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ASSIGNMENT 2: Software Development Life Cycle

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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.			
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Grading grid

P5	P6	P7	M3	M4	M5	M6	D3	D4

❒ Summative Feedback: ❒ Resubmission Feedback:		
Grade:	Assessor Signature:	Date:

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Signature & Date:

Contents

I. Introduction

This essay will discuss how to create requirements based on stakeholder analysis. In the given requirements, it will identify and indicate functional and non-functional requirements. Besides the system is described in the form of architectures and designs such as Use case, UML, Diagram ... Finally, software quality control cycles will be implemented.

II. Stakeholders

Stakeholders are people who have any project related. Stakeholders are those who directly invest in the project and or who will be affected by the project during the completion of the project. The stakeholders will directly affect the project's results. related parties, such as customers who refuse to accept the project, no matter how good the project results are, the project will evaluate as failure.

The main stakeholders of the project include:

- A champion is responsible for promoting, allocating time and ultimately a champion whose mission is to provide resources for the project to execute (money, sample products). ...)
- Organizational management is known that people and organizations are knowledgeable about the system, have enough capital to implement the objectives and help the project operate, in addition to this organization also encourages users to accept and use the system. which includes their system and the company's system.
- Finally, in the main stakeholders, System Users, the user can change the game if the decision is directed to the project. Users take actions to help the

project implement practical activities. Finally, the user uses the system to decide whether the project is successful or not.

III. Requirement

A requirement is an idea that leads the system to do or need it in the development process. A system development project will have the business requirements set out for the software to follow. For user requirements is what the user needs. There are 2 types of requirements: software requirements do (functional requirements), System characteristics (requires no function), all detailed planning requirements will build a system design that is exactly what the business, user, manufacturer wants. (Bentley, L. D., et al., 2000)

1.Functional Requirement

A functional requirement that indicates the function of a system or its component, in which the function indicates user interaction and the system's functions

Functional requirements are well-defined, technical details, multitasking tasks along with the task and the defined functions that the system is aware of. Functional requirements are constrained by non-functional designs and requirements (called quality requirements). In short, functional requirements are the system requirements that must be fulfilled. (Adams, 2015)

Example:

- The system allows to listen to music online with 128 music quality and download offline listening with lossless quality.
- The system needs to store user-downloaded songs for a fee so that users can download them for free if data loss or new device conversion.
- The system allows users to create their own albums using the account they are using

2.Nonfunctional Requirement

Non-functional requirements are requirements for evaluating system performance instead of specific behaviors. Non-functional requirements are significant in the architectural aspect so it is designed in the system design process. Non-functional requirements are often called "quality attributes" of a system. In non-functional

requirements include: security, safety, usability. Besides non-functional requirements are also mentioned with the ability to test, maintainability, and scalability. (Adams, 2015)

Example:

- The system works on all web browsers today
- All feedback with user requests is less than 3s
- Non-functional requirements on security: Only admin can upload music online and edit and remove music in the system
- Non-functional requirements on security
- The system uses security according to existing ISO standards

3.Implement

There are five ways to find stakeholder requirements, including: Interviews, questionnaires, Observation, joint application development (JAD), and document analysis. Applying to tune source I use **interview** because it's simple and I know how to use it effectively.

a. Theory of interview

To determine the main requirements for the system, to determine the requirement of analysts to use stakeholder **interview** methods. (Bentley, L. D., et al., 2000)

Interview is one of the simple techniques to collect requests. An interview is a dialogue prepared some information between two people. (Bentley, L. D., et al., 2000)

Step 1: The first job of the interview was to set up interviewers, interview time and location. Following the table have information details:

Name	Position	Purpose of Interview	Meeting
Andria McClellan	Director, Accounting	Strategic vision for new accounting system	Mon, March 1 8:00–10:00 A.M.
Jennifer Draper	Manager, Accounts Receivable	Current problems with accounts receivable process; future goals	Mon, March 1 2:00–3:15 P.M
Mark Goodin	Manager, Accounts Payable	Current problems with accounts payable process; future goals	Mon, March 1 4:00–5:15 P.M
Anne Asher	Supervisor, Data Entry	Accounts receivable and payable processes	Wed, March 3 10:00–11:00 A.M
Fernando Merce	Data Entry Clerk	Accounts receivable and payable processes	Wed, March 3 1:00–3:00 P.M.

The schedule will provide a specific time for the best interview, in which each meeting will meet a different stakeholder, who will provide information to proceed as a requirement. During the interview, the interviewees will have different views on the system and follow them with different requirements, so during the interview process will include staff from high level to low level. Moreover, to determine exactly what needs to be done, the interviews will take place in chronological order.

Step 2: The next step in the interview process is **to create interview questions**. In the interview there are 3 types of questions we will use to create interview:

- **Closed-Ended Questions** is the question to seek the most convincing answer. For example, how many visits does Tune Source have per day, instead of questions that many requests need to be processed? This question does not provide information on why they answered so? This question provides accurate and concise information that the interviewer needs.
- **Open-ended questions** are questions collected for analysis and answers to how questions, what are reasons, why. These questions are not answered by

Yes-No, open-ended questions are answered as a paragraph to explain or provide detailed information about an issue that the interviewer mentioned, the answers can also be used to compare the answers that the interviewer collected

- **Probing questions** used to learn more based on what has just been discussed. In it this question encourages and expands and learns more about the aspect being discussed.

Step 3: **Preparing for the Interview** is an important step to conduct an interview in the best way. In this step there was a list of questions created from step 2. From these questions will identify related topics. Identify who needs to be interviewed to be able to ask questions that match the advantages of respondents to avoid interviews without obtaining information. In this step, the classification of questions to focus on the most collected question, in this interview will be given priority in terms of time and information. Finally, the notices sent to the interviewees will be broadcast and sufficient time so that they can also prepare for the best interview.

Step 4: The last thing in interview is **to conduct interview**. In this step, the first thing to do is to build up enough relationships to conduct interviews (example: introduction, greetings,…) so that the interviewer can be comfortable. Say what you think to avoid the two people being confused and passive. During the interview, you should be professional in approaching the problem independently. The interview should start with a question why or why. Summarize and record comments and comments or requests accurately. As a final step, explain what happens next and start other questions that make the interviewer comfortable and leave lots of information.

Step 5: **Post-interview** will have a report describing the interview information, including reports, summaries of key information.

b. Apply for tune source with Interview method

Step 1: Selecting Interviewees

Name	Position	Time meeting
Ariny	Leader, Director	Mon, March 1 8:00–10:00 A.M.
Tom	Manager	Mon, March 1 2:00–3:15 P.M
Henry	User	Mon, March 1 4:00–5:15 P.M

Step 2: Create interview questions

- Closed-Ended Questions

• Do you often listen to music online?

• Do you know Tune Source?

- Open-Ended Questions

• What do you think when using Tune Source a new and exciting website?

• What are some problems you encounter on online music websites?

• How do you want it to be improved?

- Probing Questions

• Can you give me an example?

Step 3: Preparing for the Interview

For the preparation for the interview, the questions will be in the following order:

1. Do you often listen to music online?
2. Do you know Tune Source?
3. What do you think when using Tune Source a new and exciting website?
4. What are some problems you encounter on online music websites?
5. How do you want it to be improved?
6. Can you give me an example?

For the preparation of the interviewer, appointments will be scheduled on time and the meeting place is at the ABC company itself. If all appointments change, the interviewer will have to notify the interviewee 1 day in advance. If the interviewee delays, the interview will take place in 5 minutes by phone interview. The interview starts from the leader to the next manager who will eventually be the user.

Step 4: **to conduct interview**

The interview took place in accordance with the prior preparation, everyone interviewed and answered questions that brought a lot of information for the requirement function process.

Step 5: The interview documents are recorded and follow the form below:

Name / QS	1	2	3	4	5	6
Ariny	Yes	Yes	I have read about introducing Tune Source, it will be very interesting	I cannot download music offline, I can't buy my favorite song on the music page I'm using	I want the feature page to login to download my favorite content, along with providing ablum so I can include my songs and enjoy them.	I want your music site to work with the login sequence - download music
Tom	Yes	Yes	It's just a music site, but I'm still not sure because I haven't experienced it yet	I could not search for my music when I did not remember the name, The music I bought on Iphone 6 disappeared	I want it to search for advanced keywords, I want to search by artist name and lyrics, year of creation ... In addition,	For example, I don't remember what the song title is, I just remember the singer name and a little

				when I upgraded to Iphone 7	I want my account to store personal information with the songs I have purchased	lyrics, I want to type the following: "jfla- I'm a hot" search results will return the song: Happy by singer Jfla.
Henry	Yes	Yes	Surely I was interested	I buy a lot of music online, but I still don't get any offers from the service provider, which makes me sad. Sometimes, my favorite listen music crack, so I don't go to music website and listen music, it	I want a discount code, And the site works better.	I want one code to send sms to discount 30% when I use buy music.

				make me angry.		

Base Interview I create **Requirement for Tune Source** as follows:

c. Functional Requirement:

1	Account
Summary	In the login will display a box to enter account information and password, in which account types are categorized into 3 types of accounts: customers, admin, person sales.
Input	Input user and password to box and press login
Process	The database will automatically search for information and jump to different functions depending on the account

2	Search
Summary	All searches related to lyrics, songs, singers will display when the results are available. The system allows adding songs to the favorites list.
Input	ELECT [nature] <column list> FROM <Table / Query list> WHERE <column> LIKE <sample data>
Process	Enter the name of the song, playlist, artist ... If the correct result returns the song list, the artist, the playlist the user searches for.

	Otherwise, it will return to the "no search results" screen.

3	Purchase
Summary	The system for customers to create accounts and for customers to pay by online payment, then when customers specify to buy music, a type of notice will appear, the transactions will be processed by the system and The process of downloading music starts. On a note, the account that bought the music will not need to buy it for the second time and will allow free download
Input	Input requires - the receiving system - processing system - returns the result
	Purchase from 1 account - if the account is purchased, allow free download, otherwise, if the account has not purchased the specified music, the stored information will proceed to payment - after the bar Complete math will allow downloading music

4	Promote
Summary	Based on the purchase and statistics of the frequency of buying customer music, the auto-donation system offers a 20% -99% discount for customers depending on the frequency of music listening and frequency of operation. On holidays, there are

	rewards for the whole system that help boost sales. In addition, discount codes are paid when purchasing a CD in the store.
Input	Discount Code
Process	The system provides discount codes - customers use - enter discount code - proceed to buy music - successful payment discount code will be removed from the system

5	Feedback
Summary	Tune Source customers have the right to respond, evaluate and report vulnerabilities, inappropriate songs and report copyright songs to help Tune Source grow stronger.
Input	Feedback input into customer feedback section
Process	Open any song with signs of violation, error, copyright, ... click on the feedback, enter the error and send it to the developer.

6	Add Item
Summary	Add new tracks to the system
Input	NewSong
Process	Go to admin account- choose add item- upload new song- save
Output	New song available in system

7	Download
Summary	Download new song

Input	Click download
Process	Click download free song will always available, if song not free, need buy song before download

8	Marketing manager
Summary	Have mission create promotion for user
Input	Click create new promotion
Process	Click create new promotion and send it for system, continued to user will use promotion for any scope.

d. Nonfunctional Requirement:

Performance requirements:

- System response to users not more than 2s.
- When initializing the site, Ram accounts for no more than 5% and Cpu <2%.
- It is possible to use 3000 users at the same time without delay.

Safety requirements for releasing user data management. Moral issues are put on top, it will be dangerous for users if their information is exposed and they can be life-threatening. To be safe for users and data, it is necessary to use a firewall, user data is protected from external and internal agents such as fire and viruses ...

Software requirement

When users log into the system, users are provided with a separate tonken to verify that they are. Taking the user position to make sure they are using their own account, if the user's location is wrong from the beginning, a series of alerts will be issued and the user will know it. In addition to software requirements, all administrators have the right to modify the system such as fixing songs. However, for users who are not allowed to edit songs, any behavior that is not appropriate will be considered illegal.

Operational requirements:

- The system will run on every browser and every OS
- During any music download process, any work will be stored and completed after connection

Security

- Payment will be encrypted
- Customer information will be kept confidential
- The system will use the security of PCI DSS security standard

IV. Diagram

1.Use case

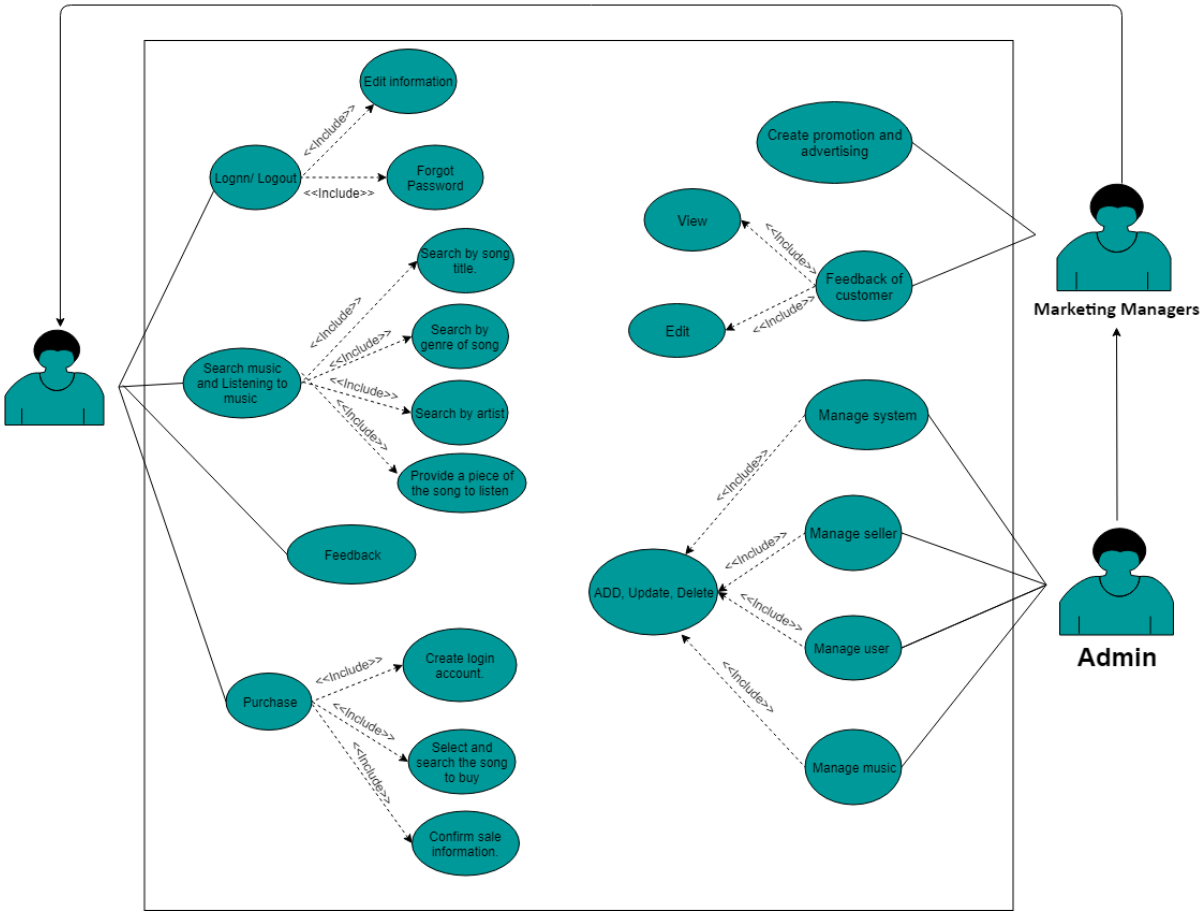

Figure 1 :Tune Source System

Based on the requirements in Part III, I create use case, entity, data flow diagrams to help identify more clearly about the system going to implement.

With admin:

Login account system: The login system of tune source includes admin, person sale, customer. If you already have an account and password in the database, proceed to log into the Tune Source system. Only customers can register to create a new account.

Add/update/delete item: In the system, only admin has the right to delete, edit, and update music items.

With customer:

Search: Everyone in the system can access the search section and use it, but the search interface for users is different from the admin search interface (For users who search and listen to music, for the admin search cover) including song results and adding functions such as deleting ...)

All people can **listen music**.

With download, it will be linked with **purchase, promote** to pay and buy when users use copyright music function. If users buy free music, it will automatically **download**

Promote will be launched by marketers to reduce the price for paid tracks that users have to buy.

The **feedback** function is used to send feedback to the system to help the system grow better.

With marketing managers:

Order manager

Receive and manage customer feedback

Describe and create promotions with authorized accounts

2.Entity

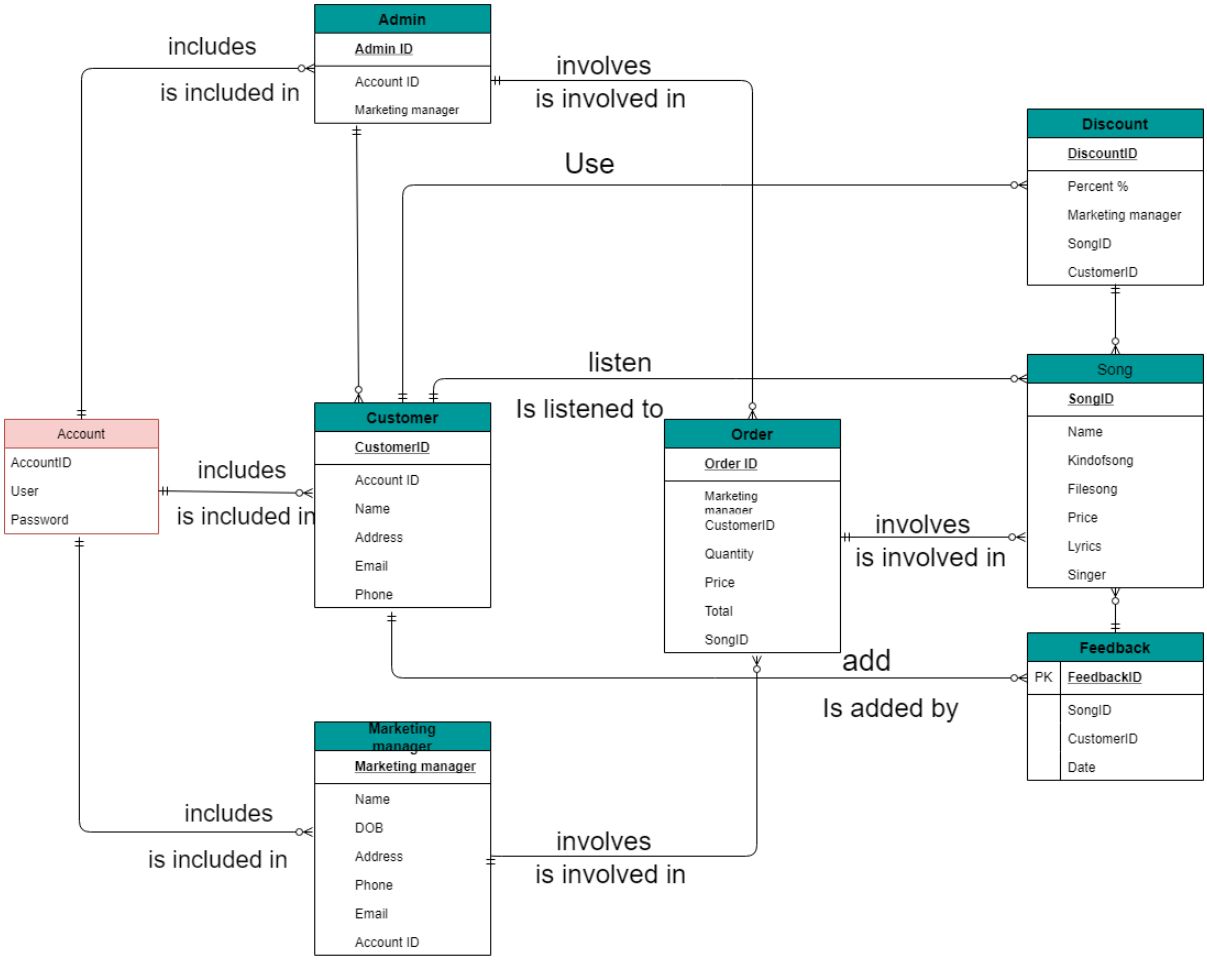

Figure 2:Entity Diagram

3. DFD for Tune source:

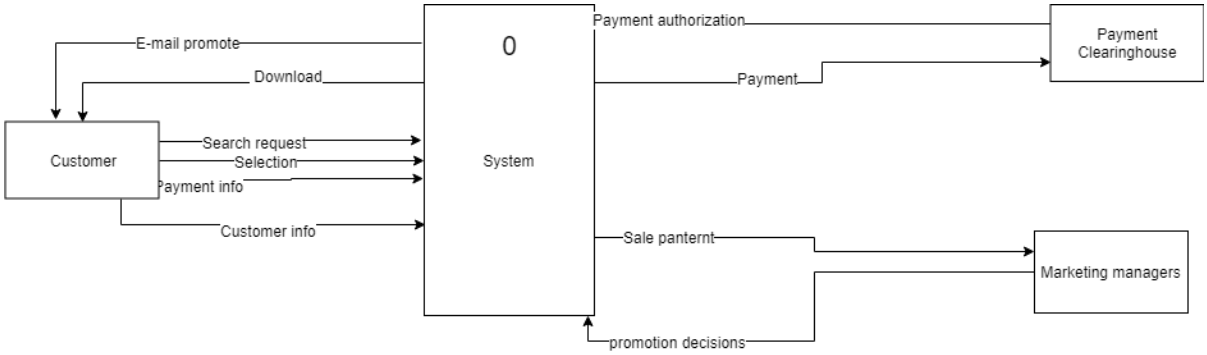

Figure 3:DFD level 0 Diagram Tune Source

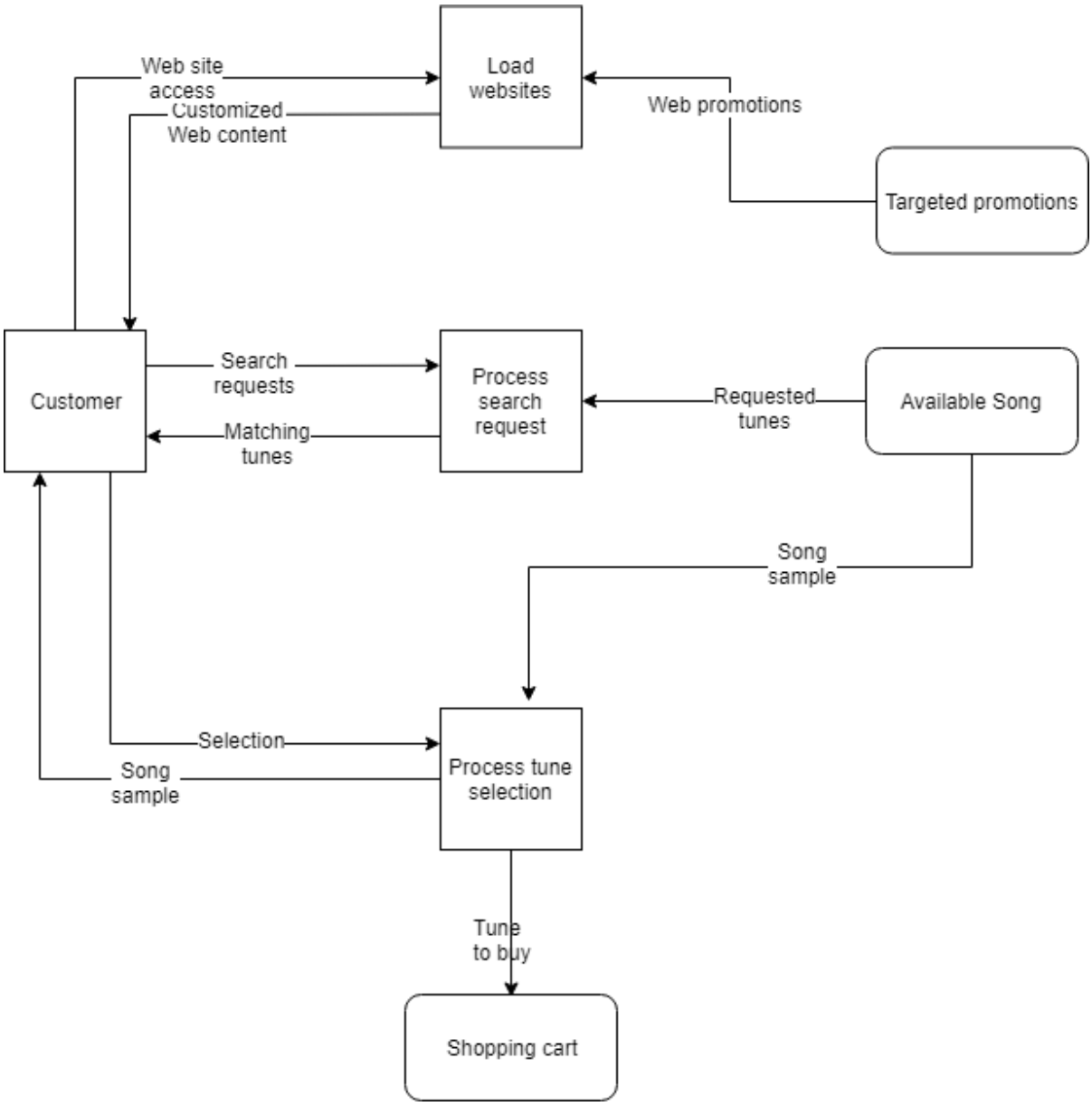

Figure 4 : Level 1 DFD : Search and Browse Song

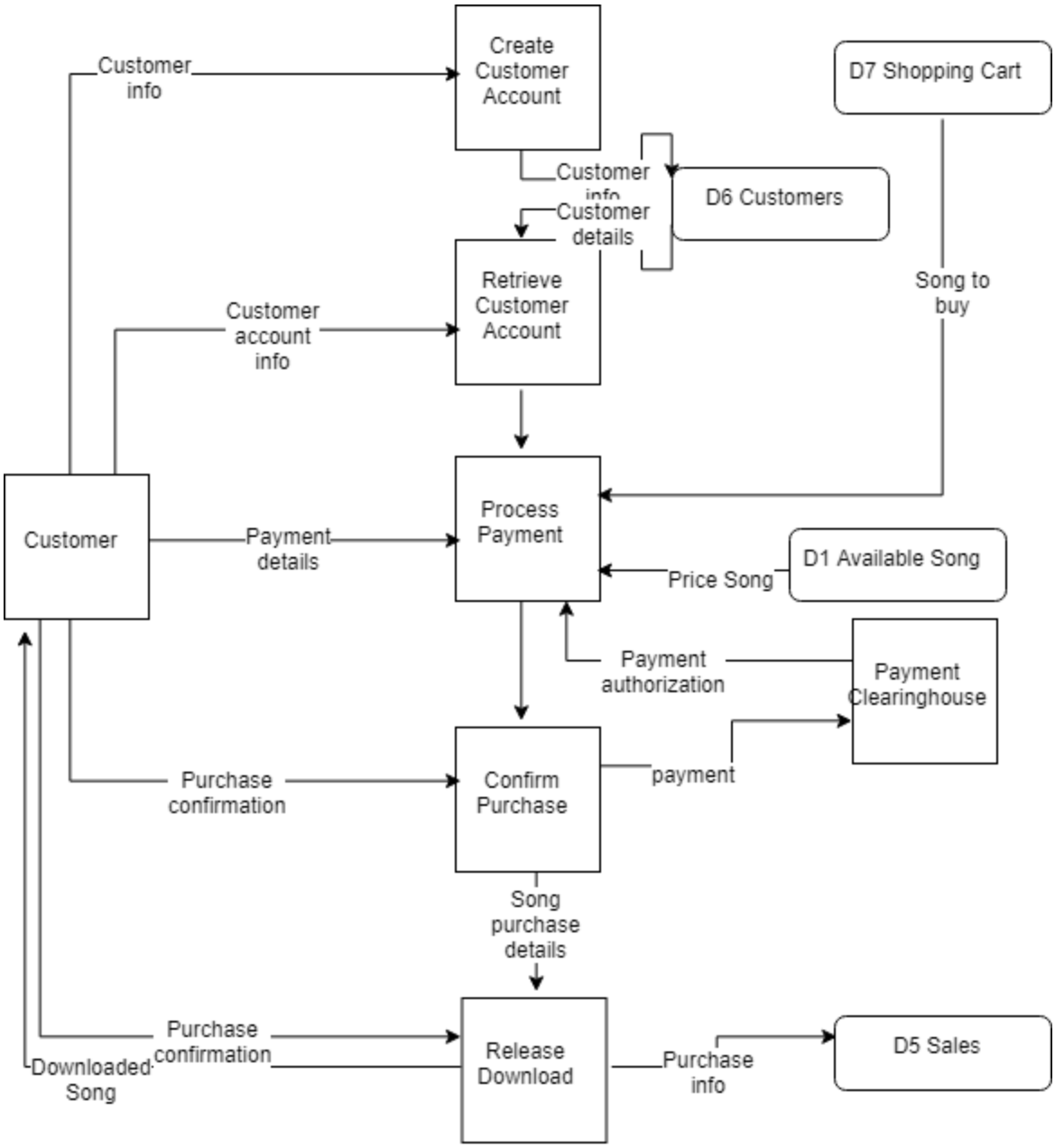

Figure 5: Level 1 DFD for Tune Source : Purchase Song

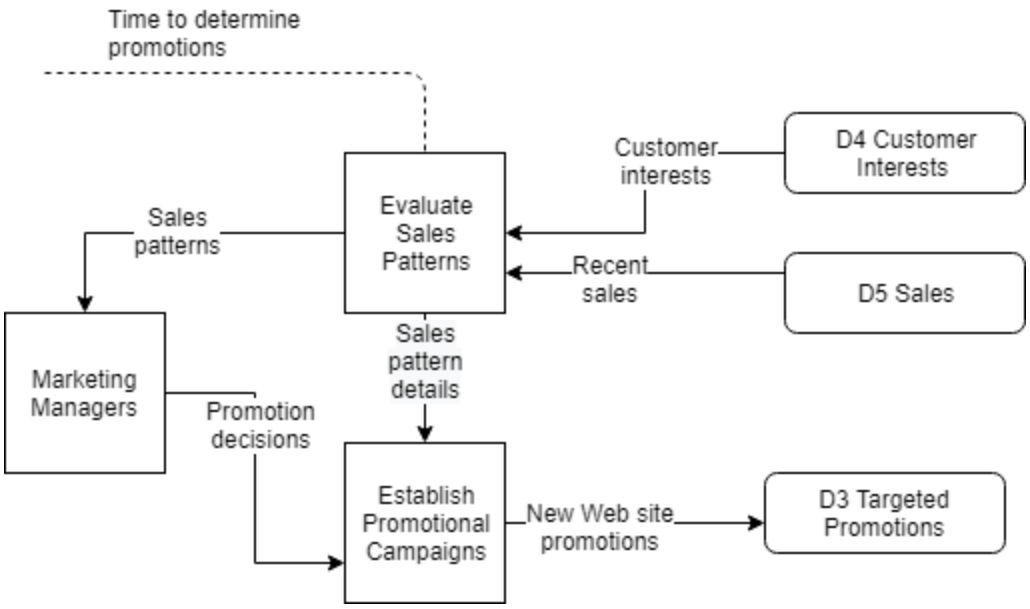

Figure 6:Level 1 DFD : Promote Song

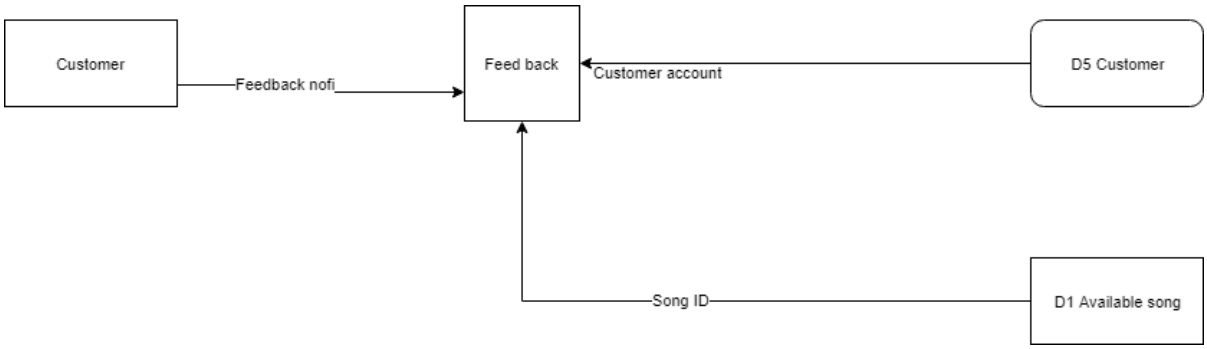

Figure 7:Level 1 DFD : Feedback

V. Software quality implement

1. Function of search

a. Interface

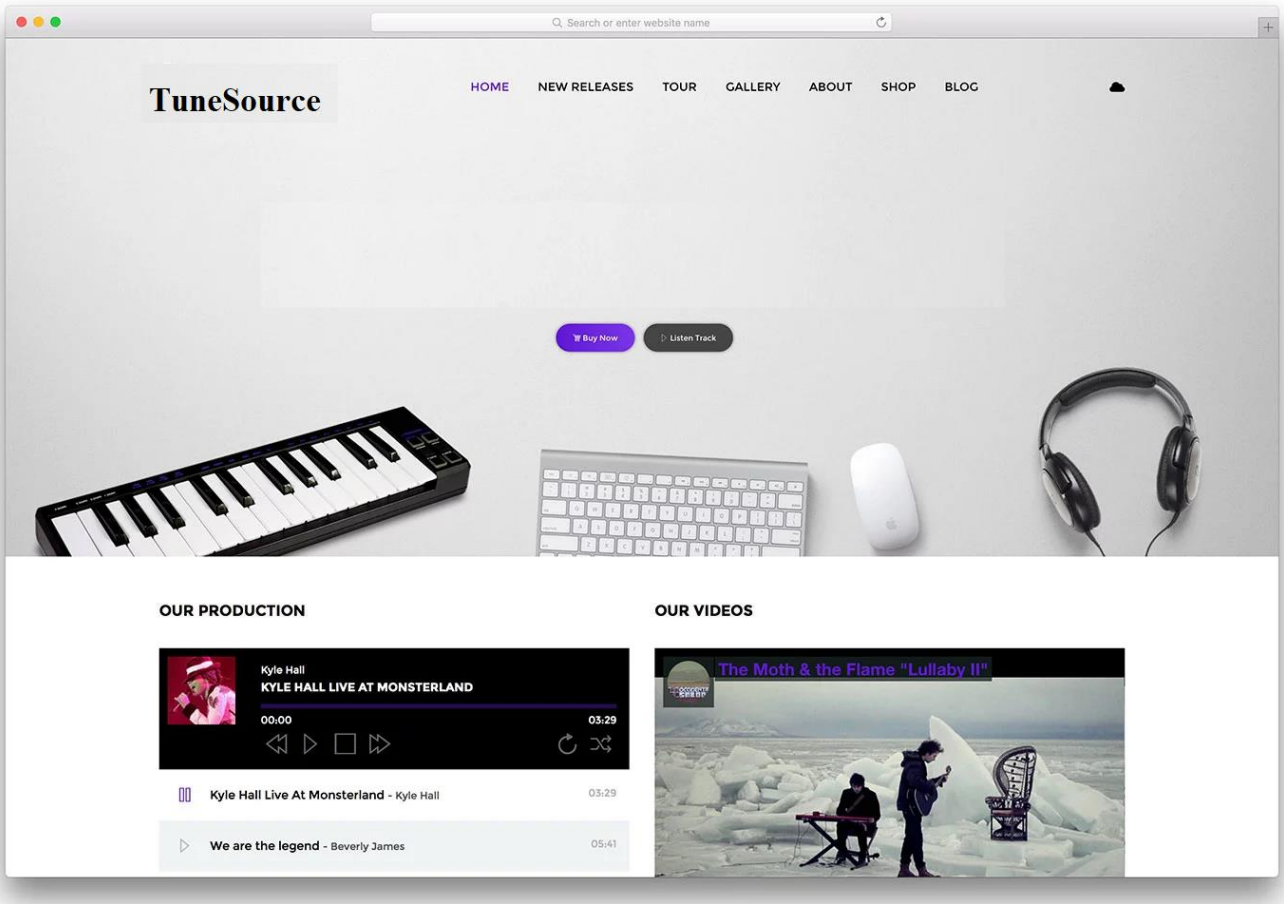

Figure 8: Search interface

b. Flowchart

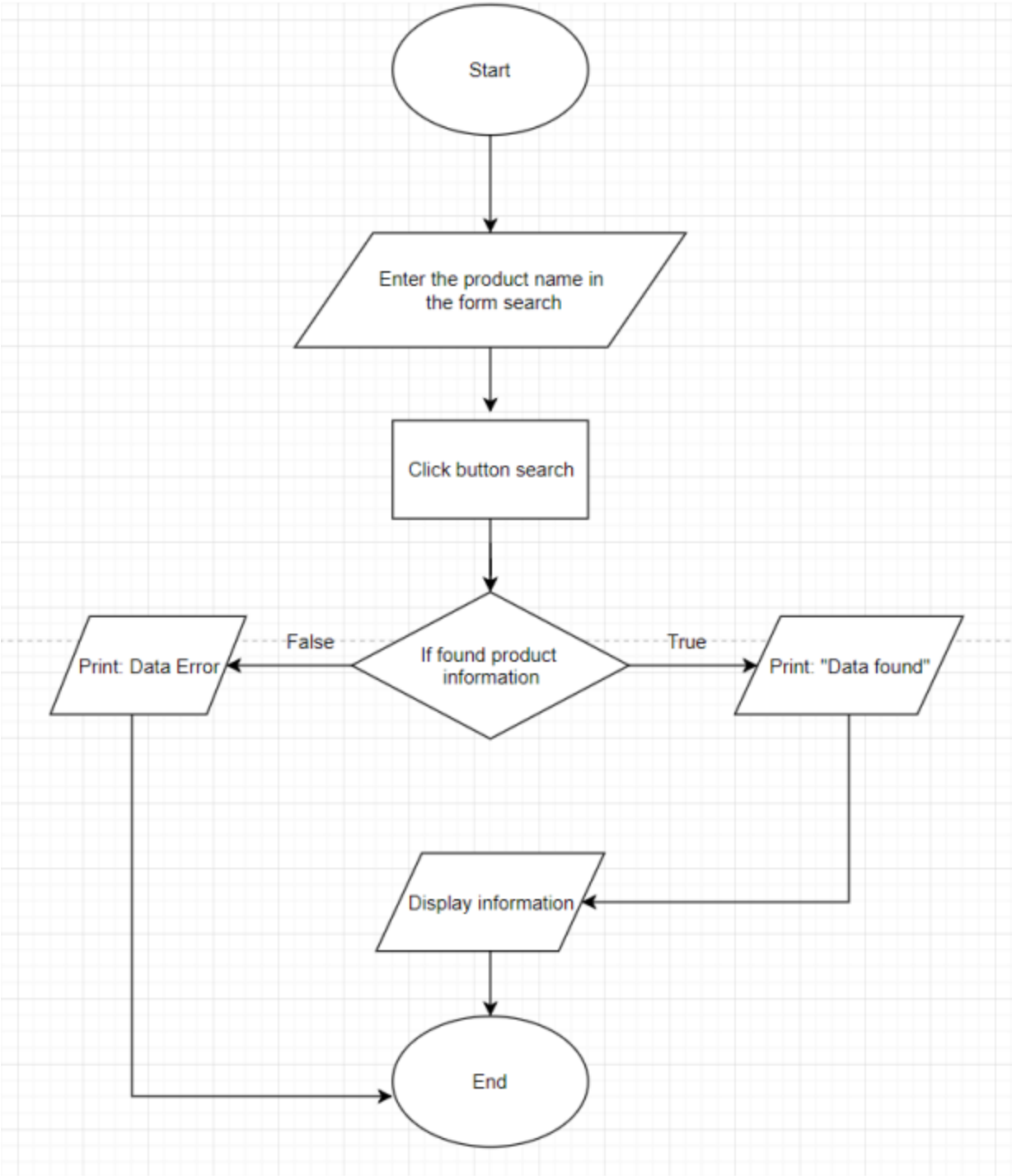

Figure 9: Flow chart for search

c. Code Search function

After make dataflow I will use pseudocode to make Tune Source search function:

1. Initialize program(process)
2. Enter variable(input)
3. Found information of product(process)
4. If information not available, go to step 5(I/O)
   If information available send information product for display(I/O)
5. End process.

Search function for the system:

```
Search function for the system:

String SongName;
String QueryCountSong = (select count ([TUN_ID]) from [available tune} where [TUN_ID] = '" SongName"');
int CountSong = Query(QueryCountSongs);
if (QueryCountSong >= 1)
{
Show songs;
}
else
{
display" No songs found";
}
```

Figure 10:search function for Tune Source

After make dataflow I will use code to make Tune Source search function:

Figure 11:Value after process

2. Functional testing

Functional testing is a process of quality assurance and testing methods that depend on the software and testers choose. This article will talk about White box and Black box.

Black box testing is a method of software testing that, when testing the functions of a software, testers do not care what is inside and how it works. Black box testing does not concern the internal as code ... With Black box testing, a series of test objects include functions, modules, or a functional system. With the test not interested behind the interface rather than what's inside the code line. Tester does not need to have knowledge

of coding, system architecture, nor programming. The tester's job is to determine if the testing functions are appropriate for the user and the requirements are given. (Bentley, L. D., et al., 2000)

The **white box test** in contrast to the black box test method is a software testing method in which code structure testing, internal designs are work to be done. In particular, the tested component is the code, the architecture inside a software. Testers must have code experience as well as know how to design the system to be able to do this work. When writing a test case, it will rely on the Source Code requirements and content, use the supported framework to find the software debug. (Bentley, L. D., et al., 2000)

In my personal opinion, applying Black box testing to Tune source will help test the functionality and will help find the software shortcomings to the above mentioned requirement.

Finally, I will test and create the test case as follows:

Number	Function	Input	Test types	Expected results	Actually Result	Status	Note
1	Search function	Input value: Shape of you	Normal	Shape of you	Shape of you	Pass	
2	Search function	Input value: SHape of you	Normal	SHape of you	Shape of you	Fail	Fail but good because result the same with relevant
3	Search function	Input value: Shape ò you	Invalid	Shape ò you	Not have result	Fail	Fail but good because result

							the same with relevant
4	Search function	Input value: Shape you	Invalid	Shape of you	Shape you	Fail	Wrong song
5	Search function	Input value: Of you	Invalid	Shape of you	A lot of value relate to Shape of you and include Shape of you	Pass	

Conclusion

After this essay, I have shown you how to choose a method to create a requirement. In particular, having the functional requirements of uncertainty and functionality helps to complete a project lifecycle management. In addition, the use case, diagram, and UML help describe the system. The implementation of the software selected one of the two methods to suit Tune Source. The report showed how to do and write a case test to show how to test a system's functionality.

References

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Adams, K. M., 2015. *Nonfunctional requirements in systems analysis and design (Vol. 28).* Switzerland: s.n.