**TABLA DE ESPECIFICACIÓN DEL PROBLEMA DE INGENIERÍA DE SOFTWARE, identificando los siguientes elementos**

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| CLIENTE | NeoTunes |
| USUARIO | NeoTunes manager |
| REQUERIMIENTOS FUNCIONALES | 1. Register users (consumers and producers) 2. Register audios (songs and podcasts) 3. Buy songs 4. Create playlists 5. Edit playlists 6. Share playlists 7. Reproduce audio 8. Show report of total number of reproductions of each type of audio in the platform 9. Show report of most listened song genre in the entire platform 10. Show report of most listened song genre by a specific user 11. Show report of most listened podcast category in the entire platform 12. Show report of the podcast category most listened by a specific user 13. Show report of the top 5 artists and top 5 content creators 14. Show report of the top 10 songs and top 10 podcasts 15. Show report of number of songs sold of each genre 16. Show report of the song with the greatest number of sales in the entire platform |
| CONTEXTO DEL PROBLEMA | NeoTunes is a music platform where consumer users can be premium or standard. They can listen to the entire audio catalog, buy songs, and create playlists, which can also be edited. The audios are produced by the platform’s producer users (artists and content creators). Artists create songs and content creators create podcasts. The platform will have functionalities that show general reports like the most listened song genre or podcast category, the song and podcast total listened time in the entire platform, reports about the top 5 and top 10 producer users and audios, respectively, and reports about the most sold songs. |
| REQUERIMIENTOS NO FUNCIONALES | R1: The system should allow the implementation of more audios types and users |

**Tabla de análisis de requerimientos funcionales (Nota: Una tabla por cada requerimiento funcional)**

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| Nombre o identificador | R1: Register users | | |
| Resumen | The system will allow the registration of users, which can be either consumes or producers. At the same time, consumers will be divided between standard and premium, while producers will be divided between artists or content creators. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| nickname | String | Value must be unique |
| id | String | Value must be unique |
| selectionUserType | int | Chosen option must be within range |
| selectionProducterType | int | The user must be produccer and the chosen option must be within range |
| selectionConsumerType | int | The user must be consumer and the chosen option must be within range |
| name | String | User must be a producer |
| url | String | User must be a producer |
| Actividades generales necesarias para obtener los resultados | The systems check if the nickname and id are unique, then requests what kind of user wants to create (producer or consumer), then the system will ask to specify the user type. If consumer, standard or premium. If producer, artist o content creator, if the user created is a producer the system will ask for extra data. | | |
| Resultado o postcondición | The user is registered and the object is stored in the Users ArrayList | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |

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| Nombre o identificador | R2: Register audios | | |
| Resumen | The system will allow the registration of audios (songs and podcasts). The artist users will be able to add songs and the content-creators’ users will be able to add podcasts. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| audioType | int | chosen option must be within range |
| chosenCreator | int | chosen option must be within range |
| name | String |  |
| duration | double |  |
| url | String |  |
| genre | int | The selected audio type must be a song |
| album | int | The selected audio type must be a song |
| value | double | The selected audio type must be a song |
| description | String | The selected audio type must be a podcast |
| category | int | The selected audio type must be a podcast |
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| Actividades generales necesarias para obtener los resultados | The user must choose whether to create a song or a podcast. Then, the user is asked for the name of the audio, its duration and the url of the album cover (if creating a song) or distinctive image (if creating a podcast). Then, the user will be shown a list of artists, if creating a song, or a list of content creators, if creating a podcast, for the user to choose the producer user. Then, if a song is being created, the user will be asked to choose the genre of the song and will be prompted for the cost. Otherwise, if a podcast is being created, the user will be prompted for a description and asked to choose the category. Finally, a status message will be displayed (audio registration success or failure). | | |
| Resultado o postcondición | An instance of the chosen audio is created and is stored in the audios’ ArrayList | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |
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| Nombre o identificador | R3: Buy song | | |
| Resumen | The system will allow to buy a song (for the consumer users), a list of the existing song will be displayed and then will be prompted to select one of them. If the consumer user is standard, there is a maximum of 100 purchased songs. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| selectionUser | int | chosen option must be within range |
| selectionSong | int | If the user is standard he must have bought less than 100 songs and the chosen option must be within rang |
| Actividades generales necesarias para obtener los resultados | A list of the registed consumers users is displayed, then the system checks if the selected user is standard or premium and display the existing songs, then the system will allow the purchase of the song (if the user is a standard user the system will validate that he/she can have no more than 99 purchased songs, otherwise it will cancel the purchase). | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |

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| Nombre o identificador | R4: Create playlists | | |
| Resumen | The system will allow to create a plylist for the consumer users, where songs and podcasts will be stored, each list will have a name, a list of audios and autogenerated id. When the playlist is created, it will be empty. If the consumer user is a standard user, he can only have 20 playlists, while premium consumer users can have an unlimited number of playlists. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| userChoice | int | If the user is standard, he must have less than 20 playlists |
| name | String |  |
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| Actividades generales necesarias para obtener los resultados | A list of consumer users is displayed, and the manager must choose one to create the new playlist. if the select user is standard the system will check if he has less than 20 playlists. Then the user will be asked to enter the name of the new playlist and an instance of the playlist class will be created, and then the object will be stored in the chosen user. Finally, a success or error message will be displayed, depending on if the list was created or not. | | |
| Resultado o postcondición | Creation of the instance playlist object and storage of the object in an array list of a Consumer instance | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |
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| Nombre o identificador | R5: Edit playlist | | |
| Resumen | The system will allow to edit a playlist, i.e. will can add or eliminate audios in an existing playlist | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| userChoice | int | The select user must be consumer type and the chosen option must be within range |
| listChoice | int | chosen option must be within range |
| editChoice | int | chosen option must be within range |
| audioChoice | int | chosen option must be within range |
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| Actividades generales necesarias para obtener los resultados | A list of consumer users will be displayed (standard and premium) for the manager select one. Once the consuming user is selected, his playlists will be displayed, and he will be asked to choose which playlist will be edited. Then, he will be asked if he wants to add or remove an audio to the chosen list. If an audio is to be added, they will be asked whether they want to add a song or a podcast, and then the respective catalog will be displayed. The user must choose one of the options and the audio will be added to the playlist. On the other hand, if the user selects the option to delete an audio, the user will be shown all the audios stored in the list and the user must choose which one to delete. The audio will then be removed from the list and a status message will be displayed, depending on whether the playlist edit was successful or failed. | | |
| Resultado o postcondición | A consumer user’s playlist will be modified | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |
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| Nombre o identificador | R6: Share playlist | | |
| Resumen | The system will allow for a user consumer’s playlist to be shared through a code generated depending on the playlist’s content (only podcasts, only songs, podcasts and songs), which will determine the iterating pattern over a 6x6 matrix filled with random single digit numbers | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| selectionUser | Int | Chosen option must be within range |
| selectionPlayList | Int | Chosen option must be within range |
| Actividades generales necesarias para obtener los resultados | The list of all the consumer users will be shown. The user will choose one of them and then the system will show the list of all the chosen user’s playlists. If the playlist is not empty, a 6x6 matrix will be generated with random numbers, and depending on the type of the playlist’s content (only podcasts, only songs, podcasts and songs) a different iterating pattern will be chosen to create the playlist's shareable code. Lastly, the code will be shown on screen. If the playlist's empty, no code will be generated, and this situation will be informed to the app’s user. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| matrix | String |  |
| message | String |  |
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| Nombre o identificador | R7: Reproduce audio | | |
| Resumen | The program will allow for a consumer user to reproduce a selected audio, either song or podcast, from the platform’s entire audio catalog. If the consumer is standard, every 2 songs or before listening to a podcast, an ad will be played. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| consumerChoice | int | Chosen option is within shown list’s range |
| audioType | int | Chosen option is within shown list’s range |
| audioChoice | int | Chosen option is within shown list’s range |
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| Actividades generales necesarias para obtener los resultados | The program will show the list of all the consumer users for the manager to choose one. Then, the program will ask if the user wants to listen to a song or a podcast. If the chosen consumer is standard, an ad will be played before playing a podcast, or if the person has listened to 2 songs before the chosen one. Then, a simulation of the playable audio will be shown. | | |
| Resultado o postcondición | A series of variables will be updated throughout the app: the chosen audio’s reproduced times; the audio’s producer’s reproduced times and time listened by consumers; the chosen consumer’s total listened time of the chosen audio type; the consumer’s listened times of a category if the audio is a podcast or the consumer’s listened times of a genre if the audio is a song. | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| playedAudio | String |  |
| message | String |  |
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| Nombre o identificador | R8: Show report of total number of reproductions of each type of audio in the platform | | |
| Resumen | The program will allow the user to know the number of reproductions of a select song | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| audioSelection | Int | Chosen option is within shown list’s range |
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| Actividades generales necesarias para obtener los resultados | The program will iterate over the audios ArrayList in the controller class and will add up the reproductions of the songs and podcasts. Then, the total number of reproductions of both types of audio will be shown on screen | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |
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| Nombre o identificador | R9: Show report of most listened song genre in the entire platform | | |
| Resumen | The name and number of reproduced times of the most listened song genre in the platform will be shown on screen | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| menuChoice | int |  |
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| Actividades generales necesarias para obtener los resultados | The program will iterate over the consumer’s ArrayList in the controller class and will access to the consumer’s genre count ArrayList. The number of times that each consumer has listened to each genre will be added to an ArrayList in the controller class and it will be sorted to find the genre with the greatest number of listened times | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| message | String |  |
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| Nombre o identificador | R10: Show report of most listened song genre by a specific user | | |
| Resumen | The app will show the name and number of reproductions of the most listened song genre by a specific user | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| consumerChoice | int | Chosen option is within shown list’s range |
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| Actividades generales necesarias para obtener los resultados | The program will show the list of consumer users and the manager must choose one to show the corresponding report. The chosen consumer will have an ArrayList with the number of each genre’s reproduced times. If the chosen consumer has not listened to any song, the report will say so. The ArrayList will be duplicated and the second temporal ArrayList will be sorted and the name of genre and the reproduced times of the first genre in the sorted ArrayList will be shown on screen. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| report | String |  |
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| Nombre o identificador | R11: Show report of most listened podcast category in the entire platform | | |
| Resumen | The program will show the name and number of reproductions of the most listened podcast category in the entire platform | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| menuChoice | int |  |
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| Actividades generales necesarias para obtener los resultados | The program will iterate over the consumer’s ArrayList in the controller class and will access to the consumer’s category count ArrayList. The number of times that each consumer has listened to each category will be added to an ArrayList in the controller class and it will be sorted to find the category with the greatest number of listened times | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| categoryReport | String |  |
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| Nombre o identificador | R12: Show report of the podcast category most listened by a specific user | | |
| Resumen | The program will display the podcast category most listened to by the user | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| userSelection | int | Chosen option is within shown list’s range |
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| Actividades generales necesarias para obtener los resultados | The program will show a list of consumers users and the manager must choose one to show the corresponding report. The chosen consumer will have an ArrayList with the number of each category reproduced times. If the chosen consumer has not listened to any song, the report will say so. The ArrayList will be duplicated and the second temporal ArrayList will be sorted and the name of category and the reproduced times of the first category in the sorted ArrayList will be shown on screen. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| report | String |  |
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| Nombre o identificador | R13: Show report of the top 5 artists and top 5 content creators | | |
| Resumen | The app will show the name and the reproduced times of the top 5 of artists and the top 5 of content creators | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
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| Actividades generales necesarias para obtener los resultados | The program will iterate through the artists’ and content creators’ ArrayList in the controller class, and it will be duplicated in a temporary Arraylist, this one will be sorted according to the number of reproductions. A report with the name and number of reproductions of the first 5 of each producer type will be shown on screen. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| top5Producers | String |  |
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| Nombre o identificador | R14: Show report of the top 10 songs and top 10 podcasts | | |
| Resumen | The app will show the name, genre or category and the reproduced times of the top 10 of artists and the top 10 of content creators | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
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| Actividades generales necesarias para obtener los resultados | The program will iterate through the audios arraylist in artists and content creators ArrayList in the controller class, and it will be duplicated in a temporary Arraylist, this one will be sorted according to the number of reproductions. A report with the name, genre or category and number of reproductions of the first 10 of each will be shown on screen. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| top10Producers | String |  |
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| Nombre o identificador | R15: Show report of number of songs sold of each genre | | |
| Resumen | The program will show the number of sold songs and the total income for each song genre | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| menuChoice | String |  |
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| Actividades generales necesarias para obtener los resultados | The program will iterate over the consumers ArrayList in the controller class and will access each consumer’s bought songs ArrayList. Then, the program will add the number of songs of each genre of each bought song of each consumer. Also, the corresponding price of the songs of each genre will also be added up to a total income of each genre. Then, the program will show the number of sold songs and the total income for each song genre | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| genreReport | String |  |
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| Nombre o identificador | R16: Show report of the song with the greatest number of sales in the entire platform | | |
| Resumen | The program will display the name, duration, and number of sales of the best-selling song on the entire platform. | | |
| Entradas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
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| Actividades generales necesarias para obtener los resultados | The program will iterate over the audio arraylist and will look for those of song class, it will copy the first value and compare them with the rest, if it finds a value higher than the one it has stored it will reassign it and continue, until it gets the audio with the highest number of sales, then it will return the object. | | |
| Resultado o postcondición |  | | |
| Salidas | Nombre entrada | Tipo de dato | Condición de selección o repetición |
| report | String |  |
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