

## ASSIGNMENT 02 FRONT SHEET

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<p>Student declaration</p> <p>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.</p>			
		Student's signature	Ha

### Grading grid

P5	P6	P7	M3	M4	M5	M6	D3	D4

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## I. Introduction.

In the previous report, I detailed and identified some models in SDLC and applied them to the tune source, in addition, I also discovered some risks that the project may face in the future. work process, and at the same time I applied the feasibility study to the project. In this report, I will Identify the stakeholders, their roles and interests in the case study beside I will also Discuss the relationships between the FRs and NFRs and some features required in the system.

### P5. Task 1 – Analysis (1)

#### a) Identify the stakeholders, theirs roles and interests in the case study.

- Identify The Stakeholders.



Stakeholders are those who may be affected by or have an effect on an effort. They may also include people who have a strong interest in the effort for academic, philosophical, or political reasons, even though they and their families, friends, and associates are not directly affected by it.

(ctb, 2022)

- Roles of Stakeholders

The role of stakeholder representative includes but is not limited to the following:

- ✓ Faithfully representing the views and needs of the section of the broader stakeholder community they represent.
- ✓ Taking an active role in the project.
- ✓ Participating in requirements and other project reviews.
- ✓ Participating in the assessment and verification of the product produced.
- ✓ Attending workshops and meetings.
- ✓ Doing independent research.
- ✓ Championing the project to the stakeholders they represent.

(informit, 2002)

- Stakeholders interest

Stakeholders' interests can be many and varied. A few of the more common:

- ✓ Economics. An employment training program might improve economic prospects for low-income people, for example. Zoning regulations may also have economic consequences for various groups.
- ✓ Social change. An effort to improve racial harmony could alter the social climate for members of both the racial or ethnic minority and the majority.
- ✓ Work. Involving workers in decision-making can enhance work life and make people more satisfied with their jobs.

- ✓ Time. Flexible work hours, relief programs for caregivers, parental leave, and other efforts that provide people with time for leisure or taking care of the business of life can relieve stress and increase productivity.
- ✓ Environment. Protection of open space, conservation of resources, attention to climate change, and other environmental efforts can add to everyday life. These can also be seen as harmful to business and private ownership.
- ✓ Physical health. Free or sliding-scale medical facilities and other similar programs provide a clear benefit for low-income people and can improve community health.

(ctb, 2022)

- Types of Stakeholders:  
Stakeholders can be internal or external to an organization. Internal stakeholders are people whose interest in a company comes through a direct relationship, such as employment, ownership, or investment.



### Internal Stakeholder Roles

One of the main roles internal stakeholders have is voting rights based on the number of shares owned or the percentage of the company owned. The board of directors usually votes for things like new acquisitions, liquidations, key position hiring, and

oversight and budget items including distributed profits. Those with larger stakes in the company might meet with leaders, brainstorm development or marketing ideas, and identify new areas for market penetration.

(Leonard, 2020)

- **Apply to tune source.**

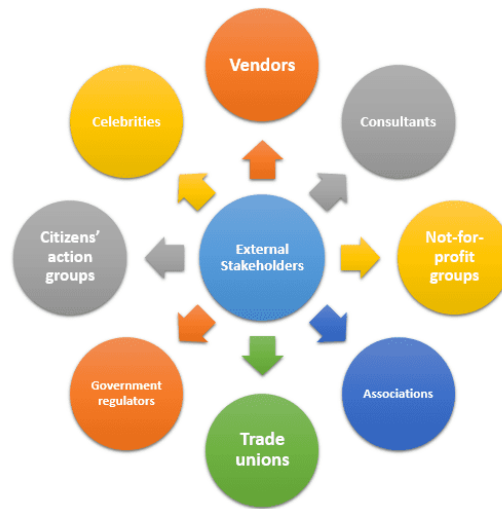
Name	Position	Roles	Advantage
Jonny dang	<b>business analysts</b>	Business analysts will make revenue projections as well as budget for a project. At the same time, it will help outline the problems in the tune source business and offer some solutions for businesses.	He can participate in planning and project management and receive benefits under the agreement.
Mike nguyen	System designer	System design, plays an extremely important role in business development, especially for tune source projects they will be the ones interested in website design to attract customers, user interface requires full functionality such as adding, editing, deleting, managing data data and users in order to create satisfied applications. customers and save time while increasing labor productivity. they will be key in building and developing the system	she can actively manage the risks on the system, ensuring the system must be managed as closely and optimally as possible, after completing the task, mike will be rewarded by the company and receive percent commission.
Nguyen thu ha, dang van manh, hoang thuy linh, tran minh	Project build team	They will be the ones who develop business strategies, come up with models that are suitable for the company's environment, trends and budget. in the	After completing the project, if they are on a strong development momentum, they will be rewarded by the



phuong, nguyen nhat tri		tune source project in the future: they will come up with business models to help increase revenue such as on holidays and special days, will reduce the price of all music, and give gratitude gifts to customers. In addition, a buy one get one free program can be applied to attract customers,...	company, trusted to assign tasks, and of course will receive a generous salary worthy of their efforts.
Joy pham, ken tran, mikenco nguyen, traycy nguyen, hanna pham	Marketing department	<p>They play a very important role in the project, their mission is to satisfy the customer, or in other words, the customer is to understand and understand their needs and answer customers' questions or problems. problems during the customer's use of the product. they have to make sure that the product gets to the customer a good customer, they can be seen as the customer care department.</p> <p>they are required to be knowledgeable about the product, well-trained and understand the business process. for timely application.</p>	As sales grow, they get a raise. and rewarded by the company
John Margolis, Megan Taylor , Phil Cooper	Tune source owner's	Because they are the leaders in a system, an extremely important role in the development of the company, they will have to bear the full responsibility for managing the system, they must supervise all activities, monitor , stick to the business process, they always have to	When the company grows and increases sales, they will improve their earning capacity, and at the same time employees will also get a raise, they will become heroes in the eyes of employees and

		keep a close eye on employees and monitor their working process. A development company will rely on the behavior and working attitude of employees, so if any employee is incompetent, they will be fired immediately. In addition, they must also ensure that all information of customers or employees must be safe, and system information must be highly confidential, because if it is disclosed to the company, it will be very dangerous.	are admired by many people. People.
Chile le	Project management	Manage the entire Tune Source software development project to ensure quality, timeliness, and budget compliance	After the project is completed , they will be to build credibility with the company, will be invited by the company to participate in many other projects, will get a salary increase and finally be loved and wanted by many teamwords

External stakeholders are those who do not directly work with a company but are affected somehow by the actions and outcomes of the business. Suppliers, creditors, and public groups are all considered external stakeholders.



## External Stakeholder Roles

The roles of external stakeholders often reflect the community, government or environmental concerns. For example, an automotive manufacturer seeking to build a new plant might need to meet with the city council and the environmental protection agency representatives to review potential benefits and disadvantages to the community and environment. Ignoring external stakeholders could lead to stalling or blocking of projects. It is best to allow external stakeholders a voice in the process and brainstorm with them regarding solutions that work for the company and the community alike.

(Leonard, 2020)

- **Apply to tune source.**

name	Position	Roles	Advantage
Nguyen Thu Huyen	Customer	directly experience the product, apply technology and evaluate the very important suggestions that can help the company overcome and know the flaws or the quality of the product.	experience, consume and feel the quality of the songs

Nguyen Manh Thang	Supplier	provides music downloads for tune source, supporting the system with the most reputable and quality music sources. He plays no small role in the business development mechanism.	Depending on the business situation, suppliers will influence the market price to ensure they get a profit after making an agreement with the company.
Cao Trong Hai, Pham Manh Truong, Le To Uyen	Sponsors	financial support, capital, helping the company thrive and expand further. especially when cconnhaf sponsors tune source will not have to worry about financial problems. The project will be expanded, there will be many popular and vip music downloads to be released in the future.	they will receive a percentage of the revenue from the company. everything will be committed and agreed from the beginning, so there is nothing to worry about

## B, stakeholder(s) provide what requirements.

- What are Project requirements?

A requirement is a service, function or feature that a business or customer needs which is specified for the purpose of clarifying and communicating the required capability. It is important to understand the type of requirement being specified.

Project requirements are conditions or tasks that must be completed to ensure the success or completion of the project. They provide a clear picture of the work that needs to be done. They're meant to align the project's resources with the objectives of the organization. The benefits of effectively gathering project requirements include cost reduction, higher project success rates, more effective change management, and improved communication among stakeholders (Raynor, 2021)

- Types of requirement:

2. Business Requirements – Describe the higher-level needs of the organization as a whole, such as business issues or opportunities, and reasons why a project has been undertaken.
3. Stakeholder Requirements – Describe the needs of a stakeholder or stakeholder group, where the term stakeholder is used broadly to reflect the role of anyone with a material interest in the outcome of an initiative and could include customers, suppliers, and partners, as well as internal business roles.
4. Solution Requirements – Describe the features, functions, and characteristics of a product, service, or result that will meet the business and stakeholder requirements. Solution requirements are further grouped into functional and non-functional requirements.
5. Functional Requirements – Describe the behaviors of the product.
6. Non-functional Requirements – Describe the environmental conditions or qualities required for the product to be effective.
7. Transition Requirements – Describe temporary capabilities, such as data conversion and training requirements, and operational changes needed to transition from the current state to the future state.

(visual-paradigm, 2022)

### **The importance of project requirements.**

They establish a foundation for product vision, scope, cost, and schedule and they ultimately must target finished product quality and performance. Requirements provide stakeholders such as marketing, electrical engineering, mechanical engineering, and software engineering with one uniform vision and set of goals. Each stakeholder will be able to understand the requirements and hold realistic expectations for the final product. The final product should come with no surprises in terms of design and functionality, ultimately yielding a successful and profitable product launch.

(mann, 2017)

### **Discuss the relationships between the FRs and NFRs.**

1. Functional Requirement.
  - Define.

A Functional Requirement (FR) is a description of the service that the software must offer. It describes a software system or its component. A function is nothing but inputs to the software system, its behavior, and outputs. It can be a calculation, data

manipulation, business process, user interaction, or any other specific functionality which defines what function a system is likely to perform. Functional Requirements in Software Engineering are also called Functional Specification.

(Martin, 2022)

### **Benefits of Functional Requirement**

Here, are the pros/advantages of creating a typical functional requirement document-

- Helps you to check whether the application is providing all the functionalities that were mentioned in the functional requirement of that application
- A functional requirement document helps you to define the functionality of a system or one of its subsystems.
- Functional requirements along with requirement analysis help identify missing requirements. They help clearly define the expected system service and behavior.
- Errors caught in the Functional requirement gathering stage are the cheapest to fix.
- Support user goals, tasks, or activities

(Martin, 2022)

### **Types of Functional Requirements**

Here are the most common functional requirement types:

- ✓ Transaction Handling
- ✓ Business Rules
- ✓ Certification Requirements
- ✓ Reporting Requirements
- ✓ Administrative functions

- ✓ Authorization levels
- ✓ Audit Tracking
- ✓ External Interfaces
- ✓ Historical Data management
- ✓ Legal and Regulatory Requirements.

(Martin, 2022)

## **2. Non Functional Requirement.**

Non-Functional Requirement (NFR) specifies the quality attribute of a software system. They judge the software system based on Responsiveness, Usability, Security, Portability and other non-functional standards that are critical to the success of the software system. Example of nonfunctional requirement, “how fast does the website load?” Failing to meet non-functional requirements can result in systems that fail to satisfy user needs.

Non Functional requirements in Software Engineering allows you to impose constraints or restrictions on the design of the system across the various agile backlogs. Example, the site should load in 3 seconds when the number of simultaneous users are > 10000. Description of non-functional requirements is just as critical as a functional requirement.

(Martin, 2022)

### **• Types of Non functional requirement.**

- ✓ Usability requirement
- ✓ Serviceability requirement
- ✓ Manageability requirement
- ✓ Recoverability requirement
- ✓ Security requirement
- ✓ Data Integrity requirement
- ✓ Capacity requirement
- ✓ Availability requirement
- ✓ Scalability requirement
- ✓ Interoperability requirement

(Martin, 2022)

### **Advantages of Non-Functional Requirement**

Benefits/pros of Non-functional testing are:

- The nonfunctional requirements ensure the software system follow legal and compliance rules.
- They ensure the reliability, availability, and performance of the software system
- They ensure good user experience and ease of operating the software.
- They help in formulating security policy of the software system.

### **Disadvantages of Non-functional requirement**

Cons/drawbacks of Non-function requirement are:

- None functional requirement may affect the various high-level software subsystem
- They require special consideration during the software architecture/high-level design phase which increases costs.
- Their implementation does not usually map to the specific software sub-system,
- It is tough to modify non-functional once you pass the architecture phase.

(Martin, 2022)

### **The differences between Non Functional vs. Functional Requirements**

Here, are key differences between Functional and Nonfunctional requirements in Software Engineering:



Parameters	Functional Requirement	Non-Functional Requirement
What it is	Verb	Attributes
Requirement	It is mandatory	It is non-mandatory
Capturing type	It is captured in use case.	It is captured as a quality attribute.
End result	Product feature	Product properties
Capturing	Easy to capture	Hard to capture
Objective	Helps you verify the functionality of the software.	Helps you to verify the performance of the software.
Area of focus	Focus on user requirement	Concentrates on the user's expectation.
Documentation	Describe what the product does	Describes how the product works
Type of Testing	Functional Testing like System, Integration, End to End, API testing, etc.	Non-Functional Testing like Performance, Stress, Usability, Security testing, etc.
Test Execution	Test Execution is done before non-functional testing.	After the functional testing
Product Info	Product Features	Product Properties

❖ **Apply to tune source.**

number	User story	Types of function	Explain the reason
1	As a customer, I want to be able to buy songs in many forms such as electronic payment.	Function Requirement	It related to business process. This function should be in the system, it is quite important because it helps our system to optimize time and process transactions in the fastest and most convenient way.

			And it can show the difference between System new and old.
2	Customers need an account to buy song download cards, and need an account to be able to listen to and download vip playlists.	Function requirement	It related to business process, This function is pretty cool, it can help staff authenticate customer information in a specific and fastest way, the authentication by account is highly strict.
3	The user interface must be sleek. Not flashy, but elegant, to show that tune source systems have flair and have the trust of customers.	functional requirement	It related external interface, This function should be included in the business model, it can be considered as the key to business development. A great-looking interface will attract users, help users have an overview of the product and help the business image become more beautiful in the eyes of users.
4	As a business developer of tune source, I want my system apps to be error free, running smoothly and smoothly.	Non functional requirement	It related to Recoverability, This is certainly something that entrepreneurs do not want to happen in their systems, but technology cannot avoid problems, this function is quite important, it helps to recover applications quickly. and get everything back in order.
5	As a user, I want to be able to customize my shopping cart	Functional requirement	It related to business process, it nesscessery in System, this is because can helps customers feel comfortable and satisfied with the business model.
6	Users can evaluate the quality of the song through the control buttons that the system has created. At the same time, they can also comment and comment on the song through the function on the website	Non functional requirement	It related to Scalability, this Fuction is also nesscessary in System, Feed back is always important in the business model, because it helps entrepreneurs understand the situation in the evolution of a system and offer appropriate solutions in each case.

7	We need the interface of the application with very bright tones suitable for music sales, helping to attract customers as well as highlight the tune source brand..	Non functional requirement	It related to Unssability, this fuction should have in System, Adjusting the interface and website will help the business model look professional, quality and attract customers. if the interface is not attractive, it will make it difficult for the business to grow and fall
8	Users need to know the song information before buying, in addition, they also need to listen to it.	Functional requirement	This feature is very important because it helps to increase the interaction between the user and the system, the user will experience and know the song information. Customers will experience and buy with their favorite music without regret.
9	The mobile application can trigger notifications when new song come out.	Non function requirement	It related to System requirement, this function so great, it can help users to receive information anytime, anywhere, users will not need to worry about missing the movie show time, in general this feature is really necessary in a system. In business, the advance notice helps customers feel more secure, improve quality and operate closely.
10	There should be a feedback system where people can make suggestions for improvements to the facilities.	Non function requirement	It related to businessment requirement. It very importance because of it can help businesses know the progress of the model, so that they can improve and take the model to the next level. It also increases the interactivity of using the system

**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.

**❖ Joint Application Development (JAD)/ Requirement Workshops**

This technique is more process-oriented and formal as compared to other techniques. These are structured meetings involving end-users, PMs, SMEs. This is used to define, clarify, and complete requirements.

This technique can be divided into the following categories:

- **Formal Workshops:** These workshops are highly structured and are usually conducted with the selected group of stakeholders. The main focus of this workshop is to define, create, refine, and reach closure on business requirements.
- **Business Process Improvement Workshops:** These are less formal as compared to the above one. Here, existing business processes are analyzed and process improvements are identified.

Benefits:

- Documentation is completed within hours and is provided quickly back to participants for review.
- You can get on the spot confirmation on requirements.
- Successfully gathered requirements from a large group in a short period.
- Consensus can be achieved as issues and questions are asked in the presence of all the stakeholders.

Drawbacks:

- Stakeholder's availability might ruin the session.
- The success rate depends on the expertise of the facilitator.
- A workshop motive cannot be achieved if there are too many participants.

(softwaretestinghelp, 2022)

## ❖ **INTERVIEW**

This is the most common technique used for requirement elicitation. Interview techniques should be used for building strong relationships between business analysts and stakeholders. In this technique, the interviewer directs the question to stakeholders to obtain information. One to one interview is the most commonly used technique.

Basic Rules:

- The overall purpose of performing the interviews should be clear.
- Identify the interviewees in advance.
- Interview goals should be communicated to the interviewee.
- Interview questions should be prepared before the interview.
- The location of the interview should be predefined.
- The time limit should be described.
- The interviewer should organize the information and confirm the results with the interviewees as soon as possible after the interview.

Benefits:

- Interactive discussion with stakeholders.
- The immediate follow-up to ensure the interviewer's understanding.
- Encourage participation and build relationships by establishing rapport with the stakeholder.

Drawbacks:

- Time is required to plan and conduct interviews.
- Commitment is required from all the participants.
- Sometimes training is required to conduct effective interviews.

(softwaretestinghelp, 2022)

## ❖ Observation

The main objective of the observation session is to understand the activity, task, tools used, and events performed by others.

The plan for observation ensures that all stakeholders are aware of the purpose of the observation session, they agree on the expected outcomes, and that the session meets their expectations. You need to inform the participants that their performance is not judged.

During the session, the observer should record all the activities and the time taken to perform the work by others so that he/she can simulate the same. After the session, the BA will review the results and will follow up with the participants. Observation can be either active or passive.

Active observation is to ask questions and try to attempt the work that other persons are doing.

Passive observation is silent observation i.e. you sit with others and just observe how they are doing their work without interpreting them.

Benefits:

- The observer will get a practical insight into the work.
- Improvement areas can be easily identified.

Drawbacks:

- Participants might get disturbed.
- Participants might change their way of working during observation and the observer might not get a clear picture.
- Knowledge-based activities cannot be observed.

(softwaretestinghelp, 2022)

### ❖ Prototyping

Prototyping is used to identify missing or unspecified requirements. In this technique, frequent demos are given to the client by creating the prototypes so that client can get an idea of how the product will look like. Prototypes can be used to create a mock-up of sites, and describe the process using diagrams.

Benefits:

- Gives a visual representation of the product.
- Stakeholders can provide feedback early.

Drawbacks:

- If the system or process is highly complex, the prototyping process may become time-consuming.
- Stakeholders may focus on the design specifications of the solution rather than the requirements that any solution must address.

(softwaretestinghelp, 2022)

### ❖ Choice techniques for tune source.

To meet the requirements of tune source, I have selected the technique that best suits the project which is interview. The interviews that we create are all very structured, and all are purpose-oriented, from the interview we can determine the structure of the interviewers such as: soft skills their skills, problem-solving skills, project handling, business system development, team work skills, and From there to identify candidates who really have the necessary qualifications to take on the Tune project. Source, in addition to communicating so clearly, the interviewer will also know his gaps to improve them, communicating so clearly, will help the interviewer understand more about the model company, and of course there will be an agreement between the two working parties. All are geared towards the growth of the company.

### ❖ Create table question interview

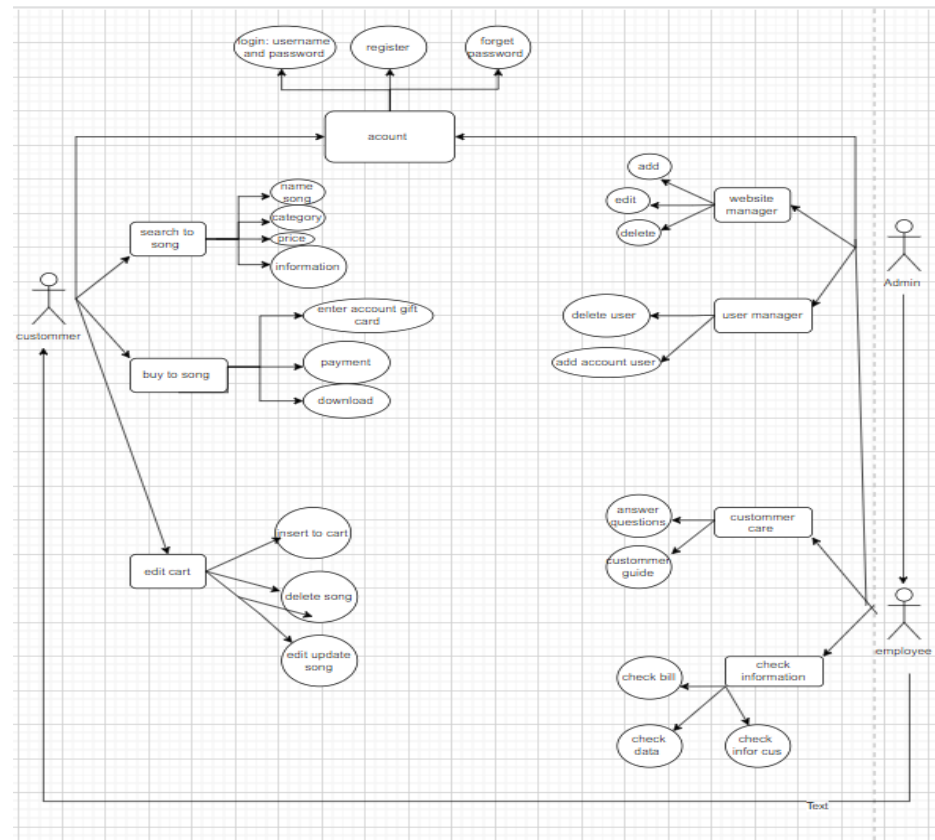
Interview Notes Approved by: Jonny Dang	
Person Interviewed	Chile Le

Interviewer	Jonny Dang
Purpose of Interview	The requirements for today's interview are: Listen to music samples
Summary of Interview:	Report and make inquiries about listening to sample music. Unused and missing information is recorded in the reports. The problems in this project are .First from listening to sample music, the project can decentralize users assuming that the visiting users are only allowed to listen to normal music and some small pieces of rare music to keep them interested. buy music. VIP users can buy music at any time and always get a discount when listening to new music. Second, listening to sample music can add many new functions to improve users and attract new users. The third is to find errors to fix when the request is put on the market.
Open Items	In the following interview, they will make other requirements to fix errors for this project with the requirement of listening to sample music and adding new functions and requirements for this system.
Detailed Notes	See attached transcript.

## P6. Task 2 – Analysis

**A, Analyse the requirements that you identified in Task 1 using a combination of structural and behavioural modelling techniques that you have learnt.**

- **Use case diagram.**



- Use case description:

Usecase 1: register for an account to listen to music.



Use case name:	register for an account to listen to music	
Actor:	Tune source	
Description:	The use case describes the user who wants to register an account to be able to listen to and buy and store vip music.	
Trigger:	Users go to the website to register (interact with the system) or go directly to the point of sale to register.	
Type:	External	
Precondition:	If you do not register for an account, customers will not be able to receive promotions, listen to vip music and store.	
Normal Course: 1. Users go to the system website or directly at the store 2. on the website will ask you to access the system with the provided account. If you don't have one, please register for an account 3. When you click the button to register for an account, the system will ask you to access it by email. 4. the system will send you an access code to the email. 5. After accessing the system, you will be asked to create an account with a personal form and password 6. The system asks you to enter your password again to authenticate. 7. successfully registered.		Information Steps ➔ display homepage.  ➔ account(username, password)(regisstered)  ➔ matching information user.  ➔ Display register page.  ➔ Check/ confirm information  ➔ Display success message.
Poscondition: valid email		

<p>Exception:</p> <p>Email is not valid(occcer at step 3)</p> <ul style="list-style-type: none"><li>- Display message email error.</li><li>- Require enter re-email.</li></ul> <p>The entered password is different from the re-password(error account bank) (occer at step 6)</p> <ul style="list-style-type: none"><li>- display a message that the password you entered is not the same as the password above</li><li>- require enter re-password.</li></ul>	
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## **Use case 2: Access, listen to music sample and buy music downloads**

Use case name:	Access, listen to music sample and buy music downloads	
Actor:	Tune source	
Description:	The system describes users who can access the website with an account that has been granted to be able to receive information and listen to purchased music.	
Trigger:	users access the music player web system with an account and password and they will hear the downloaded music and receive information on the app	
Precondition:	the user will not be able to access the system without the account and password provided	
Normal Course: user interaction with system such <ol style="list-style-type: none"> <li>1. The interface on the website will display a request to invite you to access the system(login)</li> <li>2. Upon successful login, the user wants to search for a song or listen to sample song.</li> <li>3. Users choose to buy music downloads by double-clicking on your favorite songs, then user can know information product and prices will appear, users have the option of paying in two ways, electronically and directly at the counter.</li> <li>4. The system will automatically send notifications to customers when new products are launched as well as special occasions and gifts. Customers can view the information by double clicking on the notification bell on the website</li> </ol>		Information Steps: <ul style="list-style-type: none"> <li>➔ Username, password</li> <li>➔ display list song or tune sample.</li> <li>&lt;- new interest</li> <li>➔ new shopping card entry</li> <li>➔ display detail infor song.</li> <li>➔ system activation</li> </ul>
Posicondition: <ul style="list-style-type: none"> <li>- Login: account confirm.</li> <li>- payment methods(electronic and direct)</li> <li>- the system always action.</li> </ul>		

<p>Exceptions:</p> <p>Account is not valid(occurs at step1)</p> <ul style="list-style-type: none"> <li>- showing incorrect account or password message</li> <li>- require user enter re-password or username.</li> </ul> <p>payment error(occur at step 3)</p> <ul style="list-style-type: none"> <li>- Information is incorrect or does not exist.</li> <li>- Please enter correct information.</li> </ul>	

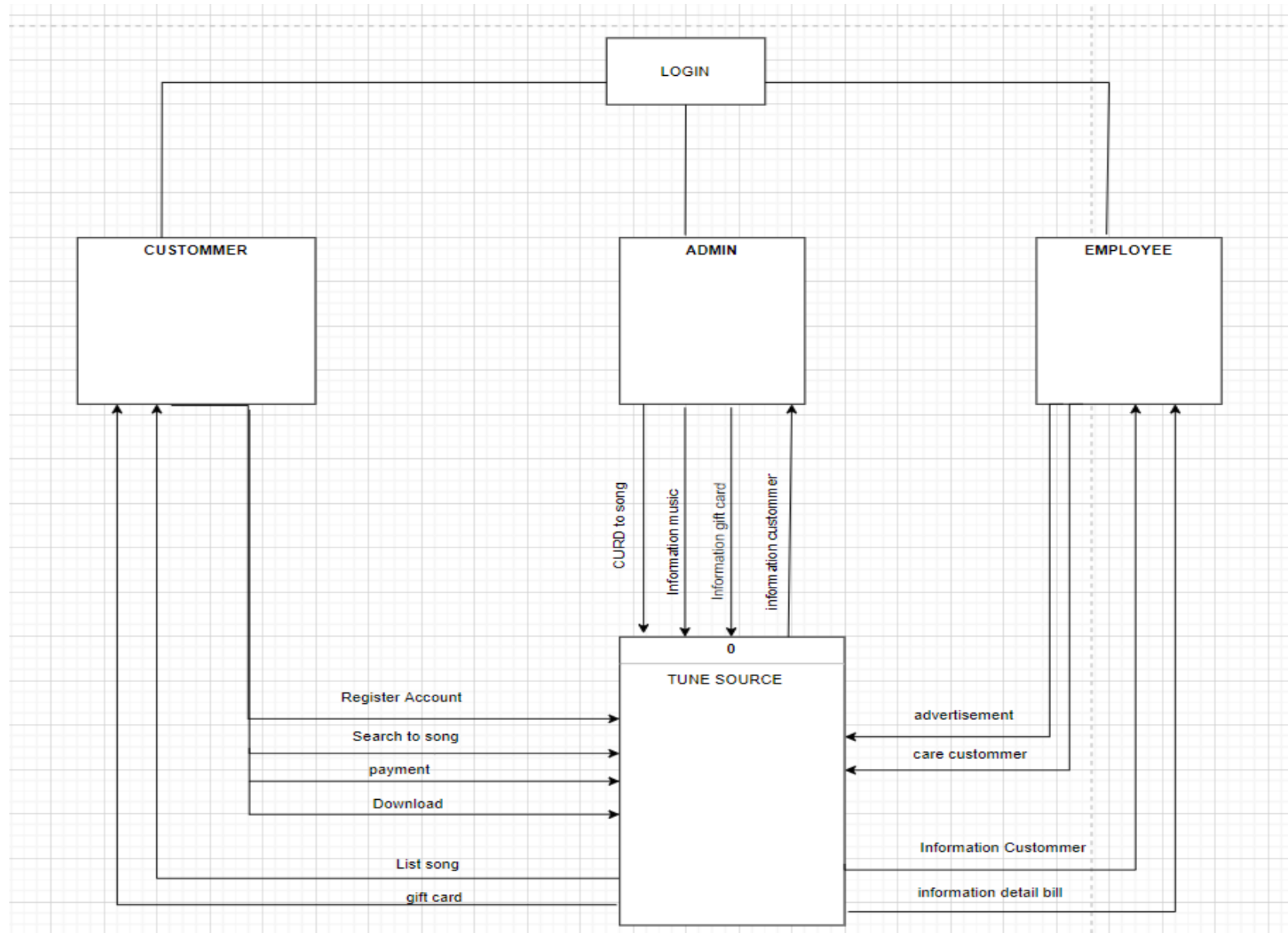
**Use case 3: Edit (add, update, delete) cart and add songs to favorite playlist.**

Use case name:	Edit (add, update, delete) cart and add songs to favorite playlist.	
Actor:	Tune source	
Description:	This use case shows users the versatility of the system, they can add, edit and delete products as well as add them to favorites.	
Trigger:	Users must have an account to access the website	
Type:	External	
Precondition:	If you do not have an account to purchase music or are not logged into the correct account registered, you will not be able to edit your order or add songs to favorite list.	
Normal Course:	<ol style="list-style-type: none"> <li>1. display the homepage.</li> <li>2. The system asks the user to enter the provided account and password.</li> <li>3. When entering the correct account and password, the interface on the website will be displayed.</li> <li>4. The user wants to select the item to edit the product such as changing the song he wants to buy by clicking on the edit song box. from there, the edit box will display a list of songs and you just need to click on the song you want to</li> </ol>	<p>Information Steps</p> <ul style="list-style-type: none"> <li>➔ Display homepage.</li> <li>➔ Account(username, password) .</li> <li>➔ Confirm information.</li> <li>➔ Tunes choice Matching edit.</li> </ul>

<p>replace and the system will display a message: "Do you want to change the song?" when you click the yes or no button. The system will fulfill your request.</p>		
5.	you want to buy more songs. you just need to double click on the add product button, the song list as well as the information will be displayed. from there you can easily buy more songs.	➔ Display list and detail information song.
6.	you want to delete the purchased song, it's simple, you will double click on the song you want to delete	➔ Tunes matching delete ➔ Display messege.
7.	After double-clicking on the song you want to delete releave songs, the system will display a message that you want to delete the song or not. if you choose yes. The system will delete your song, otherwise the system will return the music list page.	➔ Confirm information.
8.	You want to add a song to favorites by right clicking on the song you want to add.	➔ New favorite.
9.	The system will display a list of system functions, click the mouse button on the favorite function. the system will automatically save the song you have selected in that item.	➔ Add song to favorites suscessfull.
Posicondition:		Confirm account The system alway action
Exceptions:		account was failed(occer step 2) - Display messege error account. - request enter re-account and password.

--	--

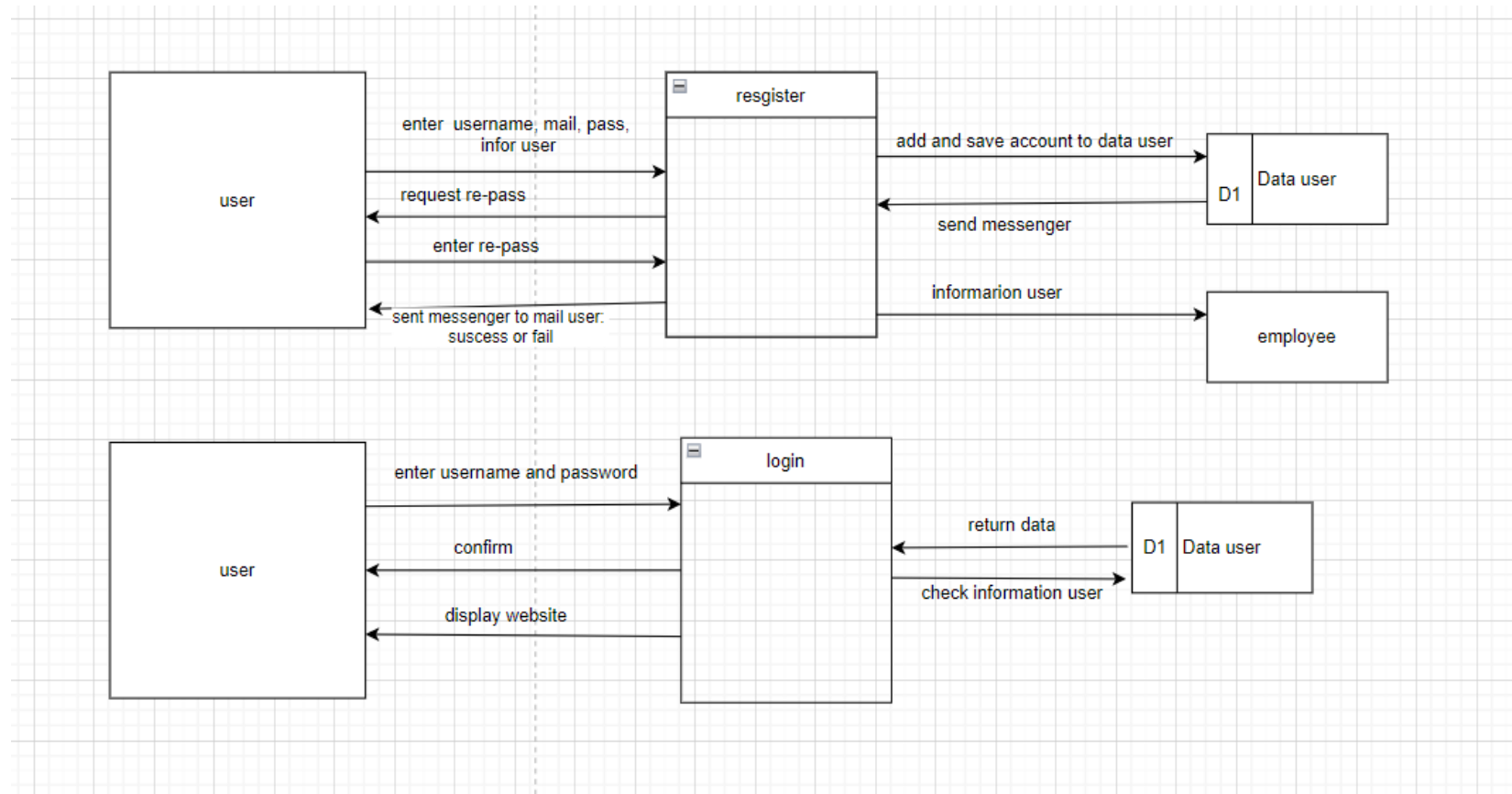
- Vẽ Context Diagram.



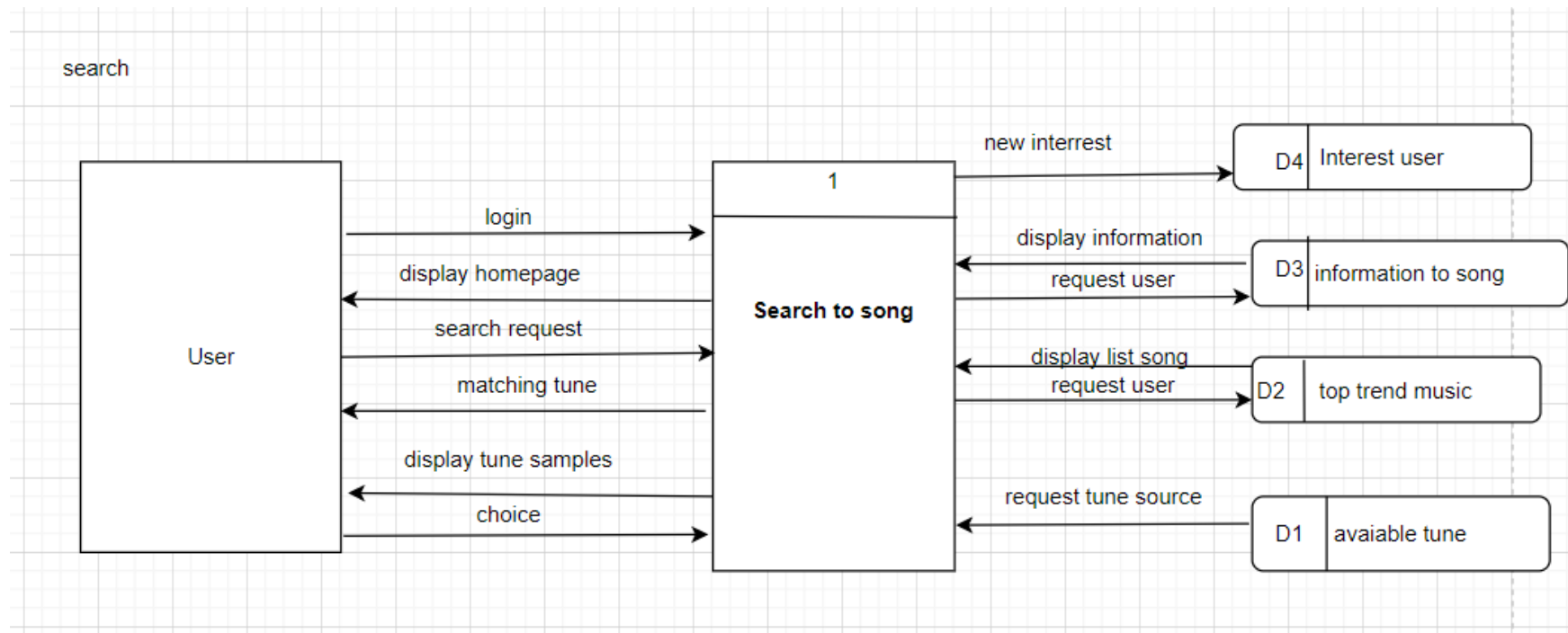


- **DFD1:**

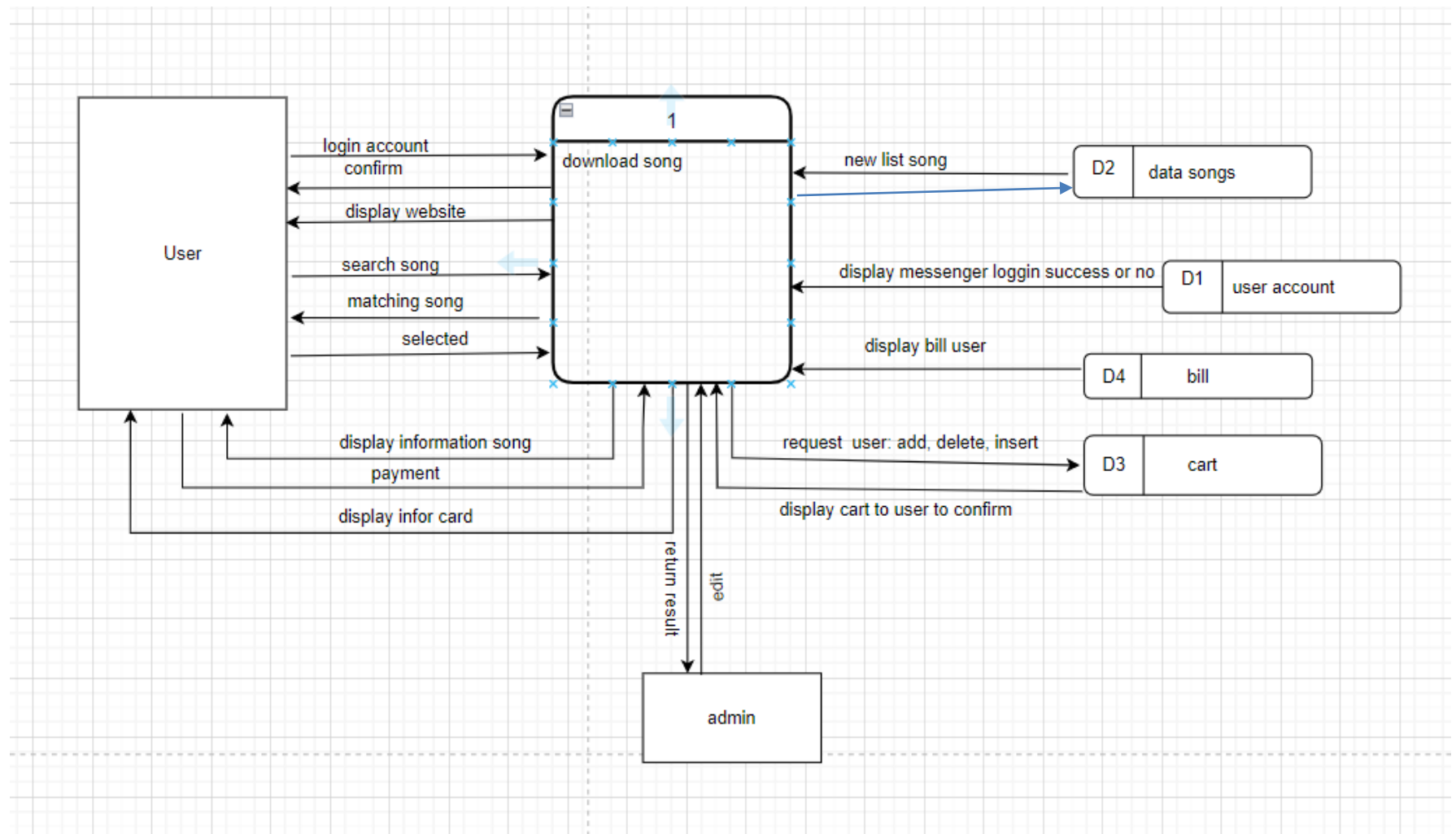
A, login and register.



B, search to song.



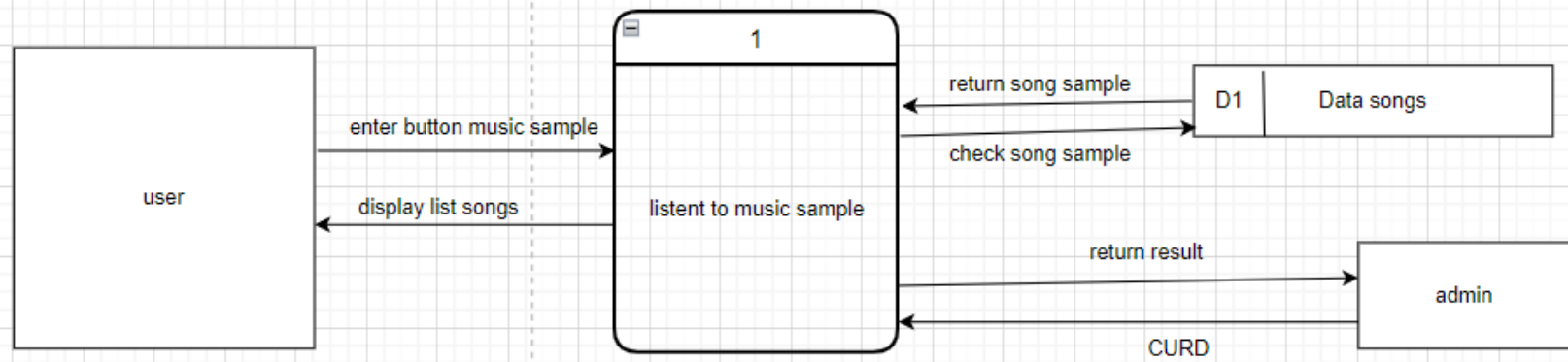
C, Download song



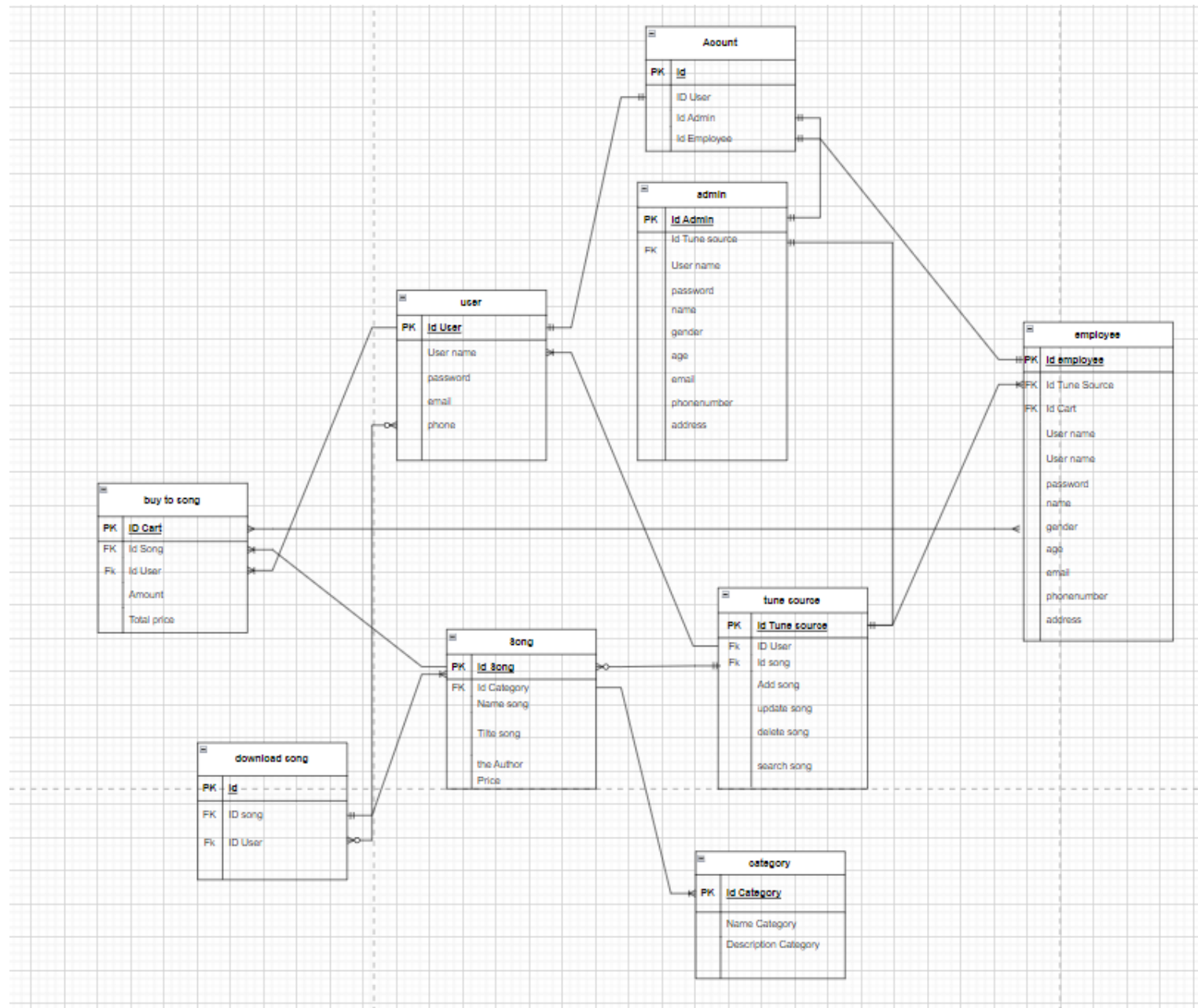
Request user

- Insert: download song → data songs.

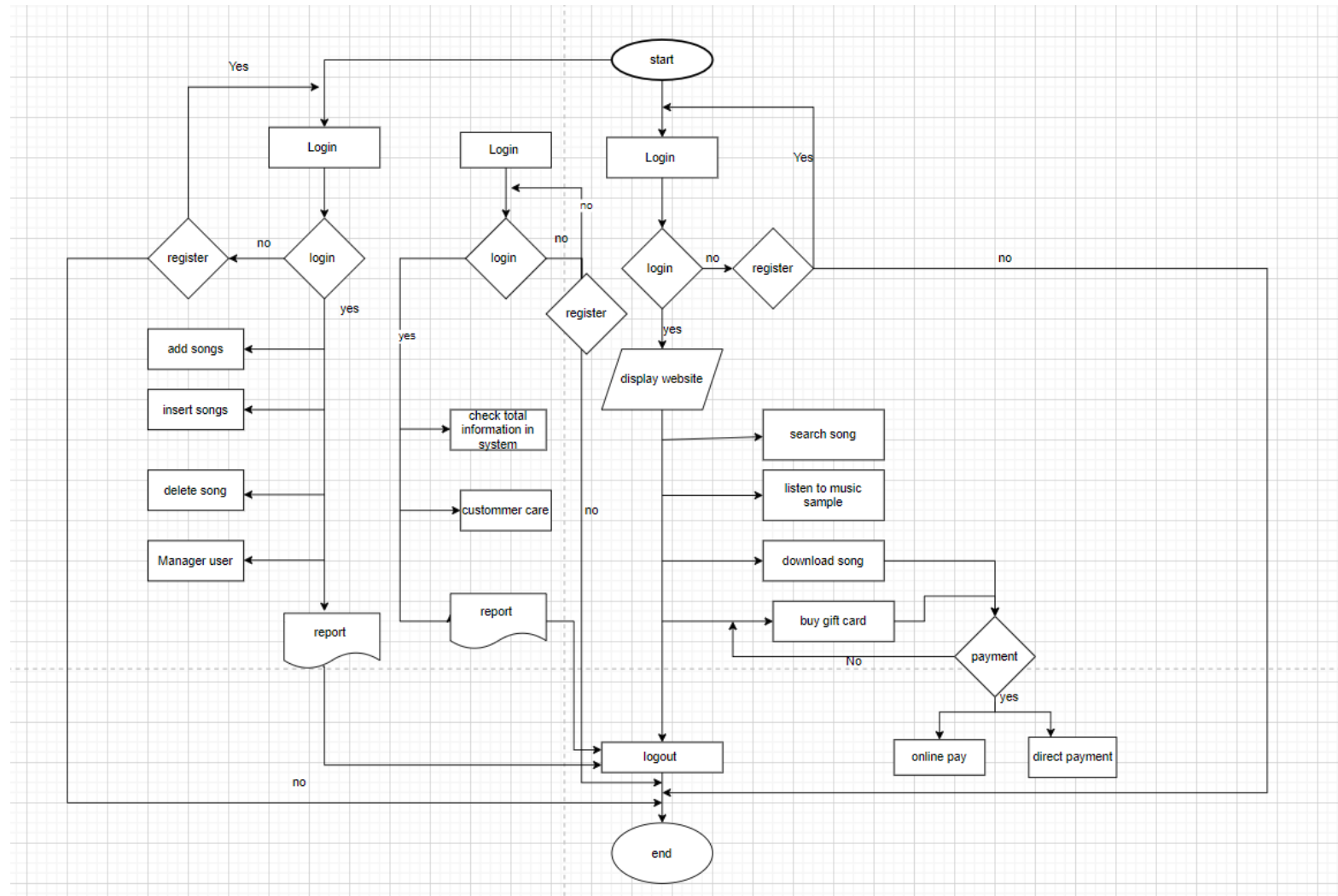
D, listen to music sample.



- ERD



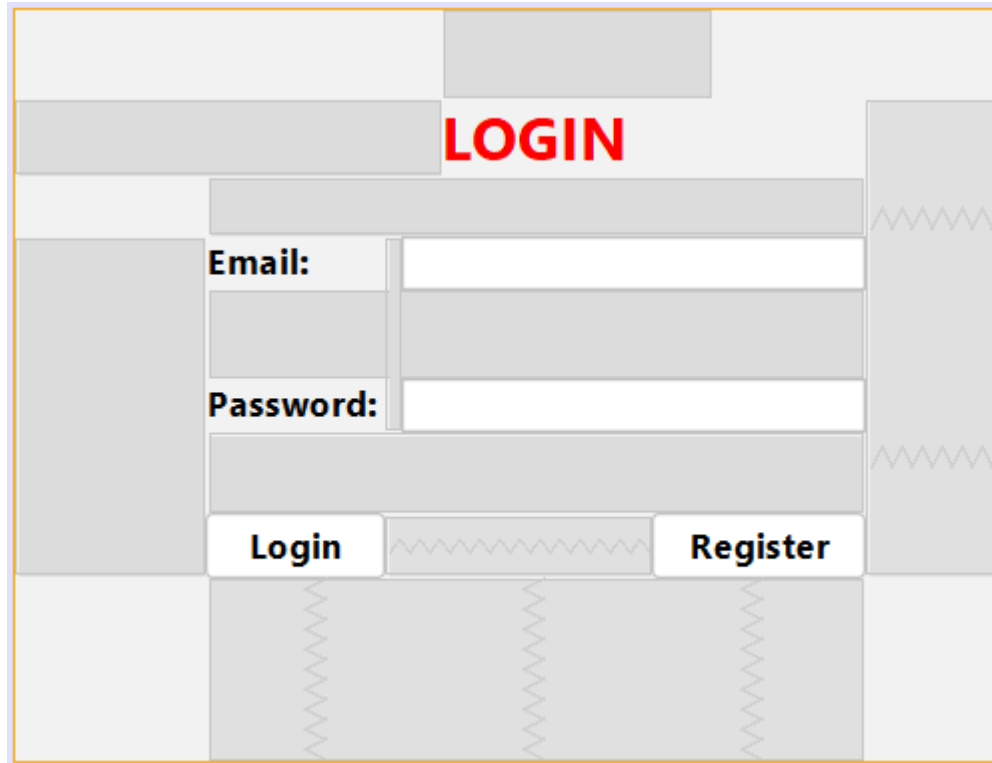
- Vẽ flowchart cho Tune source system



## P7: Task 3 – Design

- **Wireframe.**

- Login



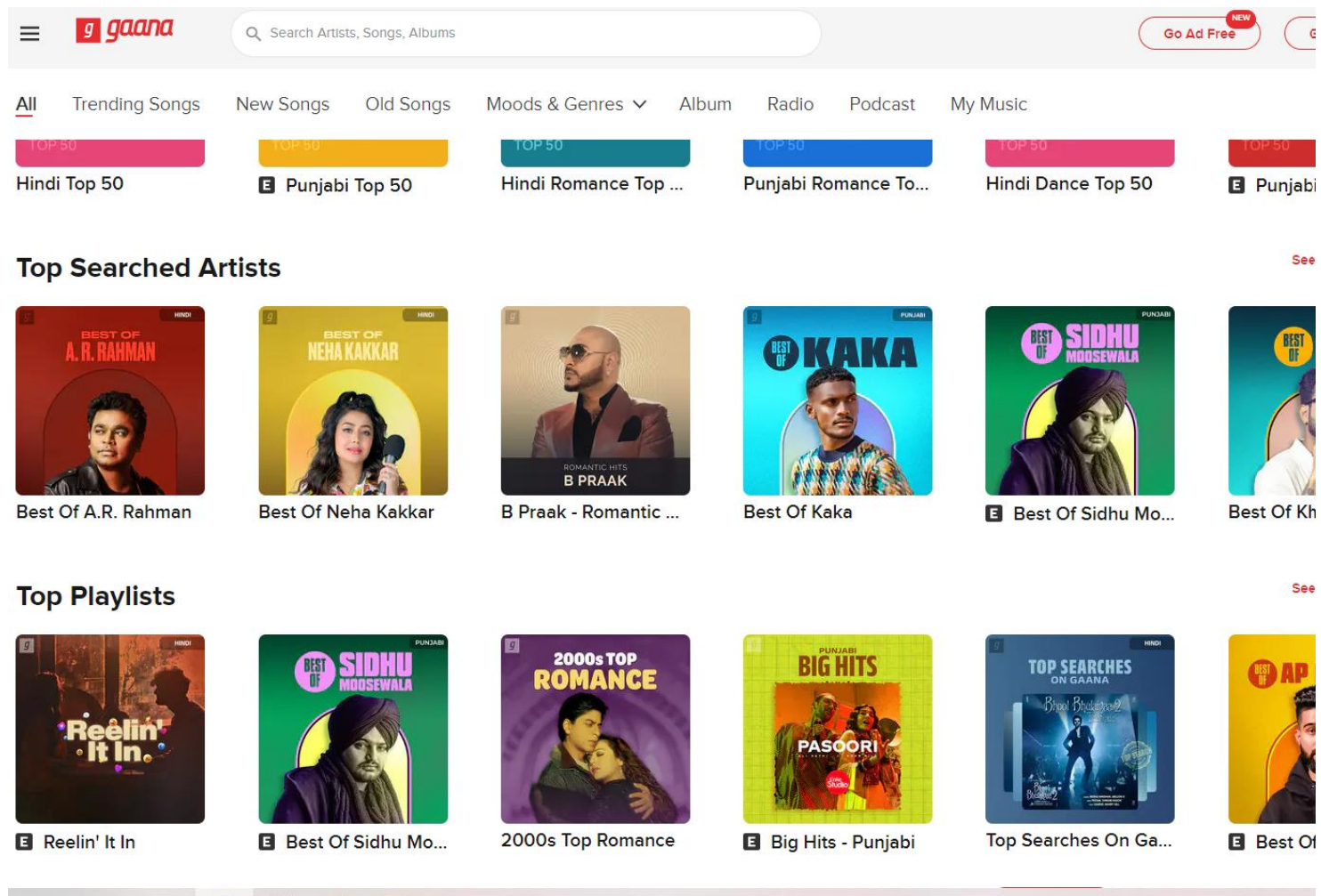
A wireframe diagram of a login page. The layout consists of several rectangular blocks of different shades of gray. At the top, there is a header area. Below it, a large gray block contains the word **LOGIN** in red, bold, uppercase letters. Underneath the header, there are two input fields. The first is labeled **Email:** and the second is labeled **Password:**. Both labels are in bold black text. Below the password field, there is a row of two buttons: **Login** and **Register**. The **Login** button is on the left and the **Register** button is on the right. The entire wireframe is enclosed in a thin orange border. There are also some zigzag lines indicating where the wireframe might be cut or where it might be part of a larger design.

- Register

		<b>REGISTER</b>			
<b>Email:</b>					
<b>Password:</b>					
<b>Re-Password:</b>					
		<b>Register</b>		<b>Cancel</b>	

Homepage





- Explain code

I use java to design the tune source system, because I see, it has many outstanding uses and is faster than other languages, in addition, it also has many automatic functions, helping me to design the system. system better and save more time.

Register:

```
private void btnRegisterActionPerformed(java.awt.event.ActionEvent evt) {
    var email = txtEmail.getText();
    var password = new String(txtPassword.getPassword());
    var rePassword = new String(txtRePassword.getPassword());
    if (!email.isEmpty() && !password.isEmpty() && !rePassword.isEmpty()) {

        if (password.compareTo(rePassword) == 0) {
            AccountModel acc = new AccountModel(email, password);
            loginView.setAccount(acc);
            JOptionPane.showMessageDialog(rootPane, "Create Account Success!");
            this.dispose();
        } else {
            JOptionPane.showMessageDialog(rootPane, "All fields cannot be left blank!");
        }
    } else {
        JOptionPane.showMessageDialog(rootPane, "All fields cannot be left blank!");
    }
}
}
```

when i double click the register button on the interface, the program executes and automatically generates the event.

I get getText data in txt Email and assign them to email with data type of varchar.

because the password when entering can have many different characters, so I put them into a string, then I get the data and assign it to a password of the varchar data type, the same goes for the repassword part.

then I use the if..else command to check the fields in the register, if the email, password and repassword are not empty the program will compare the password and repassword, if they are the same it will allow the creation of a new acc, Here, we can understand acc is Object of accountmodel and they contain properties like email and password.

After successful initialization, the information in the acc will be assigned to the loginView page, and the program will display the message: "create account success". and exit the program with the command this.dispose();

if the email, pass, repass case is empty, the program will display a message and ask the user to enter all information.

The image shows a Java Swing window titled "LOGIN". It has a light gray background and a standard Mac OS X title bar. Inside the window, there are two text input fields: one labeled "Email:" and another labeled "Password:". Below these fields are two buttons: "Login" and "Register". The window is centered on the screen.

```
private void btnLoginActionPerformed(java.awt.event.ActionEvent evt) {
    var email = txtEmail.getText();
    var password = new String(txtPassword.getPassword());
    AccountModel acc = new AccountModel(email, password);
    if (accounts != null && accounts.contains(acc)) {
        TableFrm tableFrm = new TableFrm(acc);
        tableFrm.setVisible(true);
        this.dispose();
    } else {
        JOptionPane.showMessageDialog(rootPane, "Email or Password not correct!");
    }
}
```

- registerview belongs to login class through this keyword(this), and of course all registration data.
- RegisterView.setVisible only consider true value, if not registered, user will not be able to login successfully.

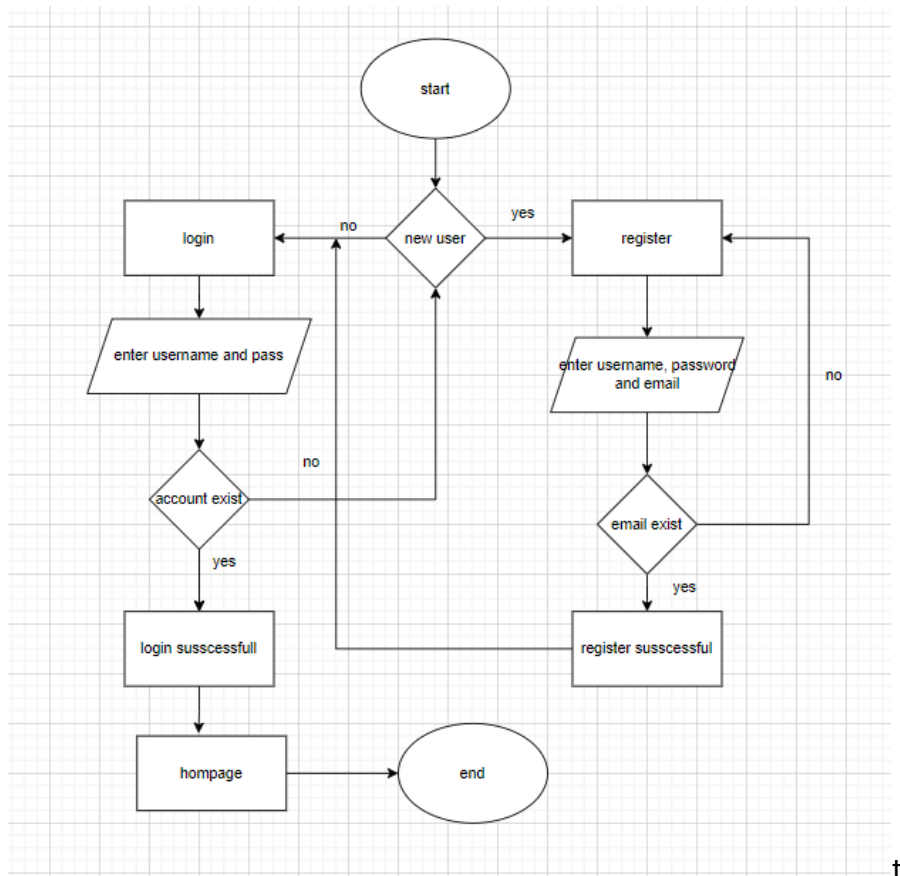
when double click on Login button, event will be fired.get email and password values through get and assign to newly initialized variables email and password with data type of varchar.get the properties of the Accountmodel and assign it to acc.

then go i use the if..else command to check.

if the accounts list is not empty and contains acc (email, password) will take the user to the Tableform page, ie successfully logged in.

If the user's login information does not match the information on the register page, it will display a message that the email or password not correct.

- **Flowchar to Login and regisster:**



t

- Search music:



First, I declare the variable table with data type DefaultTableModel. then get the Model from the product table and assign it to the table.

Next, I initialize the search variable of the string data type and get the lowercase text from txtsearch and assign it to search.

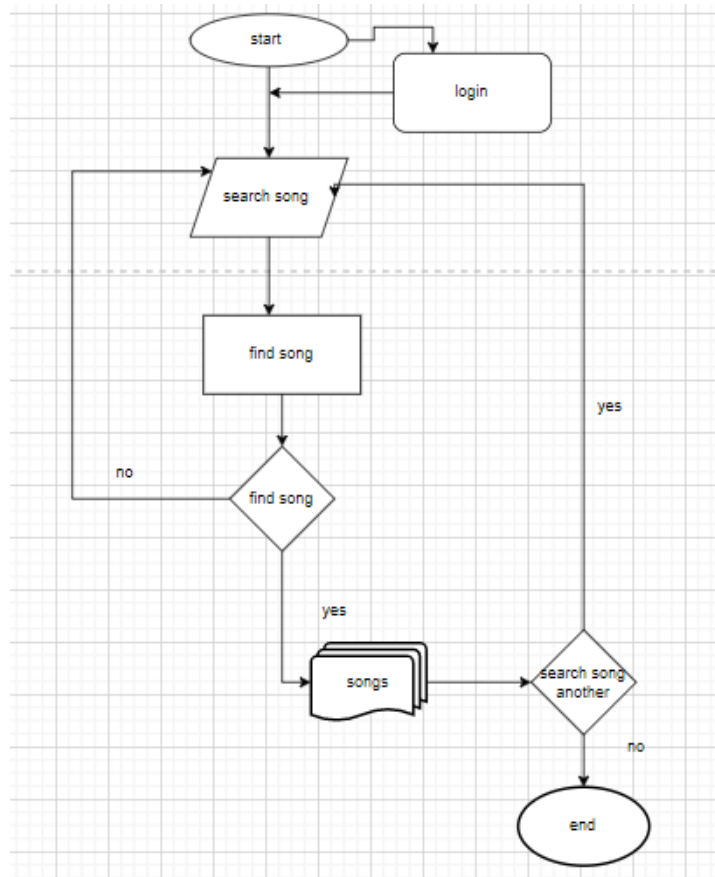
Continuing with the search function, I will initialize the variable tr of the DefaultTableModel data type and sort and filter the objects in the table variable with the TableModel and then assign it to the tr variable.

Next, I'll assign the search results to the products table.

regexFilter, we can understand it is a filter that accepts all strings that match data from the search variable and sets the filter value in the tr variable

- **Flowchart for search song:**





- **Test case**

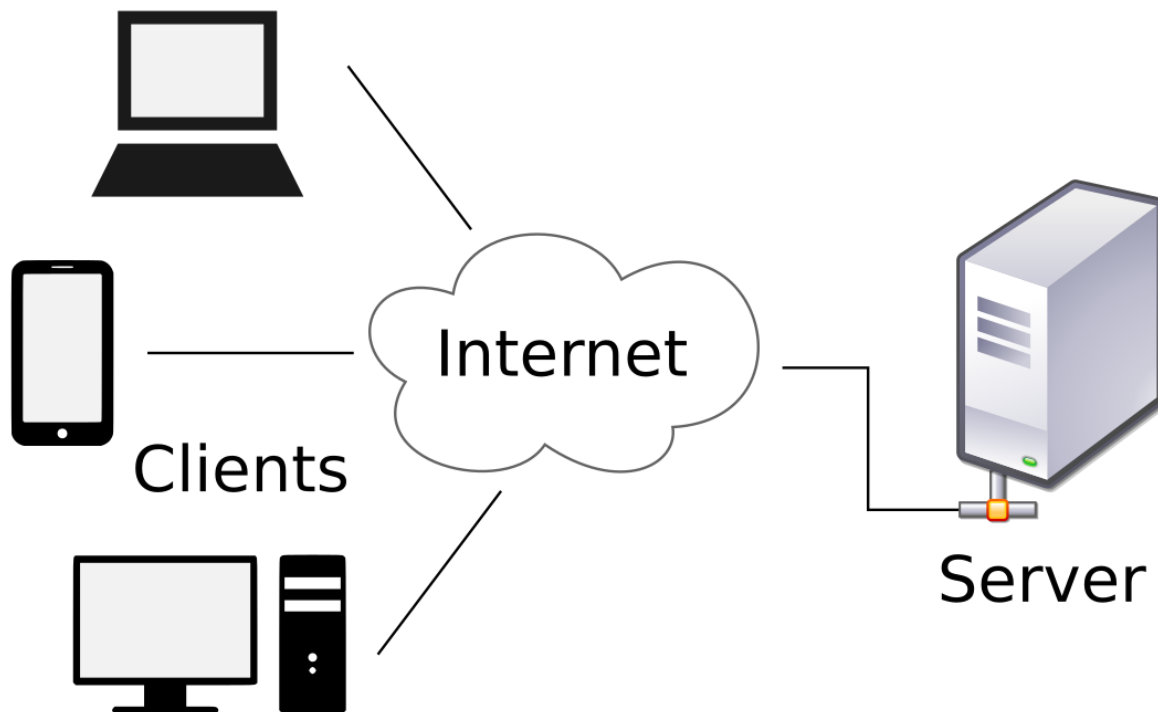
No	Description data	Test input data	Result expect	Actual result	Pass Or Fail
1	Login	Email(Username) <a href="mailto:Hanguyenth034@gmail.com">Hanguyenth034@gmail.com</a> Password: 12345	The Admin check information System tune source and confirm.	Login Susscessfull	Pass

2	Login	Email(username)nguyenthuhuyen123@gmail.com Password: chupchup	Loggin susscess	Email or passwod not corect!  Please re-enter or register account.	Fail
3	Register	Email(username) <a href="mailto:nguyenthuhuyen123@gmail.com">nguyenthuhuyen123@gmail.com</a> Password: chupchup Re-password: chupchup	Confirm	Create account susscessful!	Pass
4	Search	Enter name song: Love is gone	Display playlist same name.  And information to songs	Display list song name: Love is gone and information such as: the author, tilte,..	Pass
5	Search	Enter name song: djfvvdsjbfiaheop	Display playlist songs same name and information song	The songs not found, please re-choice or choice song another	Fail

❖ **Architecture:**

- You will explain which architecture (client – server, n-tier, microservices, etc.) is suitable for the project with clear illustrations and why.

**A, client-server.**



The Client-server model is a distributed application structure that partitions task or workload between the providers of a resource or service, called servers, and service requesters called clients. In the client-server architecture.

when the client computer sends a request for data to the server through the internet, the server accepts the requested process and deliver the data packets requested back to the client. Clients do not share any of their resources. Examples of Client-Server Model are Email, World Wide Web, etc. (geeksforgeeks, 2022)

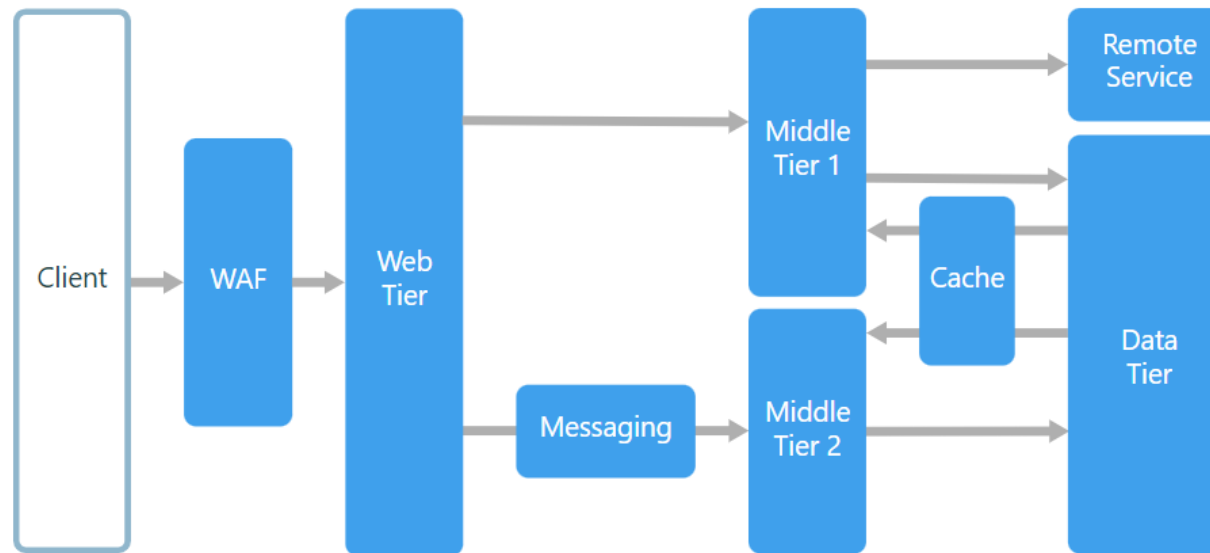
### **How the Client-Server Model works ?**

In this article we are going to take a dive into the **Client-Server** model and have a look at how the Internet works via, web browsers. This article will help us in having a solid foundation of the WEB and help in working with WEB technologies with ease.

- **Client:** When we talk the word Client, it mean to talk of a person or an organization using a particular service. Similarly in the digital world a Client is a computer (Host) i.e. capable of receiving information or using a particular service from the service providers (Servers).
- **Servers:** Similarly, when we talk the word Servers, It mean a person or medium that serves something. Similarly in this digital world a Server is a remote computer which provides information (data) or access to particular services.

(geeksforgeeks, 2022)

**B, N-tier.**



N-tier architecture is a client-server architecture concept in software engineering where the presentation, processing and data management functions are both logically and physically separated. These functions are each running on a separate machine or separate clusters so that each is able to provide the services at top capacity since there is no resource sharing. This separation makes managing each separately easier since doing work on one does not affect the others, isolating any problems that might occur.

(microsoft, 2022)

### Benefits

- Portability between cloud and on-premises, and between cloud platforms.
- Less learning curve for most developers.
- Natural evolution from the traditional application model.
- Open to heterogeneous environment (Windows/Linux).

(microsoft, 2022)

➔ When to use this N-tier architecture.

N-tier architectures are typically implemented as infrastructure-as-service (IaaS) applications, with each tier running on a separate set of VMs. However, an N-tier application doesn't need to be pure IaaS. Often, it's advantageous to use managed services for some parts of the architecture, particularly caching, messaging, and data storage.

Consider an N-tier architecture for:

- Simple web applications.
- Migrating an on-premises application to Azure with minimal refactoring.
- Unified development of on-premises and cloud applications.

N-tier architectures are very common in traditional on-premises applications, so it's a natural fit for migrating existing workloads to Azure.

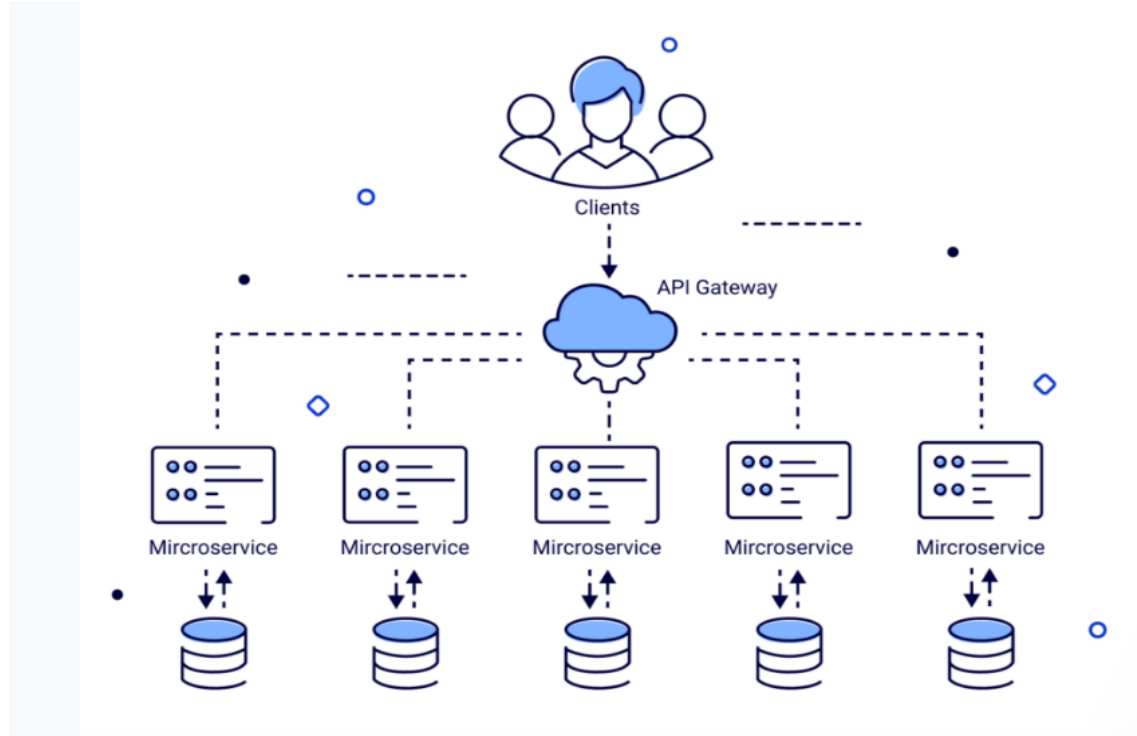
(microsoft, 2022)

## **C, microservices.**

A microservices architecture is a type of application architecture where the application is developed as a collection of services. It provides the framework to develop, deploy, and maintain microservices architecture diagrams and services independently. (cloud, 2022)

## How does Microservices Architecture work?

Microservices architecture focuses on classifying the otherwise large, bulky applications. Each microservice is designed to address an application's particular aspect and function, such as logging, data search, and more. Multiple such microservices come together to form one efficient application.



This intuitive, functional division of an application offers several benefits. The client can use the user interface to generate requests. At the same time, one or more microservices are commissioned through the API gateway to perform the requested task. As a result, even larger complex problems that require a combination of microservices can be solved relatively easily.

(middleware, 2022)

## Benefits of Microservices Architecture

Microservices architecture enables organisations to grow faster, enjoy high productivity, and innovate better to deploy competitive products in the market. Microservices architecture offers the following benefits:

- **Extensibility**  
Microservices organises applications around business functions. Each module can operate independently. It extends applications to support plugins for new features, interfaces, devices, etc. As applications gain more popularity, you can easily add more features to generate more revenue.
- **Scalability**  
Microservices divides applications into small modules that enable organisations to scale applications up and down. A fault in a single module does not crash the entire system. Hence, applications can continue operating, even after an outage in one or more modules.
- **Maintainability**  
It is easy to maintain a single module in comparison to the entire system. The breakdown of complex software into smaller parts is easier to maintain and test. Each module has a separate storage and database.  
Hence, organisations can build, test, and deploy all the modules with far less complexity.
- **Agility**  
All modules in a microservices architecture are loosely coupled. A change in one module does not affect the performance of the other module. You can also update modules individually. It leads to faster development

(Charan, 2021)

- ❖ Then you will address which technical solution stack could be suitable to implement the project with clear explanations.



For a tune source project, I think the client-server architecture is the best fit. tune source is a system, a sales website, so it is necessary to interact with customers regularly as well as always update the trends of the times. So why would I choose client-server over other techniques. It's simple, I will analyze each of their advantages:

First I will illustrate an example in tune source: that is searching for songs, then you will be the admin user on the client side, and admin will be the admin on the server side, i.e. the source of information. data. When you click on the search button and enter the song name, all information will be transmitted to the server side by internet, then the server side will confirm the information and return the results you searched for. playlist songs and songs information. So we have seen how effective it is in providing data quite easily and to do that, the system has to ensure that all the data is maintained in a single place, like such as: admin can manage all information of the song on the website. This will make management easy, save time as well as provide customers with the most complete and secure information.

and what I love most about adopting the client-server architecture is that multiple clients can be embedded into the server, which gives outstanding performance and increases the overall flexibility of the model.

however, the client-server has a few limitations, and the main problem here is: when the server crashes, the client will not be able to access the data, like in tune source, when you search or download but the system If you get an error, no results are found, then there is a good chance that there is a problem with the server side. however, this is very rare for a tune source project. Because tune source is a large system and everything related to technology is created by professional IT staff, there is nothing to worry about, the server side must always be safe and reliable high security.

## Conclusion

I feel very happy when I was able to finish this report, at first there was a bit of trouble in finding the documents, as well as reading comprehension and theory, especially the diagrams, they are quite complicated because the tune source project is quite large so I wanted to make it as complete as possible, but after finishing the report I can seem to figure out how a system works and how secure it is. get nfr fr and ways to move data in the system. and drawing diagrams, help me better understand the tune source, they work in an orderly, regular, thorough manner. and it will be very effective and easy to manage if we apply it to our projects in the future.

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