3). Assessable. Compulsory attendance. Milestone 1

- Teacher: Review/Assessment of UML diagram. Highlight common errors
- Students: Bring the corrected class diagrams and the code of the Security Company class.

4th Session (On March 10).

- Teacher: Review/Assessment the implemented class.
- Students: Bring the code of Artists and Attendees classes.

5th Session (On March 17).

- Teacher: Review/Assessment of previous classes.
- Students: Try to implement all classes except the Festival class and the Main class.

6th Session (On March 24). Compulsory attendance. Mileston 2

- Teacher: Review of UML diagrams, relationships between classes and alignment with the java code.

- Students: Begin to implement the Festival class. It is required that this class keeps a dependence relationship with Security Company class.

7th Session (On March 31).

- Teacher: Discuss about the methods to be implemented in Festival class.
- Students: Finish and improve the Festival class. Begin with the Main class.

8th Session (On April 7).

- Teacher: Discuss about the methods that should be implemented in the Main class.
- Students: Finish and improve the Main class.

9th Session (On April 21).

- Teacher: Discuss about the exceptions that should be implemented.
- Students: Finish and improve the Main class. Begin to add code for exception catching.

10th Session (On April 28)

- Questions. Finish the project. It is recommended to use an interface for constants (for example, for the percentages to apply in discounts).

11th Session (On May 5)

- Questions. Finish the project. It is recommended to use an interface for constants (for example, for the percentages to apply in discounts).

12th Session (On May 12). Defense of the Project in class (or office hours) Milestone 3

- Review/Assessment of the project

Work in lab sessions: Ongoing assessment

- For each session, a part of the problem will be proposed. In addition, a part proposed in the previous session will be reviewed.
- The comments/observations made by the professor have to be taken into account to implement the next part of the project.
- It is compulsory for both members of the group to attend class on days that are milestones. If one member is not attend, the milestone will be scored with zero points for this member of the pair.

Final assessment

- In the last session, the whole project will be assessed, along with the documentation of the project.
- To pass both parts (documentation and java code), task sending and presentation are mandatory. The presentation will be held on the date indicated and both members of the pair must be present. If one member is not present, the whole project will be graded with zero points for this member. The program submitted to Campus Virtual must work without errors, otherwise the student will not pass this part of the subject.
- **Deadline to send the java project (via "Campus Virtual"): 8 May 2025**

Assessment of the project

The grade/score of this part is 25% of the final grade of the subject. It is imperative the code corresponds to the UML design.

Documentation of the project

The activity called "elaboración de memorias de prácticas" refers to the documentation of the Project, and its grade is 15% of the final grade of the subject. This documentation must be submitted on the same date as the final project in **pdf format**.

Documentation to be sent via Campus Virtual. Delivery rules

a) Code of the program corresponding to the activity called "Realización de la práctica". Every class and method must include comments inside the methods if necessary (e.g. if the method implements a complex algorithm which needs to be explained).

b) Documentation of the Project corresponding to the activity called "Elaboración de memorias de prácticas". This documentation must contain a title page with the names of the members of the team, percentage performed by each member, an index with the pages corresponding to the different sections, the analysis of the requirements, the design including the UML diagrams and the user manual. **The documentation will be formatted as a pdf file.**

A compressed file will be upload with the following format:

G2_FirstSurname1FirstSurname2.zip

which will contain:

1. The .java files of all the classes of the program (do not include folders). The classes containing the main method will be named:

   G2_FirstSurname1FirstSurname2.java

2. The pdf file including the documentation will be named:

   G2_FirstSurname1FirstSurname2_DOC.pdf

In which Gx corresponds to the lab group. Please, long surnames should be truncated.

General issues

- Lab activities will be carried out in pairs, but the final grade will be individual. **The retake will be individual**.
- The correct running and working of the final project will be the minimum requirement to pass this activity, but other factors such as efficiency, quality of the design, use of comments (internal documentation),etc., will also be taken into account to grade the project.
- The Project will be sent via **"Campus Virtual"** through the corresponding task previously available for each lab group. Make sure, you send your project taking into account your lab group.
- The project is mandatory, and it is necessary to obtain at least 4 points (out of 10) to pass the subject.
- The documentation of the project is not compulsory. The grade obtained will be kept for the second-chance examination ("convocatoria extraordinaria").