UNIVERSITY of GREENWICH
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BTEC

ASSIGNMENT 2 FRONT SHEET

Qualification	**BTEC Level 5 HND Diploma in Computing**		
Unit number and title	Unit 9: Software Development Life Cycle		
Submission date		**Date Received 1st submission**	
Re-submission Date		**Date Received 2nd submission**	
Student Name	VO NHUT HUY	**Student ID**	GCC18169
Class	GCC0701	**Assessor name**	NGUYEN THAI NGHE
Student declaration I certify that the assignment submission is entirely my own work and I fully understand the consequences of plagiarism. I understand that making a false declaration is a form of malpractice.			
		Student's signature	NHUT HUY

Grading grid

P5	P6	P7	M3	M4	M5	M6	D3	D4

❒ Summative Feedback:	❒ Resubmission Feedback:

Grade:	Assessor Signature:	Date:

Internal Verifier's Comments:
Signature & Date:

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ASSIGNMENT 2 BRIEF

Qualification	**BTEC Level 5 HND Diploma in Computing**		
Unit number	Unit 9: Software Development Life Cycle		
Assignment title	Undertake a software development lifecycle		
Academic Year	2019 – 2020		
Unit Tutor	LE Minh Duc		
Issue date		**Submission date**	
Name and date			

Submission Format:	
Format:	The submission is in the form of 1 document. You **must** use the *Times font* with *12pt size*, turn on *page numbering*; set *line spacing to 1.3* and *margins* to be as follows: left = 1.25cm, right = 1cm, top = 1cm, bottom = 1cm. Citation and references must follow the Harvard referencing style. **Word limit**: 3000 words (excluding figures and references). Submissions that exceed this limit will be rejected.
Submission:	You **must** submit the assignment **by the due date** and follow the submission method specified by the Tutor. The submission form is **soft copy**, which is to be uploaded to the following URL: http://cms.greenwich.edu.vn.

Note:	Your assignment *must* be your own work, and not copied by or from another student or from other sources, such as book etc. If you use ideas, quotes or data (such as diagrams) from books, journals or other sources, you must reference the sources, using the Harvard style. Make sure that you know how to reference properly and that you understand the plagiarism guidelines. **Plagiarism is a very serious offence**, which will result in a failing grade.

Unit Learning Outcomes:

LO3 Undertake a software development lifecycle.

LO4 Discuss the suitability of software behavioural design techniques.

Assignment Brief and Guidance:

Tasks

At this stage, you have convinced Tune Source to select your project for development. Complete the following tasks to analyse and design the software.

Task 1 – Analysis (1)

1. (P5.a) Identify the stakeholders, their roles and interests in the case study.

   Review the requirement definition of the project. Clearly indicate which stakeholder(s) provide what requirements.

   Word limit: 150 - 200

   Identify FRs and NFRs of TuneSource Project

   Discuss the relationships between the FRs and NFRs.

Word limit: 300 – 400 words

2. (P5.b) Discuss the technique(s) you would use to obtain the requirements.

   If needed, you may state suitable additional assumptions about the project in order to justify the technique(s) that you choose.

   Techniques: JAD, Interview, Observation, etc …

   Demonstrate how to collect requirements based on chosen technique

   Word limit: 700 - 1000

3. (M3) Discuss how you would trace these requirements throughout the project.

   Word limit: 400 – 500 words

Task 2 – Analysis (2)

(P6) Analyse the requirements that you identified in Task 1 using a combination of structural and behavioural modelling techniques that you have learnt.

Scope: you only need to construct following items for the system. You will have to include

- Use Case Diagram for the whole system
- Use Case specification for 2 Use cases
- Context Diagram for the whole system
- Data Flow Diagram – Level 0 for the whole system
- ERD for the whole system

Worl limit: 1000 – 1200 words

Task 3 – Design

Based on the analysis result, discuss how you would conduct the design phase:

1. (P7) Discuss how the user and software requirements are addressed in the design phase.
    - You will explain how Mockup and Wireframe are used in the project. You should include some of the mockup or wireframe (at least 5) design of the TuneSource project to justify that it matches users' requirements
    - You will explain which architecture (client – server, n-tier, microservices, etc.) is suitable for the project with clear illustrations and why
    - Then you will address which solution stack could be suitable to implement the project with clear explanations
2. (M5) Discuss how activity diagram and pseudocode are used to specify the software behaviour.
3. (M6) Discuss how UML state machine can be used to specify the software behaviour. Differentiate between FSM And extended FSM using the case study.
4. (D4) Discuss how the data-driven approach improves the reliability and effectiveness of software.

    Word limit: 400 - 1500

Task 4 – Software quality management

1. (M4.a) Discuss two software quality attributes that are applicable to the project.
2. (M4.b) Discuss two quality assurance techniques that can help improve the software quality in the project.
3. (D3) Discuss how the design techniques and approaches that you have used can help improve the software quality.

Word limit: 400 - 1500

Learning Outcomes and Assessment Criteria		
Pass	**Merit**	**Distinction**
LO3 Undertake a software development lifecycle		**D3** Critically evaluate how the use of the function design paradigm in the software development lifecycle can improve software quality.
P5 Undertake a software investigation to meet a business need. **P6** Use appropriate software analysis tools/techniques to carry out a software investigation and create supporting documentation.	**M3** Analyse how software requirements can be traced throughout the software lifecycle. **M4** Discuss two approaches to improving software quality.	
LO4 Discuss the suitability of software behavioural design techniques		**D4** Present justifications of how data driven software can improve the reliability and

		effectiveness of software.
P7 Explain how user and software requirements have been addressed.	**M5** Suggest two software behavioural specification methods and illustrate their use with an example. **M6** Differentiate between a finite state machine (FSM) and an extended-FSM, providing an application for both.	

Contents

P5 Undertake a software investigation to meet a business need.

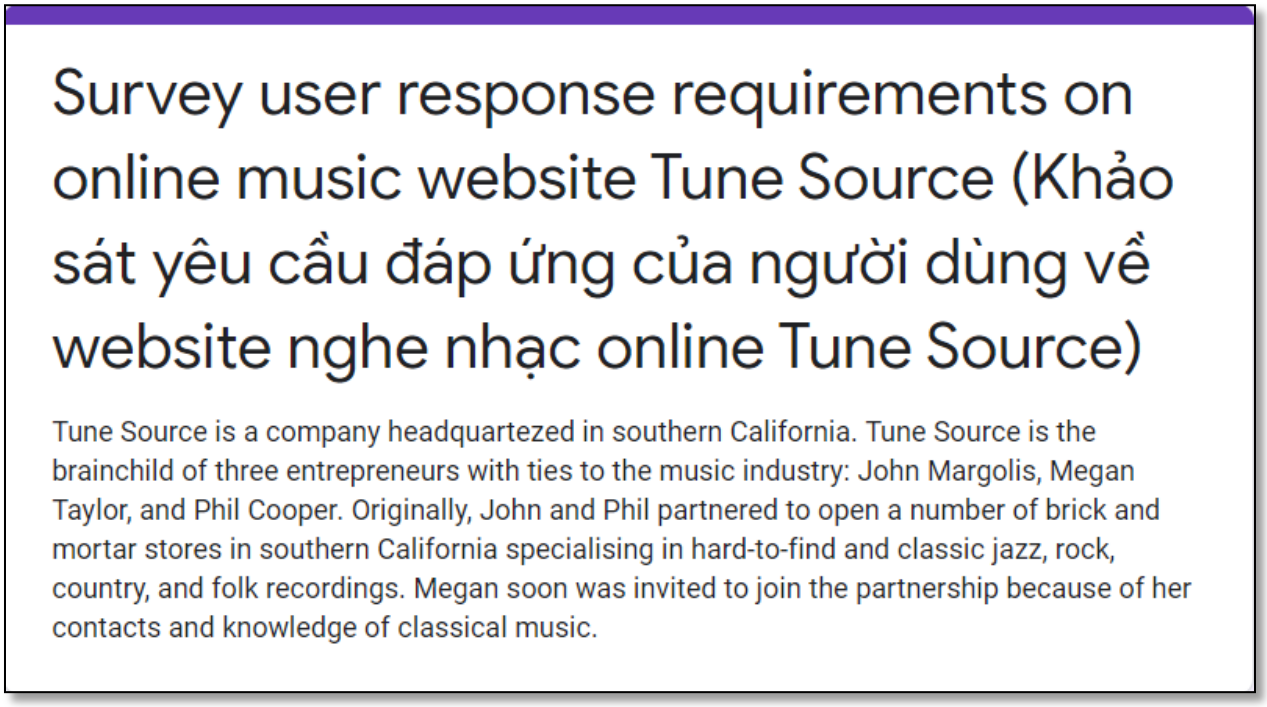

Figure 1: The introduction to Tune Source

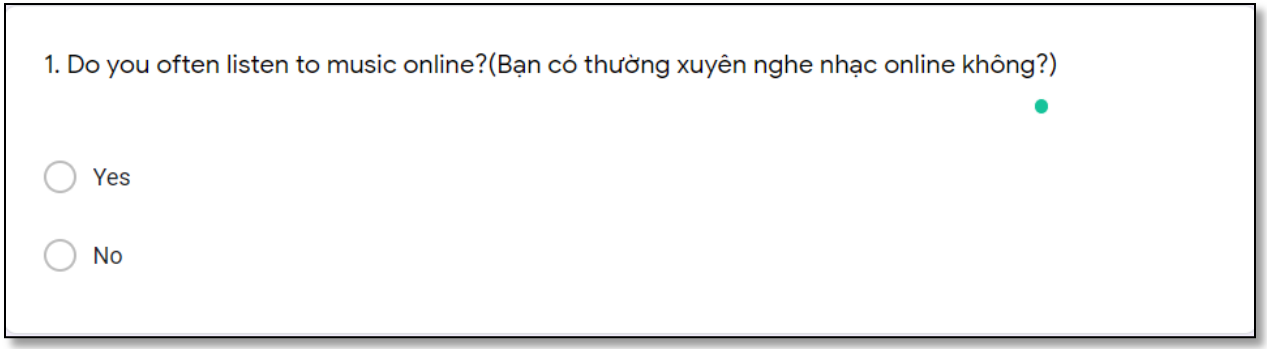

Figure 2: First survey question

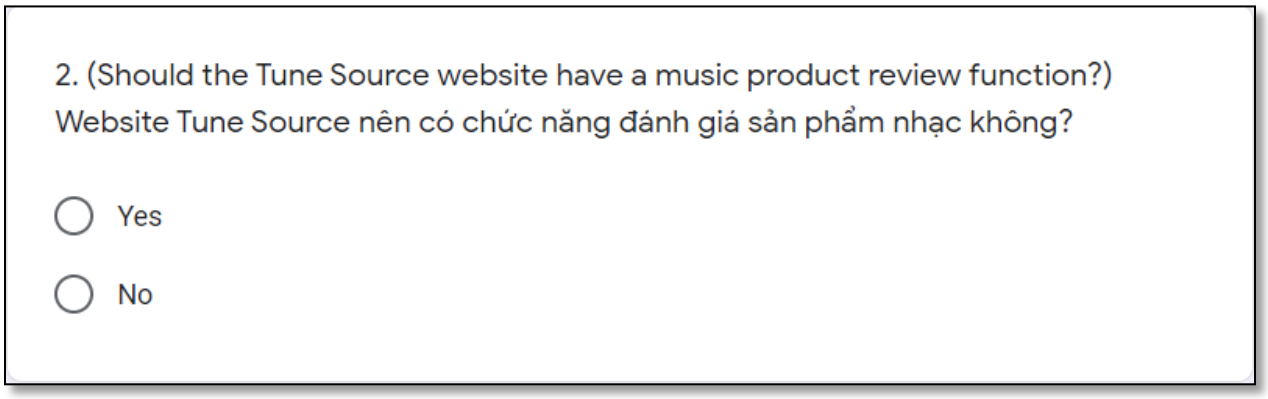

Figure 3: Second survey question

Figure 4: Third survey question

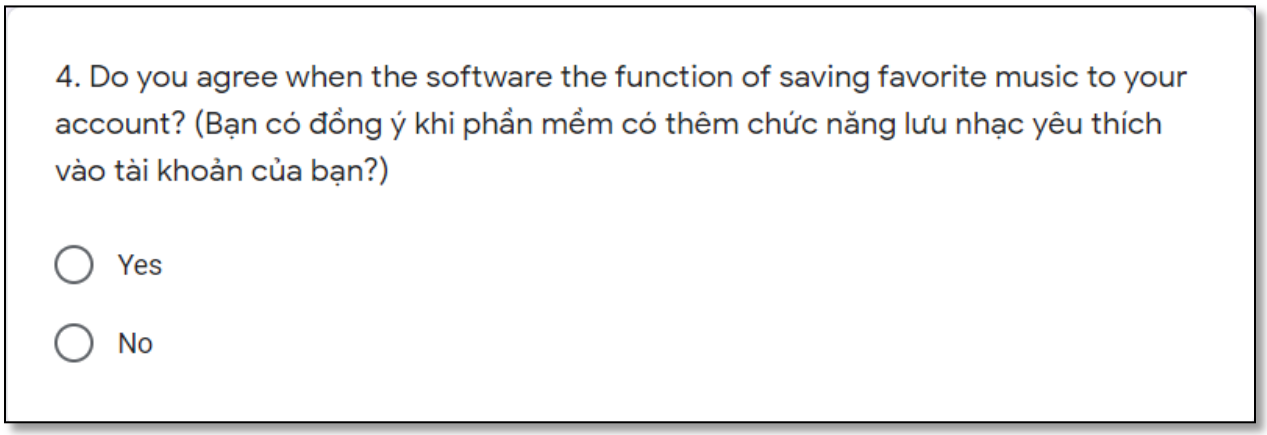

Figure 5: Fourth survey question

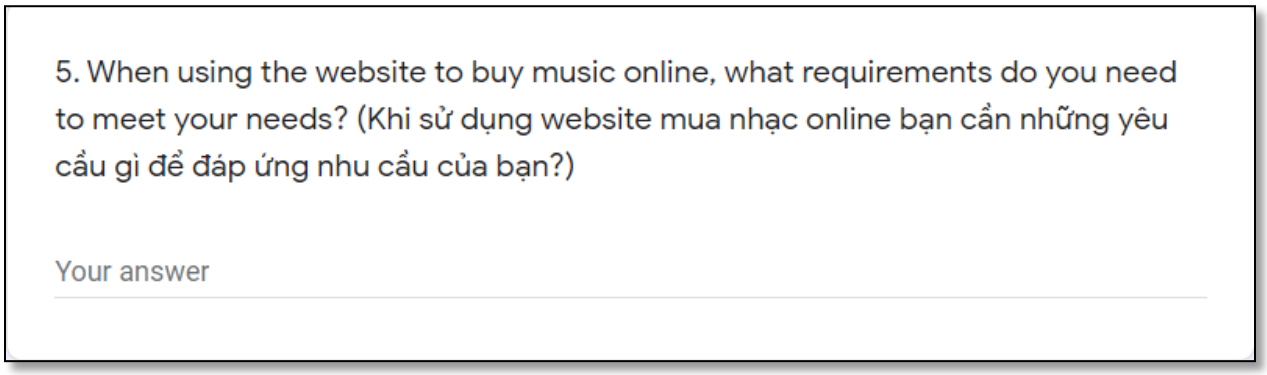

Figure 6: Fifth survey question

- The purpose of the form creation is to get the typing pattern of each user as they use many other online music sites and be able to complete the creation of the Tune Source website.
- With question:
  - "Do you often listen to music online?" → muc đích là tìm hiểu người dùng này có hiểu biết nhiều về phần mềm nghe nhạc online và có nhiều kỹ năng sử dụng phần mềm nghe nhạc online có thể bắt được lỗi về các chức năng của website.
  - "Are you willing to buy copyrighted music for listening?" → Development often involves having to invest money or resources, but this problem is intended to help us

grow in other ways that can be advantageous. However, we can consider decreasing or withdrawing the charge if the customer or sponsor is willing to pay us back.

- "Should the Tune Source website have a music product review function?" → The wrong goal is to allow users the right to experience and rate themselves, so that if this app is bad, we can both fix the bug and develop the benefits if it is very good.
- "Do you agree when the software the function of saving favorite music to your account?"→ The purpose of this question is to survey whether users really need this function when they are using the web to listen to music online. They want to listen to their favorite music and listen again and again without searching many times. With this additional function, the online music website attracts more customers.
- "When using the website to buy music online, what requirements do you need to meet your needs?" → The purpose is to learn the necessary functions of the web, listen to music online. This set of necessary functions to be able to create the most complete web for users
    - I Choose JAD In Tune Source because:
- JAD allows you to resolve difficulties more simply and produce better, error-free software
- The joint collaboration between the company and the clients lowers all risks
- JAD reduces costs and time needed for project development
- Well-defined requirements improve system quality
- Due to the close communication, progress is faster
- JAD encourages the team to push each other to work faster and deliver on time

P6. Use appropriate software analysis tools/techniques to carry out a software investigation and create supporting documentation.

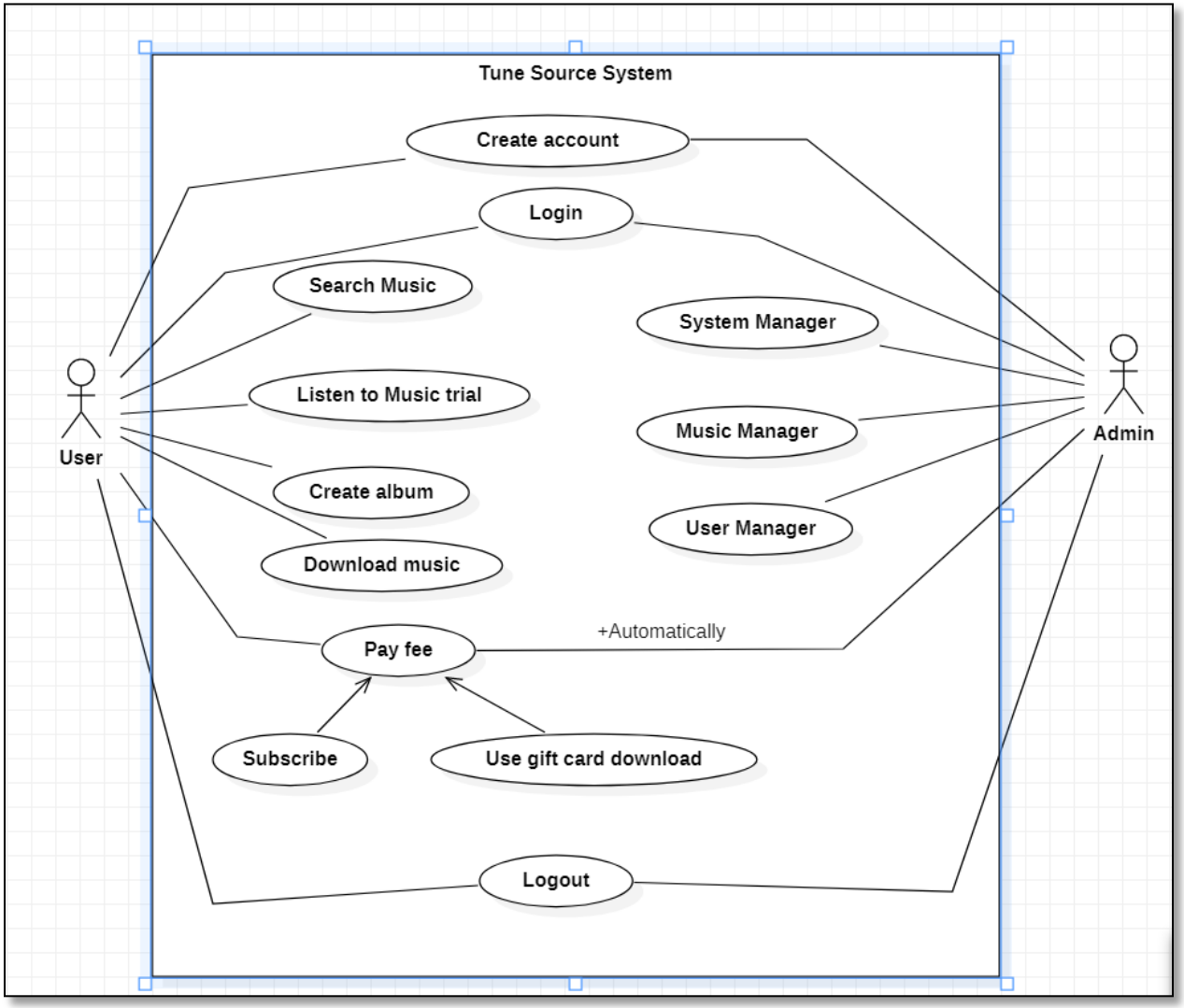

Figure 7: Use case diagram

- Use case diagram: My solution is done followed request of Tune Source. Using website to search, listen trial, download and pay fee… → In Tune Source, we have built all the features, such as how user can search music, download, listen to music trial and create

album, and admin will have the power to manage music and manage user and system manage.

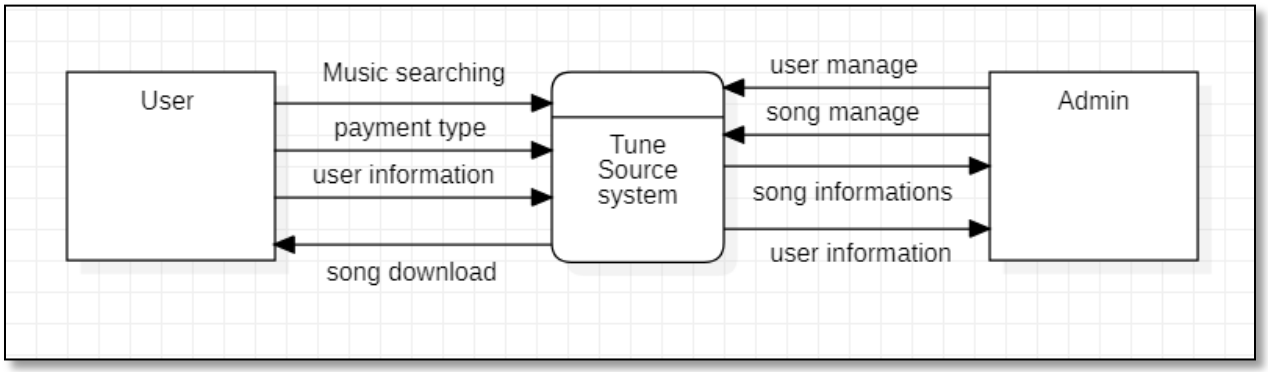

Figure 8: DFD level 0

- Data flow charts can vary from simple, even manually drawn, process overviews to detailed, multi-level DFDs that gradually deepen their manner of handling the data. It's possible to test a new system or model for an existing system. A DFD can also "say," visually and work with developer technical or non-technical audiences, things that are hard to explain in terms of language, like the best diagram ormap. Although data flow software and systems work well, software and systems that are interactive, real-time or database are less important nowadays. Here's the Tune Source's DFD Level 0 looks:

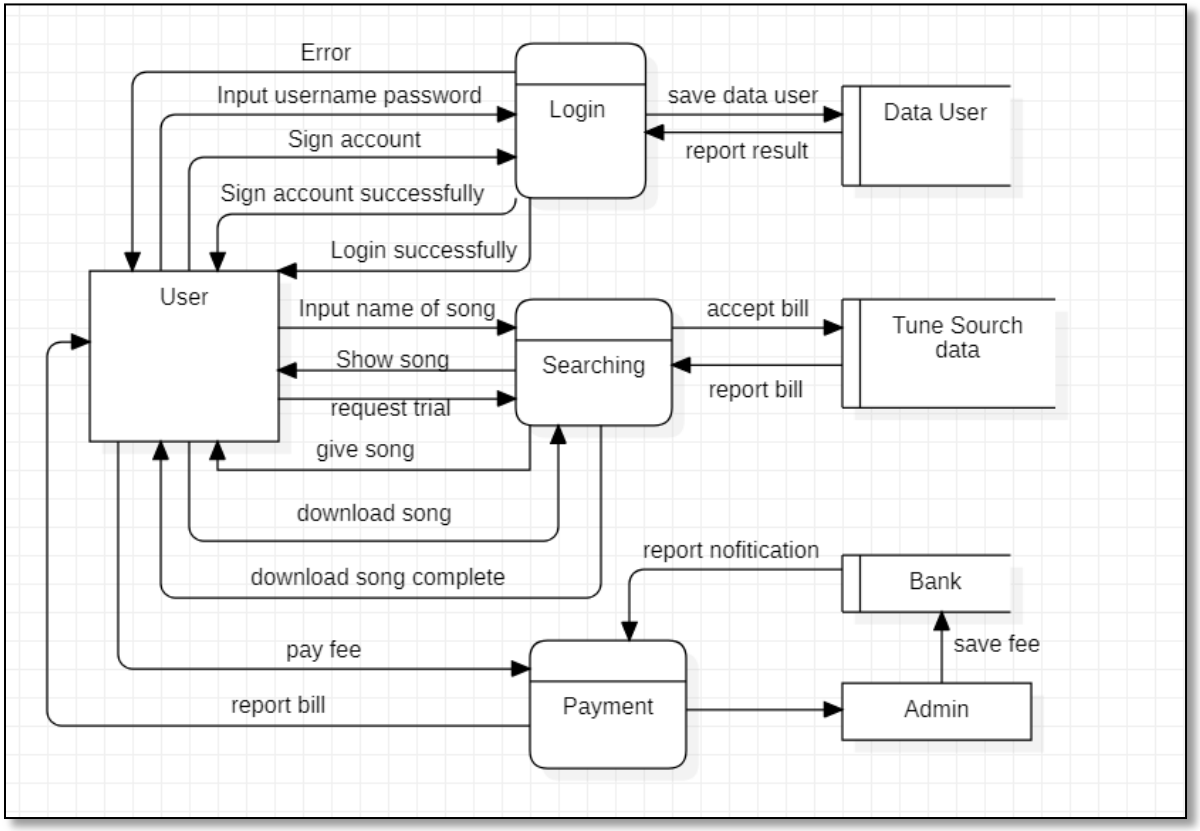

Figure 9: DFD level 1

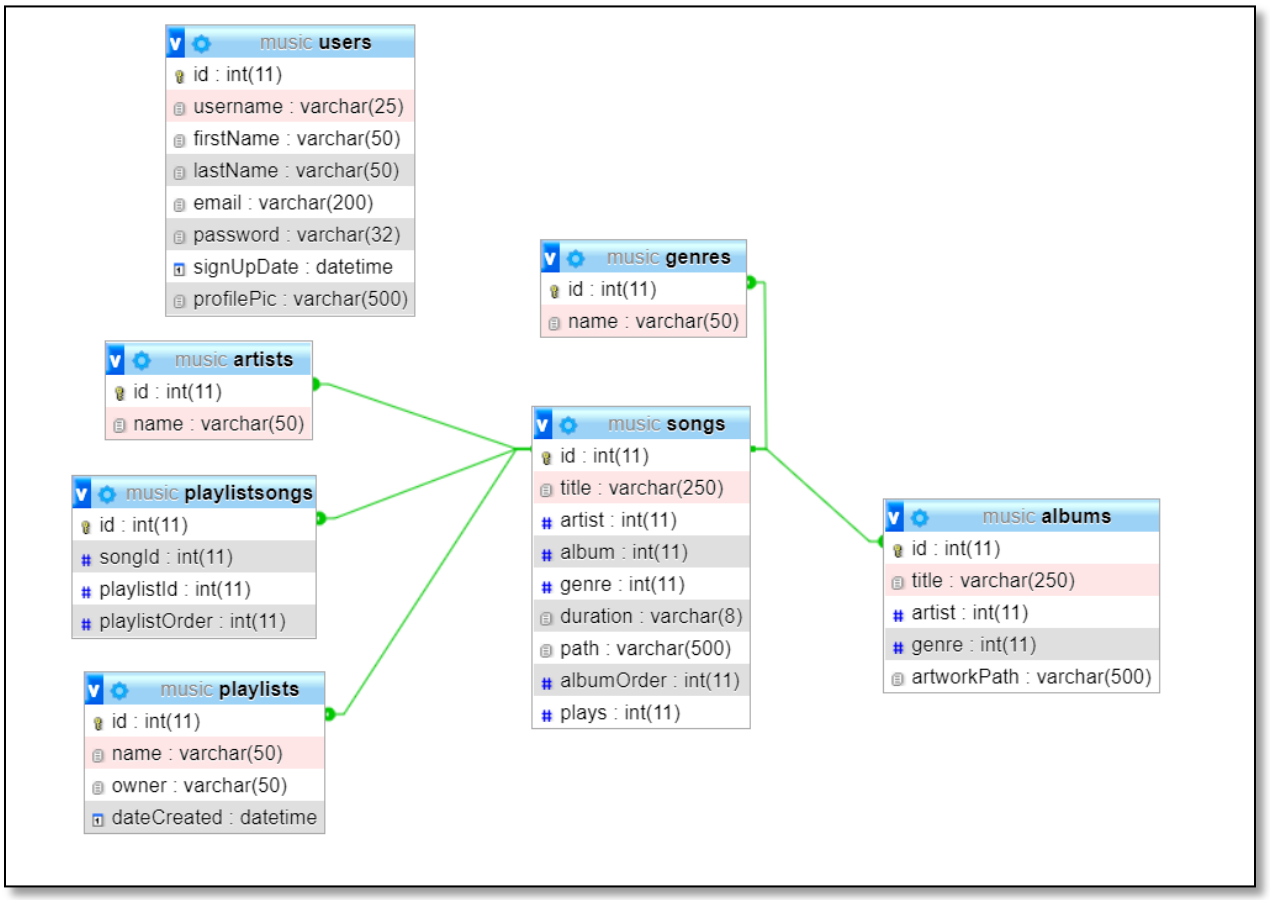

Figure 10: ERD diagram

- A diagram of the relationship between entities illustrates the relationships between sets of entities that are contained in a database (ERD). An entity is an object and a portion of data in this context. A linked entity list is a package of entities. In the definition of entities, their attributes, and the interactions between them, the conceptual framework of databases is shown.

➢ As a final step in the creation of the Tune Source ERD, we should resolve any relationships in the data model. A look at the diagram shows one such relationship,

between Admin and User; and one to many relationships such as between album and songs, artist, genre.

P7. Explain how user and software requirements have been addressed.

- ❖ In the Tune Source system there are functions that can satisfy the user's requirements.

- Create usser information
- Login
- Searching music
- Listen to music trial
- Create album
- Update Email
- Log out

1. Create user informations

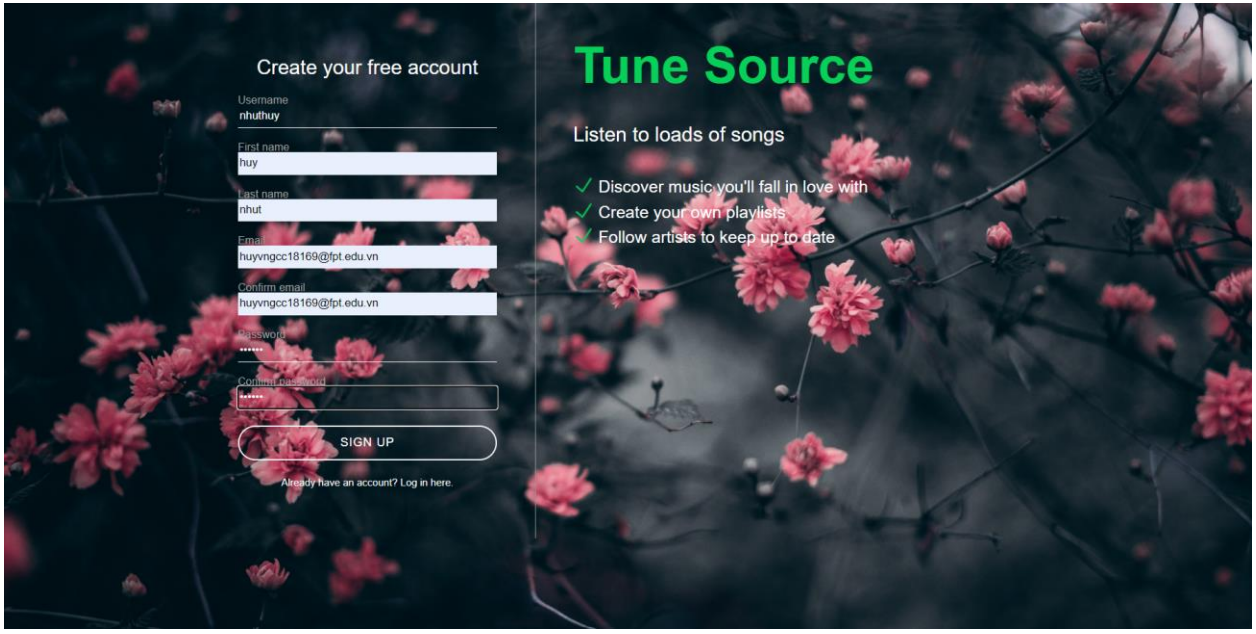

Figure 11: Interface Login

→ Before entering the Tune Source system, users need to register their personal information in order to listen to music in online music software.

- Register with the following information: Username, First name, Lastname, Email, Password.
- The user who entered all valid information will successfully register his personal information.

2. Login funtions

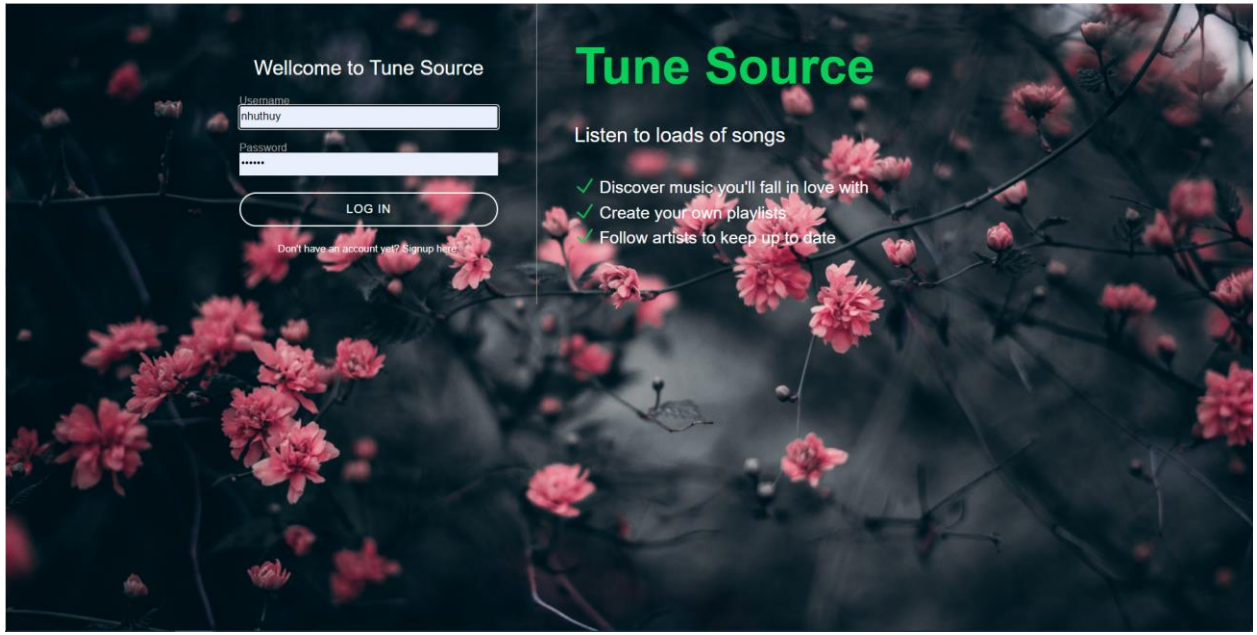

Figure 12: Interface login

- After users successfully register personal information, they will next log on to the system.
- The user who enters a valid Username, password will successfully login into the system Tune Source.
    - ➢ After the user successfully logged into the system, Tune Source will display the following interface:

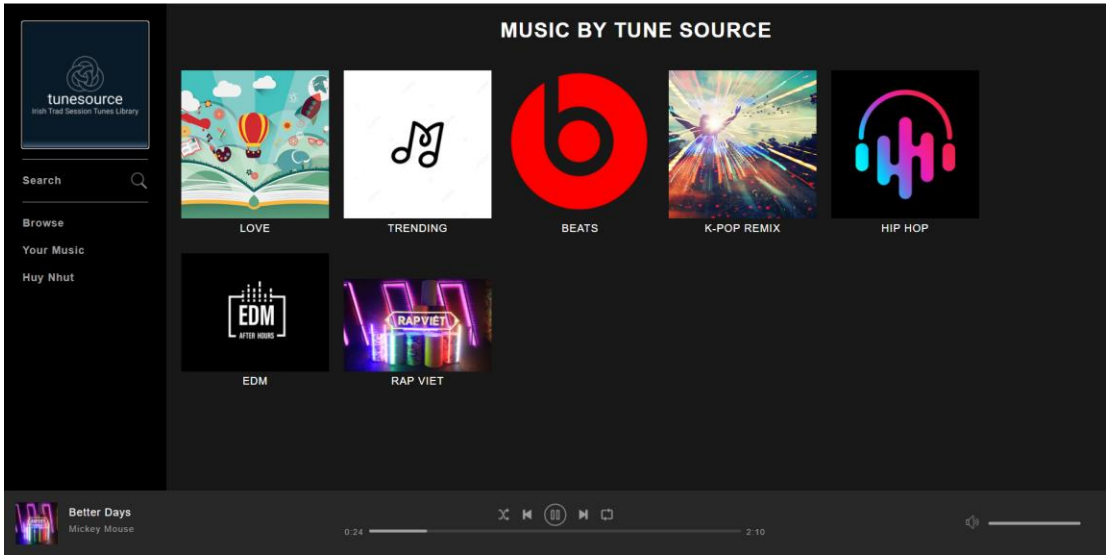

Figure 13: Interface after the user successfully logged in

3. Searching music

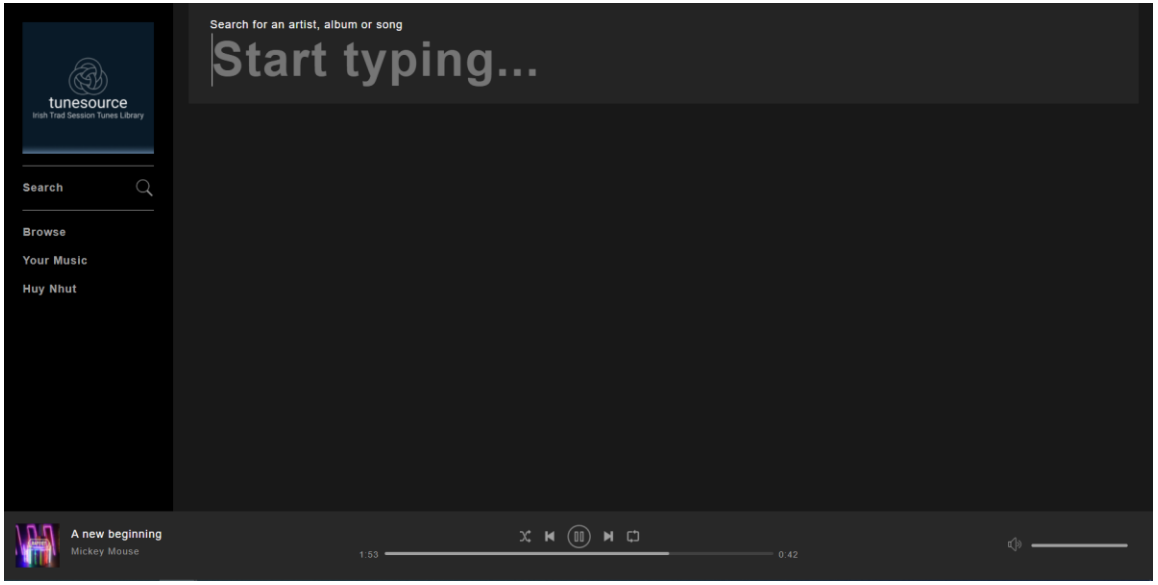

Figure 14: Interface searching music

- Users may want to search for the music they want to listen to, click the "Search" button and enter the music they want to listen to.
- The user enters the correct song name, the software will display the song title.

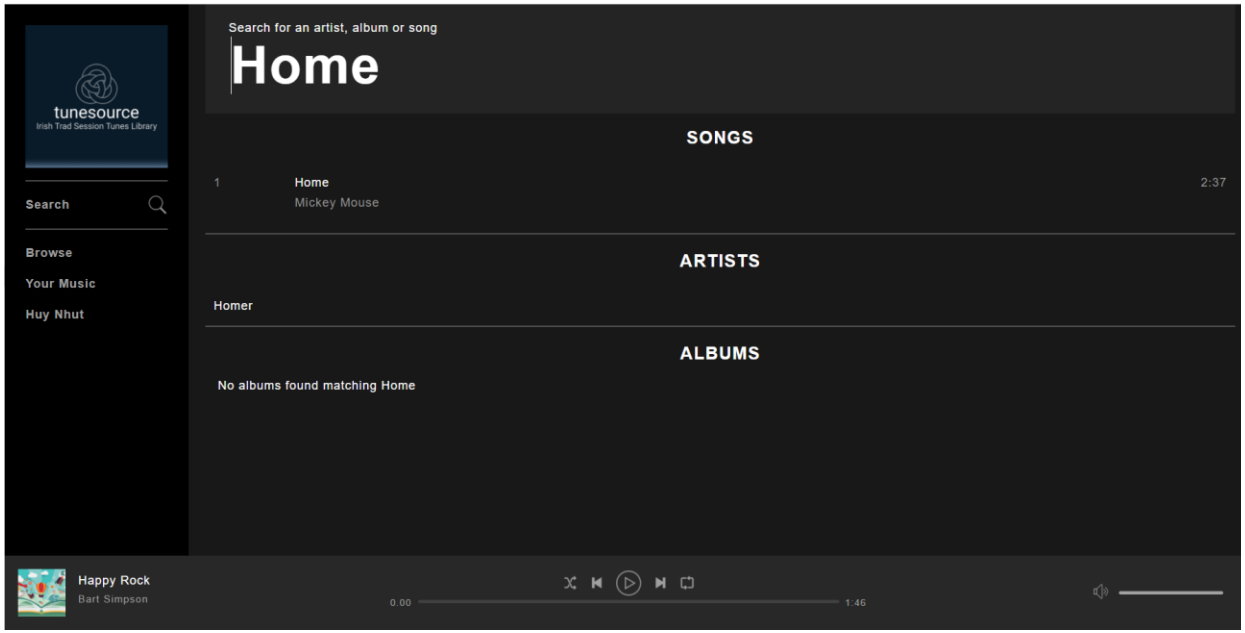

Figure 15: User interface searches for song titles.

4. Listen to music trial

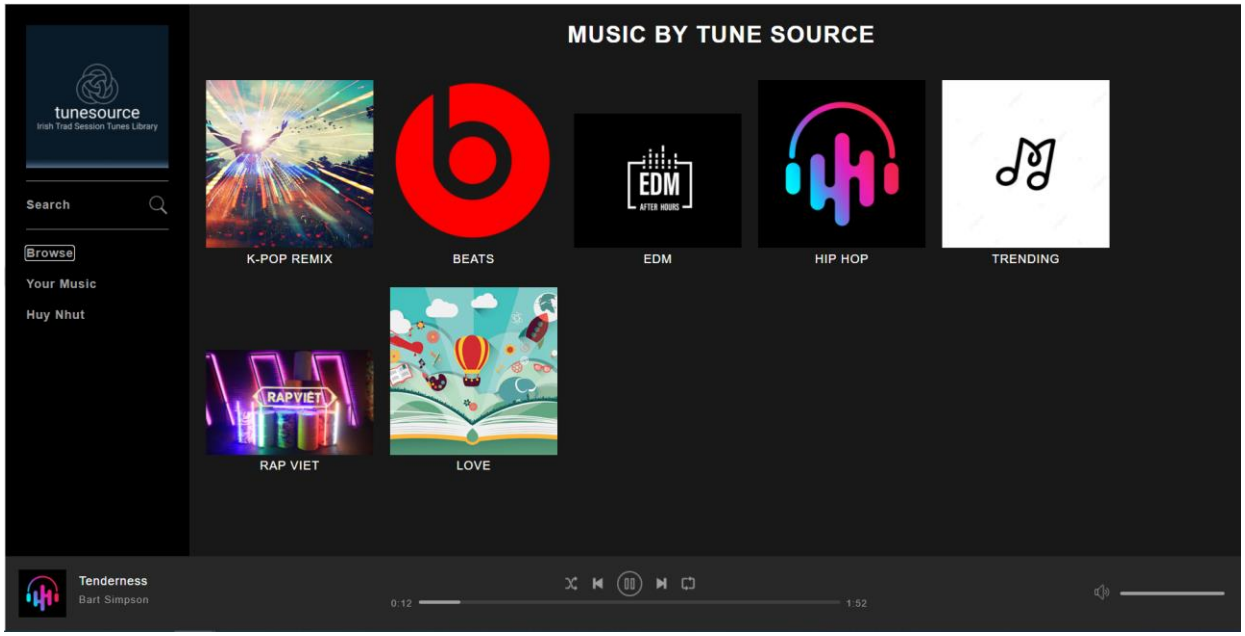

Figure 16: Music browser interface

- The user can listen to the music he wants to listen to, the user chooses the genre and selects the song in that genre.

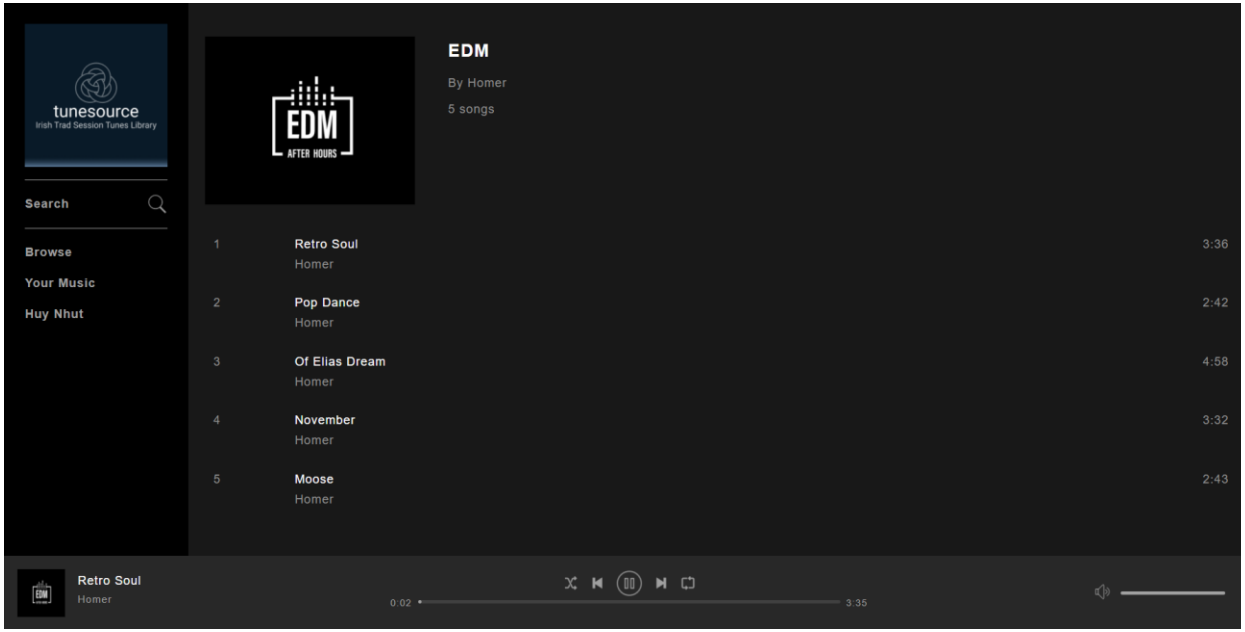

Figure 17: Interface genre of EDM music in the music browser

- Users can choose and listen to the songs they like in the Tune Source system

5. Create album

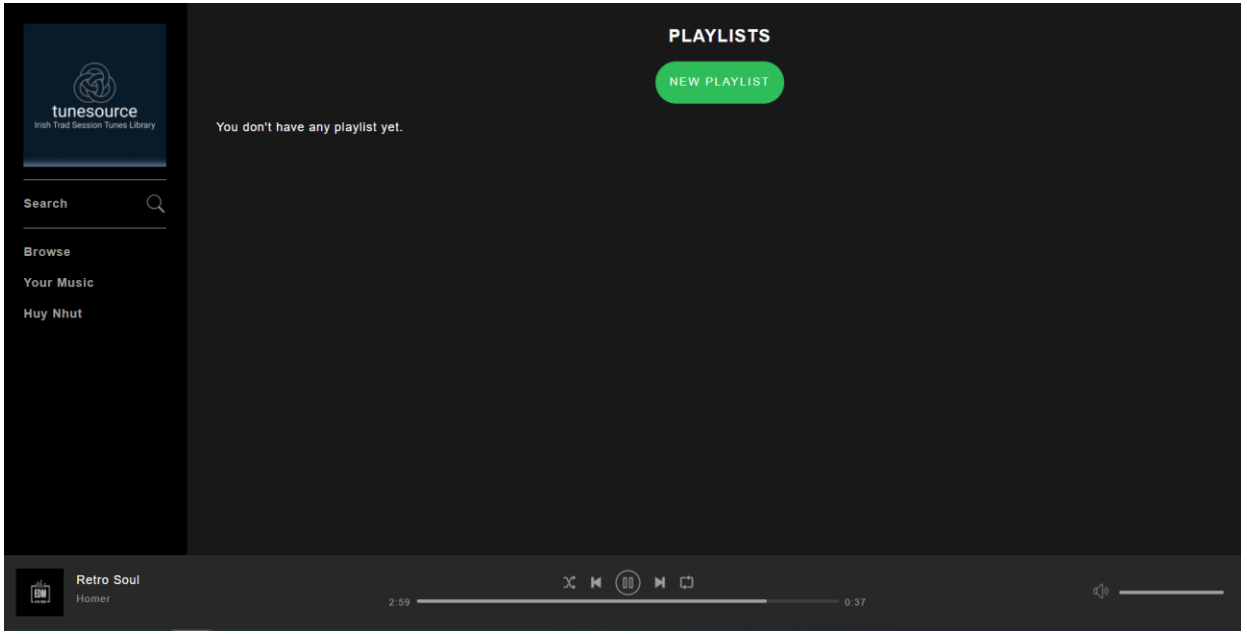

Figure 18: Interface create an album

- Users can create music albums in the Tune Source system by: Selecting "NEW PLAYLIST", the system will display the image below.

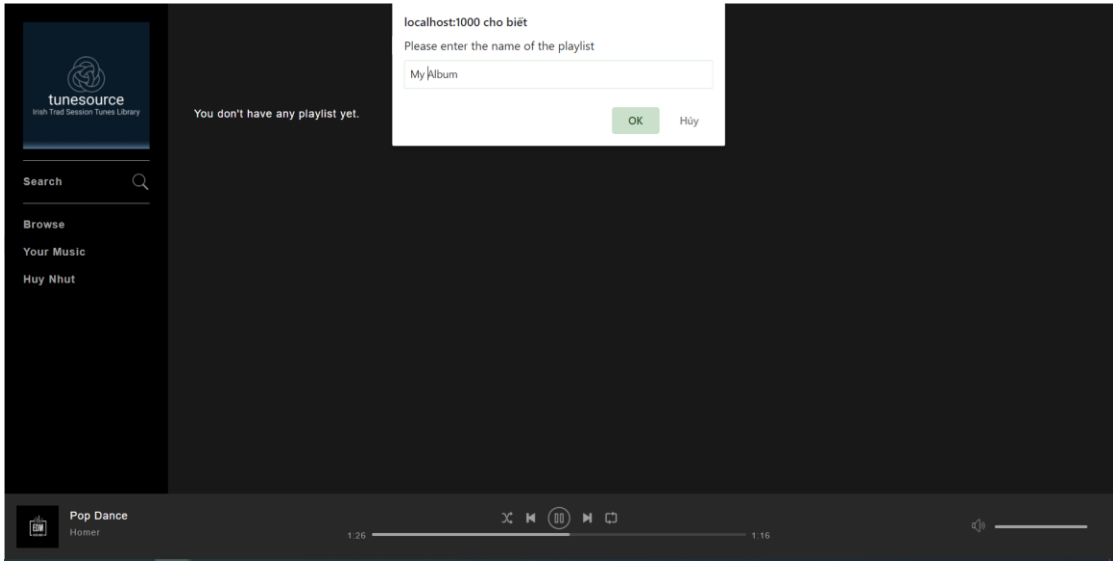

Figure 19: Interface after the user selects “NEW PLAYLIST”

- User needs to enter a name for the Album, then press the button "OK"

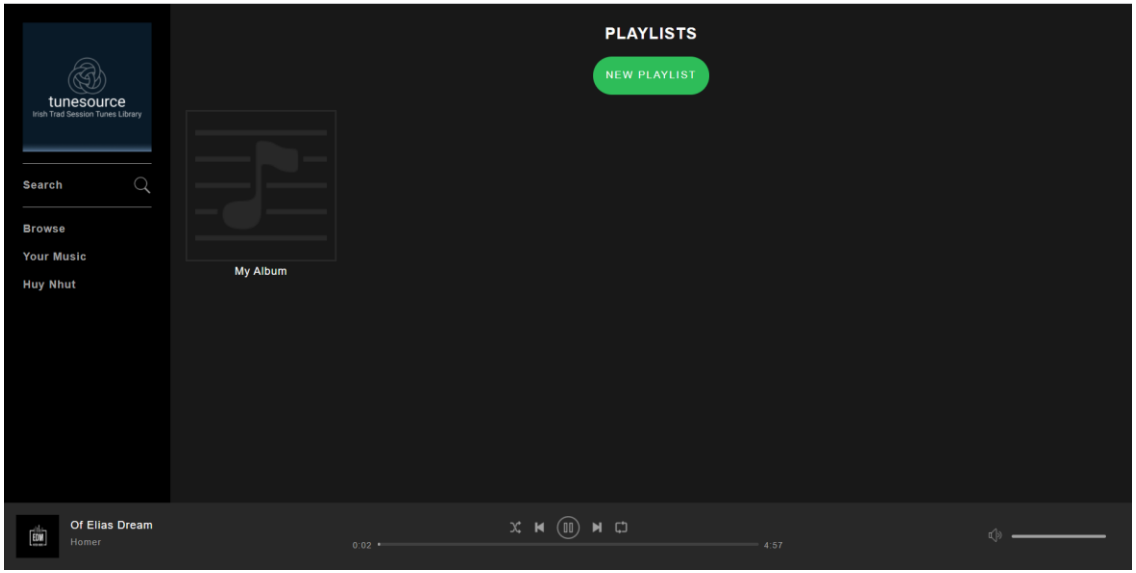

Figure 20: Interface created a successful album

- Users create music albums in order to save favorite songs they have heard, can search for their favorite music faster.

6. Update Email

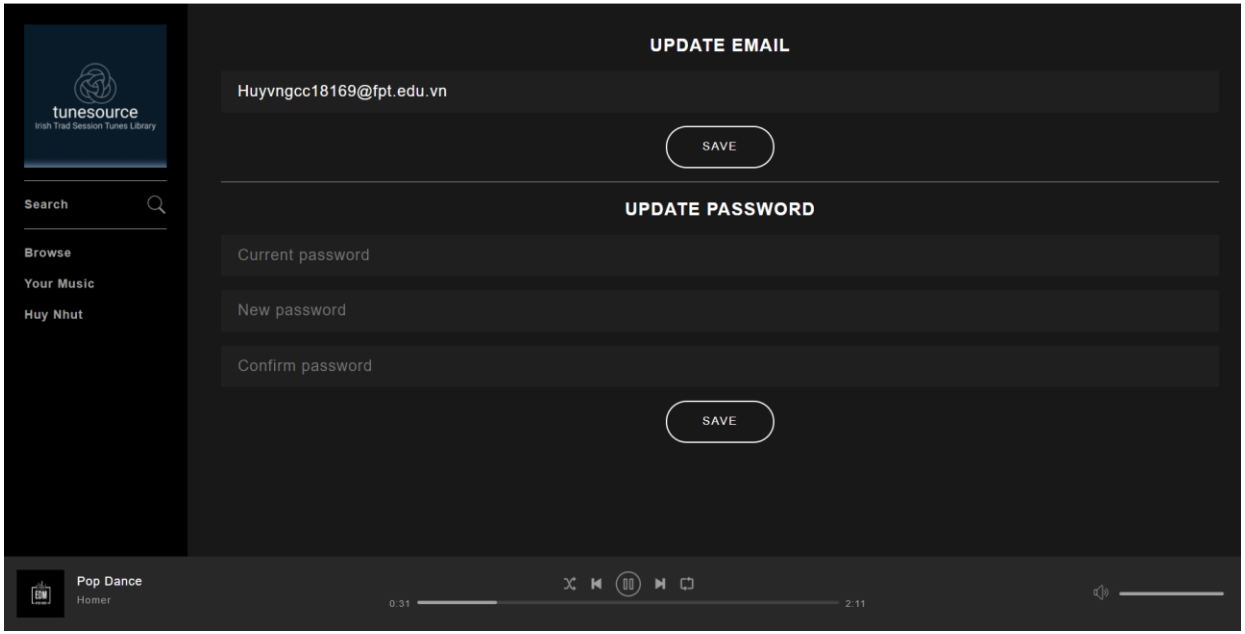

Figure 21: Interface Update email

- User can update email in Tune Source system.
- In Update Email, you can update the information Current password, New password, Confirm password.

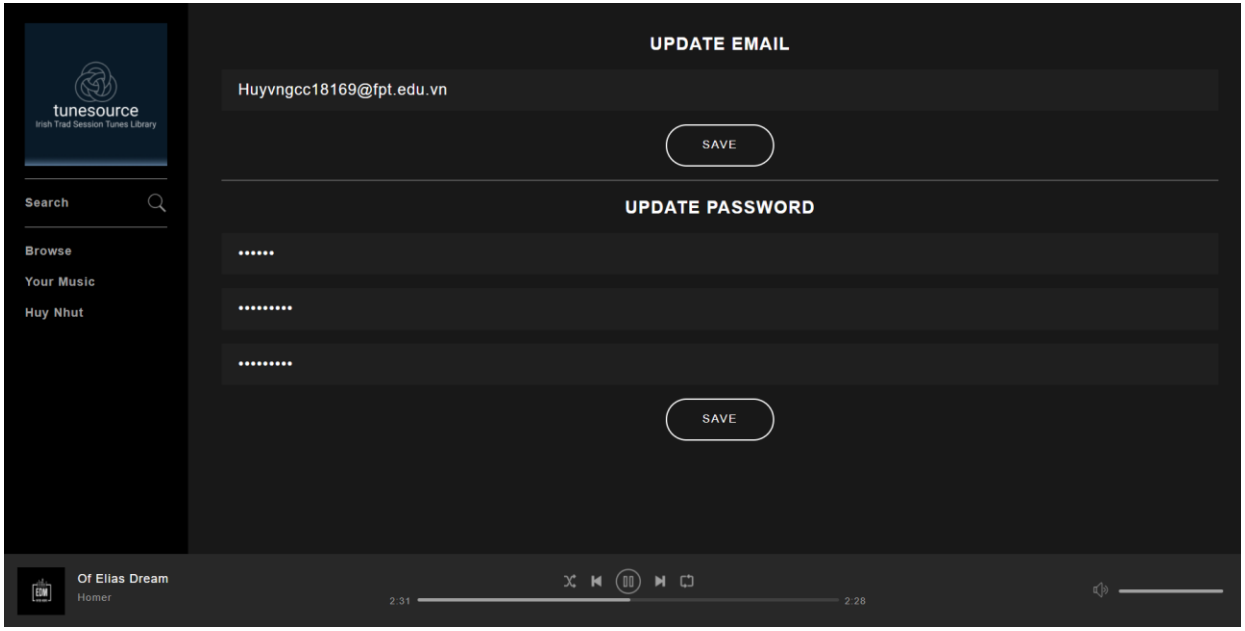

Figure 22: User interface enters all the information to be updated

- The user enters valid all information to be updated, then select "SAVE", the system will automatically save the updated information in the system.

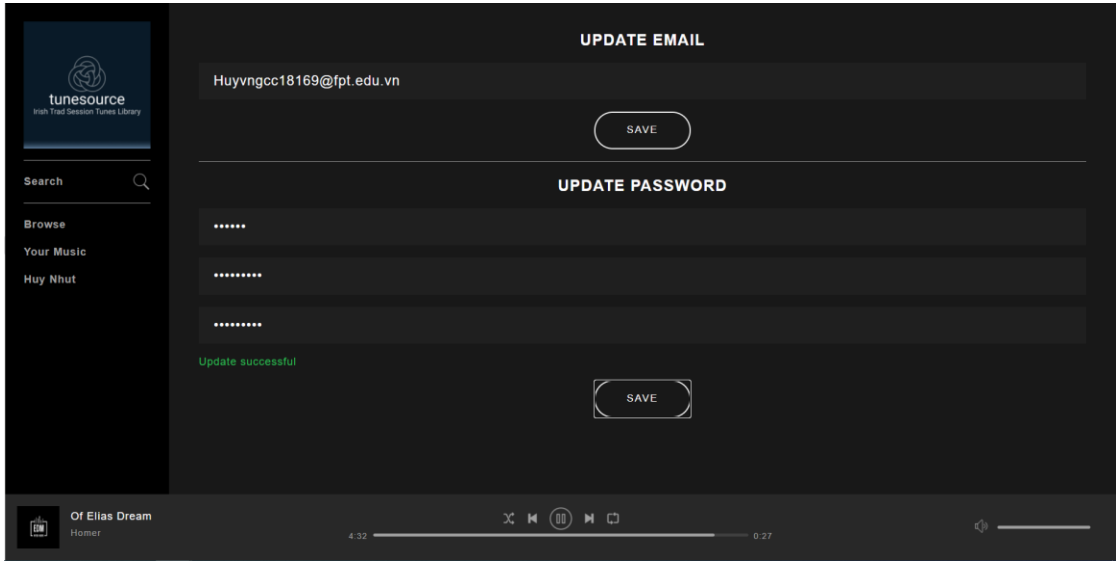

Figure 23: User interface successfully updated

7. Log out

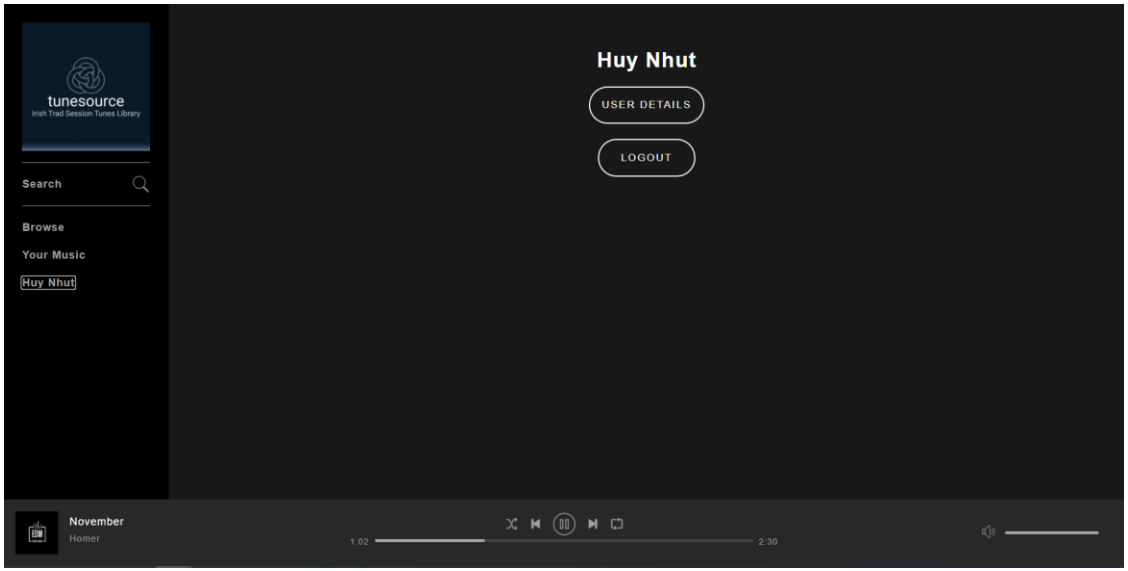

Figure 24: Interface logout

- The user clicks on the "LOGOUT" button, the system will exit your account.

REFERENCE

Ruparelia, N.B., 2010. Software development lifecycle models. *ACM SIGSOFT Software Engineering Notes*, *35*(3), pp.8-13.

Davis, A.M., Bersoff, E.H. and Comer, E.R., 1988. A strategy for comparing alternative software development life cycle models. *IEEE Transactions on Software Engineering*, *14*(10), pp.1453-1461.