UNITED STATES AGENCY FOR INTERNATIONAL DEVELOPMENT

SOFTWARE DESIGN DOCUMENT

GIFTED

Revision 1.3

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Revision History

Version	Names	Change Motives	Date
1.0	Mohammad Hannoun	Initial Revision	April/01/2022
1.1	Mohammad Hannoun	Adding the development parts	April/25/2022
1.2	Mohammad Hannoun	Editing wireframes, and mockups	May/02/2022
1.3	Mohammad Hannoun	Adding the testing, and implementation stages	May/30/2022

Approved By

Name	Signature	Department	Date
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1. Introduction

   1.1. Overview

   This software design document (SDD) is about an application that was agreed to be called **Gifted,** which has been chosen among other ideas by me to meet the demands of the United States Agency for International Development, which is an international organization that focuses on supporting refugees, which has requested constructing an application that enhances refugees' lives with its services.

1.2. Purpose

The purpose of this software design document is to provide a detailed explanation about the project including how it was planned for, analyzed, and designed, taking in consideration continuous feedback from clients and stakeholders, till that idea turns into a tangible product that is built, tested, and employed. Consequently, providing developers with a reference that they can rely on while constructing the application in a form that is functionally, and non-functionally satisfying for the stakeholders, also, providing a clear, and clean roadmap with common vocabulary, where each knows what to do. However, this document is produced for technical purposes, and so for technical staff.

1.3. Project Scope

Refugees have been given food, tuition, and shelter, but their talents, and dreams were forgotten. Consequently, this software "Gifted" came along to support youthful refugees, including both males, and females achieving their dreams that are interrelated with their talents, by providing them with the ability of showing those talents, and so they are viewed by the parties who are concerned with that talent. However, it is expected that some of the targeted people may not have the needed passion, and belief in the application in the early stages of it, but it is also expected to have some others who have more than the needed, whom we depend to inspire others. Moreover, the problem that faces refugees in Jordan that they are refugees (The goal is not racial segregation), which means that have almost no political role in Jordan, which can highly limit people with political gifts from contributing, keeping in mind that those can be such a valuable sample by taking part in those refugees' support organizations. As a consequence of having the software, refugees will be able of showing their talents, and have someone who will embrace them, which will enhance refugees' lifestyle which is catastrophic, also, organizations which will take care of those talented people will be able of making more success, and profit as well, so it is a reciprocal relationship. In addition, refugees who have lived in poverty, and bad shelters, and had chosen to take advantage of their talents so they had made success, will feel with other refugees who are still suffering, and living their previous situation, which will lead them to help them. Consequently, the United States Agency for International Development goal's which are enhancing refugees' lives, lifestyle, and supporting them so they are treated like normal people, will be achieved.

1.4. List of Abbreviations

- All the abbreviations that have been used in the document are listed in the below table:

Table 1-List-of-Abbreviations

Abbreviation	Meaning
SDD	Software Design Document
USAID	United States Agency for International Development
MD	Ministry of Social Development
SDLC	Software Development Lifecycle
UI	User Interface

UX	User Experience
IT	Information Technology
UML	Unified Modeling Language
ERD	Entity Relationship Diagram
XML	Extensible Markup Language
SEO	Search Engine Optimization
RAD	Rapid Application Development
FD	Full Development
NC	No-Code
LC	Low-Code
CP	Customization of a product
CG	Code Generation

2. Overall Description

2.1. Problem Statement

*This section talks about the problem deeply, and how it was solved by the idea of the project briefly.

Refugees in Jordan has been provided with the necessary, and fundamental elements that keep them alive, like food, work, shelter, medical care, and all other services that guarantees them being alive, but is that enough? Is it all they need?

According to Maslow's hierarchy there are five basic needs for each human, as the following figure shows:

Figure 1- Maslow's-Hierarchy

As a result of satisfying the physiological, and safety categories partially, three remains unsatisfied for refugees, but is there a way of providing the above three? The short answer of this question is yes, but how?

Refugees are humans as well as the rest of us, which means that they have the right of having dreams that they believe will get them somewhere better, however, according to a recently made study there are more than 750 thousand refugees in Jordan. Consequently, there are more than 750 dreams that may have not been achieved, also, having such a huge number of people rises a question, what about the talented people among those refugees, and what about their talents, will it get wasted? Will they use it? Will the local, and outside communities touch the effect of their talents? Or will anybody even know, or care to know about it?

Being refugees surrounded by nobody who cares enough about their talents, and dreams kills them, and makes them slaves for work, and humanitarian aid. However, in order to help refugees free their talents, and achieve their dreams, the idea of "Gifted" came along, so they can share, and show their talents, and skills to the outside world, which may be third parties, like organizations specialized in what those refugees are talented with. All in all, when refugees show their talents, and assuming that they were noticed by some party, what will be the effects?

The mentioned unsatisfied categories of Maslow's hierarchy will be met. Firstly, when they get noticed the fourth, and fifth categories which are esteem, and self-actualization will be met, as a result of having increased confidence in themselves as success is achieved by them (esteem), which will push them to be the best of what they can be (self-actualization). In addition, the third category which is love and belonging will be met as achieving success, and having enough money hugely affect having better, successful, and stable relationships.

2.2. Proposed Solution
2.2.1. Project Idea

Gifted is an application that allows refugees of sharing their talents with the outside world via videos, the application will contain categories according to which talents are categorized which are sport, voice, speech, mathematics, cooking, technology, and others where non-categorized talents will be uploaded. Also, the application will facilitate the process of showing those talents to the outside world, which means that other people can view the uploaded content, and so contact them if they were interested in their talent. Moreover, any refugee will be able of having an account on the platform, and so he/she will have their personal accounts where they can specify their contact information and upload content. All in all, by giving refugees the opportunity of showing their talents any third party that may have interest will contact them separately by viewing the contact information, and contacting them, which will give them a chance to succeed and use that talent properly so they can enhance their lives, as well contributing in the local, and global communities.

2.2.2. Stakeholders

Definition: Stakeholders are any individual, group, or party that may have any interest in the project, and that may affect or be affected by the project.

Types of stakeholders:

Internal stakeholders: People who are directly working with the company, and they are highly concerned about the performance of the company as it may have a significant impact on them.

External stakeholders: People who are not directly working with the company, but they can somehow get affected by the company's decisions, and actions.

Application (Gifted) stakeholders:

- **Customers**
  - **Ministry of Development:** The application will focus on talents, and was requested to be built by the USAID, and so the MD who is the customer that has taken care of building the application will be hugely affected by the application whether it hits, or fails, as the USAID may take a bad picture of the MD if the application was not developed, or designed as wished. Also, the demands, and constraints that are set by the MD may affect the project, and limit its performance.
  - **Refugees:** refugees will be affected by the application, as the main goal of it, is to make use of their talents, and so providing them with success. Moreover, they can affect the application as they may not have the enough courage, and willpower to try the application, which may highly lead it to failure as it is not used.
  - **Third Parties (Communities):** People from different places over the world, and especially those who have access to resources, like organizations may affect the success of the project if they didn't take the idea seriously, and didn't dedicate some of their resources to take advantage of the talents that are shown by the refugees using the application.
- **Employees:** The employees that are working on the project may affect having an appropriate suitable to requirement, and easy to use application, according to their size, experience. Also, managers may affect the project if they had any conflicts, or misunderstandings that may lead to having issues with the final product. Moreover, the size of the project in relation to the deadline may affect employee's lives, and health.
- **Investors (USAID):** The amount of money that is funded to the project will highly affect the project, as it will define the amount of resources that can be used to get the final product. Also, the fund dedicated in relation to the expected deadline may affect the project, however, the requirements that are set by the USAID may be conflicted with some of the laws in Jordan, which will also affect the project. All in all, they can be affected by the project if it was launched successfully and got good feedback.
- **Government:** The Jordanian government may affect the project as they may have some guidelines about the political role of the refugees in Jordan, which will indeed require the application not to have them at all.

2.2.3. Actors

Definition: A person, organization, or third party system that may interact with the system.

Applications Actors:

- **Users:**
  - **Refugees:** They will be the main user of the application as they will upload videos, and show other videos that are uploaded by other refugees, which will encourage them of uploading more, and more, also, they will learn from each other.
  - **Other People:** They will watch the uploaded content on the platform, and so they can view all the content, as well the contact information of each content creator on the platform.
- **MD database:** An integration with the MD database that holds all the ID of the refugees, as the signing in or up to the system is only available to the refugees.
- **Online Server:** The application will be uploaded to an online server that will handle the requests from users, also, it will help publishing the application online, as it will hold the files of the application.

2.3. Areas of Risks

- Time Shortage: If the time set by the MD, and the USAID to finish the project was tight, and a lot of features were required to be implemented, this may lead to two cases, the first is finishing the project without giving it the suitable testing, and development time which may lead to having an unacceptable version of the application which may have a lot of bugs, and the second case is not being able of finishing the project at all, and needing more time to finish it.
- Conflict: If any conflict happens among the employees, MD, or the USAID, the project may not be finished in the deadline, as more conflict means needing more time to solve that conflict, whatever it was about the technical or the policies that are about the project.
- Lack of Resources: if the fund that is dedicated to the project was not enough that may lead to having troubles finishing the project as the fund is one of the main elements needed to have talented, and experienced staff.
- Feedback: Refugees will be the main character in the story, and so they are the target audience, and if they refuse, or cooperate to give feedback by not considering the idea of the project as important as it is, the lack of feedback may highly, and seriously affect completing the project in an appropriate way, but why won't they collaborate? It is known that no one sees what he/she can't see, and so as they are in a tough situation where they are struggling to have the basic elements of living which are food, and shelter they may not be able of even understanding that this project may be a life-changing idea, as they are blinded by their needs.

2.4. Product Overview

2.4.1. Functional Requirements

Table 2-Functional-Requirements

Requirement	Description	Priority (High/Medium/Low)	Benefit	Penalty	Risk (1-9)
Login to the system.	**ONLY** refugees **MUST** be able of logging in to the system using their email, and password.	HIGH	By logging in to the system refugees will be able of adding content to the system.	By not implementing this feature the whole system will collapse as it mainly depends on being refugees able of uploading content.	9
Signup to the system	**ONLY** refugees **MUST** be able of signing up to the system using their ID, first name, last name, birth-date, phone number, and password, also, a check on the MD database will be made to verify that they are actual refugees.	HIGH	By signing up to the system refugees will be able of having a personal account on the platform.	Not implementing this feature will lead the project to failure as refugees won't be able of joining the community that is made especially for them.	9
View Personal Account, and personal content.	Refugees Must be able of viewing their personal information using which they have signed up, also, they should be able of viewing the content they have uploaded.	Medium	By viewing their information, and content refugees will be able of checking the correctness of their information	Not implementing this feature will prevent refugees from checking their personal data.	7
Uploading content	Refugees Must able of uploading content after signing in to the system, by choosing the category to which their content belongs, and then providing description of the video, and finally uploading the video.	High	This is the main feature of the system, and it will provide refugees with the ability of showing their work to the outside world.	Not implementing this main feature will lead the application to failure.	9
Updating personal information	Refugees should be able of updating the information using	Medium	Refugees can check the correctness of	Not implementing this feature may prevent refugees, and	7

	which they have signed up to the system.		their information, and also update any of their information if any of it has changed in the real world.	interested parties from contacting the content creator.	
Deleting uploaded content	Refugees Must be able of deleting videos that they have uploaded to the platform, using the id of the video.	Medium	If the content creator has changed his/her mind about the video he/she has uploaded, he/she can easily remove it and make something better.	Not implementing this feature may lead to have duplication in content as the content creator may upload the same video he/she has filmed over, and over again.	8
Viewing content, and contact information	Other people, who are not refugees, must be able of viewing the uploaded content to the platform by category by showing them the recent uploads in that specific category. Also, they should be able of viewing the full name, email, phone number, and the uploaded content by a specific creator by clicking on his name.	High	Content creators will get contacted perfectly using this feature.	Not implementing this feature will prevent refugees from getting contacted with and so uploading content for no meaningful reason.	9

1.   Use Case Diagrams

The Below image shows the use case diagram of the Gifted software:

Gifted Video Platform System

Login to the system

Sign Up to the system

Verifying that the id is a correct Refugee ID

<<include>>

Ministry of Development Database

Refugee

View Personal Account

<<include>>

Viweing the contact information of the creator

<<include>>

View the videos that have been uploaded by the creator

Uploading Content

Other People

Update Personal Information

Deleting Uploaded Videos

View Uploaded Content by category.

<<include>>

Viweing the recent uploaded videos in a specific chosen category.

View the contact information, and uploaded videos of a creator

<<include>>

<<include>>

View the videos that have been uploaded by tht specific creator

View the name, email, and phone number of the creator

Figure 2-Use-Case-Diagram

2.4.2. Non-Functional Requirements

- Capacity, and Reliability: The system will experience huge amounts of data as the main uploaded content is videos and its size is huge comparing to other types of data, so the system should be able of working under heavy usage.
- Availability: All users of the system should be able of accessing the system all around the time without confronting any technical issues.
- Security: The system must be secure, and so the personal information, like ID, and password of the refugees is not exposed to the outside world.
- Maintainability: The system should be easily maintained for future enhancements which means that good coding practices must be used, as well as having good documentation.
- Portability: The system should be portable and so can be used using a laptop, phone.
- Usability: The system should have a friendly, easy to use interfaces, so anyone can interact with the system regardless what their age, or level of education is. Also, users should be able of scrolling between videos smoothly.
- Speed: Recent uploaded videos must be rapidly added to the specific category it belongs to, with a maximum of 10-20 seconds of latency after the successful uploading of the video. Also, logging, and signing up to the system must be as fast as possible.

3. Design

3.1. Design Overview

At this stage the feasibility, and requirements gathering stages have been completed, and so it is time to know how will the application be designed, however, it is important to note that the word design here doesn't mean the UI of the application only, but it does include the design of the database (ERD), and the back-end (UML), also the design methodologies that are implemented will be discussed.

Firstly, the design methodologies used to design the UI are the following:

- Sitemaps, which shows the work-flow of the application, and clearly shows the pages of the application, as well as its sequence.
- Wireframes, which are used to present a low-fidelity design of the pages of the application.
- Mockups, which are used to present the medium-high fidelity design of the pages of the application.
- Prototypes, which are used as a simulator to the real, code-implemented application, and so provides stakeholder with flexibility of changing things, as feedback is gathered by them, however, it will not be used as the, budget, and the deadline of the application are so tight, and the team working on the project have prior experience with this kind of applications.

Secondly, as the application development process passes through different stages, and it highly depends on the SDLC, the design process should include the UI, and UX details, however, shortly the UI is the sequence of pages that is well-designed, and the UX is the impression left in the user by using that well-designed pages, however, in the following context the difference, and importance of the UI, and the UX will be discussed.

When creating an application regardless it was a web-based, desktop, or mobile application, users have to use a set of pages through which they can interact with the system. Earlier, computers had a very basic, and complex interfaces, and users of computer had to have coding skills in order to interact with computers, consequently the usage of computers was limited to those who have coding skills. Consequently, computers manufacturers had to make user-friendly interfaces that enables anyone of using their computers, and so the evolution of computers has started. The interfaces that were made are called UIs through which pages of an application are designed in order to server a service to users. As a consequence, UIs is the process of designing the interfaces that are used by users, which eases the process of using that application, and allows anyone of using them, however, how will users feel while using, and after using those pages?

Here comes the role of UX which focuses on providing the users of the application with an excellent experience, however, in order to be able of providing users with an unforgettable experience, the UX process focusses on understanding users' needs, desires, and expectations of using the application. Consequently, both of the terms completes each other, also, it is important to mention that UI is especially about the design of the interfaces of the application, and the UX is about the experience of the user using any service in the world which may not even be related to the IT industry.

Thirdly, after knowing how will the interfaces be like, it is very important to have a high-level view of the architecture of the system, and here where the UML part shows. In addition, UML diagrams are diagrams that can be made as a documentation before writing the back-end code to visualize the architecture of the system, or as a documentation after writing the code. However, UML diagrams allows teams, and people which may not be related to the IT field of having a high-level overview of the system which highly helps them understanding the system in the shortest time.

Fourthly, where will the data of the system be stored? And how? What are the relationships between system's entity types? And what are the attribute of each of them?

The data of the system will be stored in a database where there are tables holding different attributes in a relation to the entity type. However, in order to implement a well-functioning database, the design of the database should be implemented earlier. Consequently, ERDs are used to show the entity types of the database, as well their attributes, and the relationship between each of them, which highly helps when implementing the database.

All in all, using the above mentioned methodologies, UML diagrams, ERDs, and being able of differentiating between UI, and UX, will indeed facilitate the process of designing the application as each part describes a specific part of the software, which will also ease the process of delivering a high-quality software. Also, having them facilitates the maintenance process of the project as a result of having a very good documentation that will serve both of current, and future employees working on the project by having a high-level overview of the design of the application.

3.1.1. Design Techniques Comparison

As it was mentioned in the above section, there are four different types of design techniques which are sitemaps, wireframes, mockups, and prototypes. However, in order to know what each differs from the other a comparison should be made, and so the following will demonstrate the definition, usage, and an overall comparison among all of them.

- Definitions:
  - Sitemap: A model or blueprint that is made to help showing the hierarchal sequence of the pages of the website, which can also be as an XML file which is used to help search engines indexing the pages of the website, and so support the SEO of the website.
  - Wireframe: A low-fidelity skeleton that is usually black, and white colored, and used to show the structure of a web page by showing the main, and basic contents of the page.
  - Mockup: A medium to high fidelity design that shows the pages of the website as it will look like in the final implemented version of the product, which means that it will contain colors, and shapes, consequently, the look of the pages will be set.
  - Prototype: An **early** model of a system, or software that usually **simulates** the basic functional, and non-functional requirements of it for **testing**, or **demonstration** or **development process** purposes in order to get an early feedback from end-users, and stakeholders, **rarely**, it may include the **whole** functional, and non-functional requirements of the system. Moreover, it is important to know the origin of the word prototype, and the below points demonstrates:
    - *Prototype* is a word that comes from Latin origins, and the following demonstrates:
      - *proto***:** which means **original**.
      - *typum***:** which means **model** or **form**.

Overall, as it was declared above we can conclude that sitemaps, wireframes, and mockups are static models, as they do not simulate the code-implemented application, and the prototypes are dynamic models as they do simulate the functionality of the application. Moreover, in the sitemaps the sequence of the pages is shown regardless to the structure of them, but it does show the relationship between each page, and the another as a parent-child relationship as a static model, whereas wireframes are concerned with the basic structure of the website's pages regardless what are the colors of the included elements in the page, and regardless to the links among the pages also it is still static to this point as no interaction is possible. In addition, mockups are concerned with the final look of the page of the website, as the structure of the page's elements has been set, mockups role is to set the look of the page, like colors, font type, and shapes, also it is still static to this point as no interaction is possible, however, after setting the look of the website, it is time now to know how will it function, and here comes the role of the prototypes as they will provide us with the ability of simulating the final product, by having an interactive interfaces that look exactly like the final product's interfaces, also, using prototypes there will be interaction, and the functionalities that is possible to be performed will be simulated using them as well, which means that only prototypes are dynamic models, moreover, it is important to note that sitemaps, wireframes, and mockups will be used in this project, and prototypes will not be used as the, budget and the deadline of the application are so tight, also, the team working on the project have prior experience with this kind of applications.

3.1.2. Design Tools

Table 3-Design-Tools-Comparasion

Tool Name	Usage	Advantages	Disadvantages

GlooMaps	**Only** creating Sitemaps	-Free to use -Ability of saving work. -Easy to use, as the tool is especially made for creating sitmaps and there is small number of interfaces. -Adding a page whether it was in the same level, or in a sub level, to the map is achieved only by one click. -Ability of coloring map. -Ability of showing the drown diagram in different views. -Ability of exporting the sitemap in different forms which are XML, png, and pdf. -Providing users with a tutorial that shows them how to use the tool.	-Can't work on multiple sitemaps within the same page. simultaneously, as you need to open a new window for each one. -Doesn't save the work automatically, and you have to save the work and then you can export it. -No ability of importing existing sitemaps. -Cannot be used without an internet connection.
Justinmind	Creating wireframes, mockups, and prototypes.	-There is a free version which includes some of the functionalities of the tool. -Ability of creating wireframes, mockups, prototypes on different devices, like laptops, mobile phones,	-In order to have the full access to the tool users have to pay a certain amount of money, so it is not completely free. -As it may be used for different design techniques, the interfaces are a little bit complex, and may need

		tablets, and other devices. -Provides the drag and drop property. -It is a desktop application, and so it can be used offline (some of the functionalities). -Easy usage. -Ability of working on multiple project simultaneously. -Provides the layering property which help in showing all the different layers in a page, and so managing their appearance. -The screen of the project can be added with a click, and they are created in the same page. -Provides a huge set of icons, shapes, and elements that may be used in a webpage. -Ability of providing comments, and reviews. -Ease of saving, and exporting work, as well as the ability of exporting the work in different forms.	some practice, or training to start using them smoothly. -As there is a huge number of elements, searching for a specific element may consume a lot of time.

		-Provides the interaction, and linking properties. -Ability of importing external resources, like images.	
Drawio	Creating sitemaps, and wireframes.	-An online tool that is completely free to use. -Easy to use, as there are limited number of already-made elements. -Ability of exporting work in different forms. -Work is usually saved automatically, also, the software holds the projects that you have worked on and have not been exported yet. -Does not require any storage on the device you are using to create sitemaps, or wireframes, as it is an online tool. -Easy to be used. -Flexibility. -Ability of importing previous work, and continue working on it.	-The software is easy to be used, but it does not provide a huge number of already-made elements that may be needed to create a wireframe. -Does not provide the layer property explicitly, using which elements can be shown above or below each other easily. -Wireframes are not considered screen, and they are just a huge rectangle container that includes different elements. -Does not provide multi-device wireframes. -Cannot be used without an internet connection.
Adobe XD	Creating prototypes.	-Provides different set of devices to make the prototype on, like laptops,	-The tool requires a credit card to get the 7-days trial, and after that a subscription

		phones, and tablets, as well as customized option. -Provides users with a tutorial for using the software. -Provides the drag, and drop of elements property. -Provides the ability of adding medium-complex functionalities. -Provides interaction, and linking properties. -Provides collaboration feature.	should be bought, so it is not free. -Difficulty of adding animated UI. -Some of the most used, and key elements were hidden in menus, so it is time consuming to look for them each time you want to use them. -It requires some practice, or training to start using it smoothly.

1. The preferable design tools and techniques

   The design techniques that will be used in the project are sitemaps, wireframes, and mockups. However, the following shows the reasons for choosing the above techniques, and the preferable tool that is going to be used:

- For the sitemaps, it is going to be used as it will give us a clear blueprint of the hierarchal sequence of the pages, which will highly help in not missing, or forgetting any page of the website by developers, also, it will help identifying the work flow of the program as each page will show the pages it contains, or leads to as a parent-child relationship. Moreover, Sitemaps help in indexing the pages of the website by search engines which is needed to ease the process of accessing the website by refugees.\
    o Preferred tool: **GlooMaps**
        ▪ Why? The tool is completely free to use which saves resources, and the application has few number of pages which eliminates the saving disadvantage that was mentioned above, as the sitemaps will be created in a really short time, and maybe only in one shot. Moreover, using this tool is easy, and does not require a special training which highly saves time, also, this tool enables the user of exporting the map in an XML form which will be used with search engines to help indexing the pages of the

website, which also saves time, instead of using another tool to get the map in an XML format.

- For the wireframes, it is going to be used to design the basic elements of the pages of the website, and so identifying the elements of each page as wireframes is concerned with the structure of the pages, also, wireframes will be used to check if there is any functionality that is not contained by the system which will indeed help in having all the requirements included in the design of the page. Additionally, wireframes will help us getting a basic view of the structure of the page which will help us notice any forgotten elements that was not even included in the requirements. All in all, by following this technique we will get structured pages that can be easily designed in the mockup stage.
- For the mockups, after structuring the pages of the website, it is really important to know how each element of the page will look like, which will highly lower the time, and resources needed to change the design of the elements instead of changing them continuously in the construction stage. In addition, in this stage the shapes, colors, fonts, spaces between elements, and other details will be included, also, pages will have content that statically simulates the content that is expected to be included in the constructed application, which provides us with a clearer picture of how will the final product will look like.
  - o Preferred tool for both wireframes, and mockups: **Justinmind**
    - Why? Despite being this tool partially paid, the tool is very easy to use if the user has IT related experience, also, this tool will help us create wireframes, and mockups on different devices, which will indeed help in the responsive design phase. Moreover, this tool can be used without an Internet connection which will be a plus, also, this too provides the ability of saving the work, and then importing saved work which will help in the process of changing things as changes will be made on the previous version of the wireframes, or mockups which in contrast saves time instead of recreating them from scratch. Additionally, this tool provides us with the ability of importing external resources, or elements which will hugely help in the mockup process, as it highly depends on having content that simulates the content that will be included in the constructed application, also, using this tool's elements can be easily colored, and shaped which is an important functionality for creating mockups as element must be colored, and shaped, and for creating wireframes as elements should be in black, and white. All in all, by providing a huge number already-made icons, shapes, and other essential website's components a lot of time will be saved, instead of importing the desired shape, or component and then using it in the tool, also, the tool provides a huge set of fonts along with a lot of properties, which will help in finding a suitable font, and color, instead of importing external font which may be even paid.
- For the prototypes, as the team working on the project has prior experience with this type of projects, and to save time, and resources, the prototyping technique will not be used.

All in all, it is important to note that the sequence of the design techniques is as follows:

1- Sitemaps
2- Wireframes
3- Mockups
4- Prototypes

3.2. High-Level Design (HLD)

3.2.1. Sitemap

The below image shows the sitemap of the project:
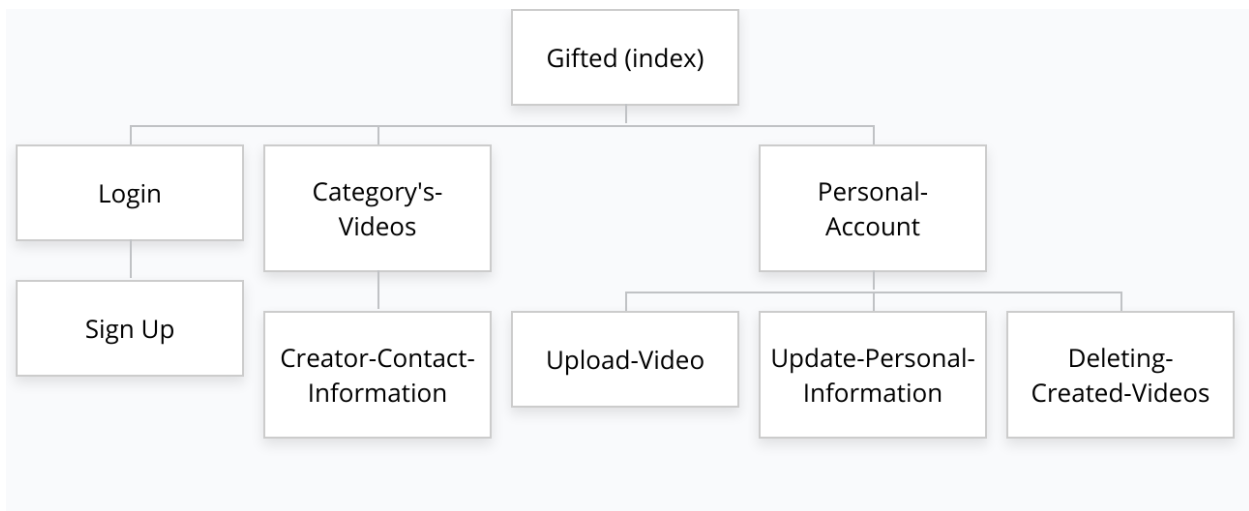
Figure 3-Gifted-SiteMap

3.2.2. Wireframes

The below images, show the wireframes of the website:

1- The index page of the website that everyone will have access to:

Gifted

Logo →

Logo

Personal Account

Category Name	Category Name	Category Name	Category Name	Category Name	Category Name

Recent Uploaded Videos

Created By: Creator Name

Video →

Description:

Created By: Creator Name
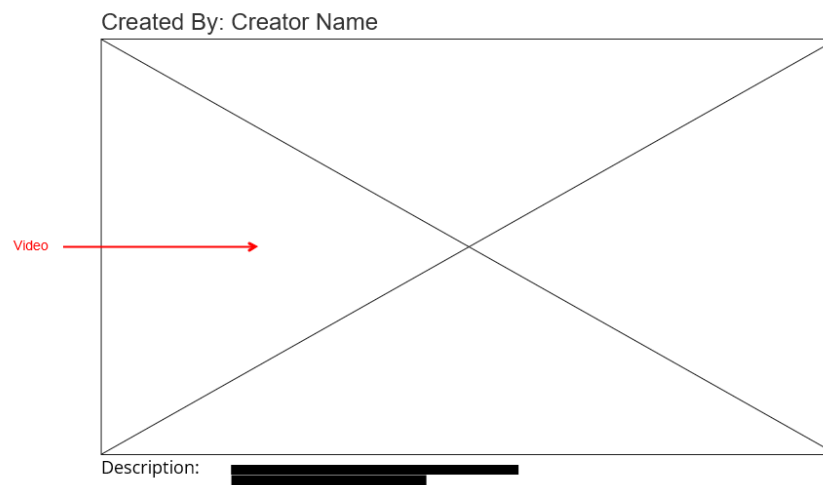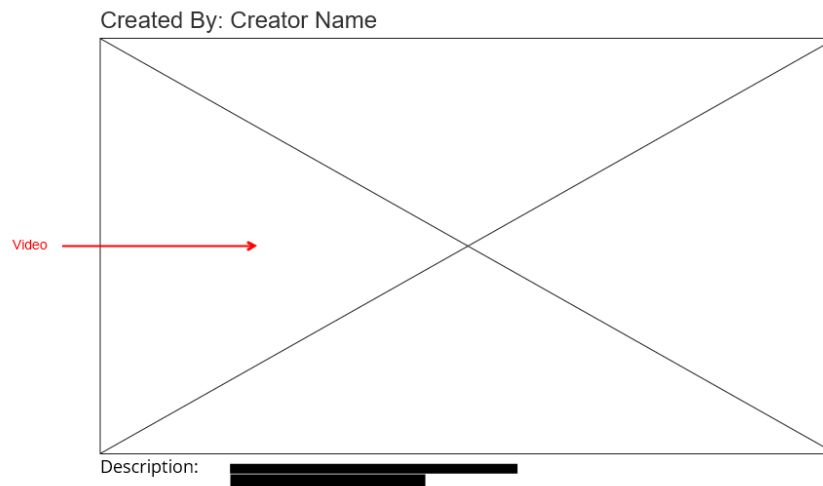
Video →

Description:

Figure 4-index-page-wireframe

2- Page of viewing videos by category:

Gifted		Logo →		Logo ↑ Personal Account	
Category Name	Category Name	Category Name	Category Name	Category Name	Category Name

Category Name

Created By: Creator Name

Video →

Description:

Created By: Creator Name

Video →

Description:

Created By: Creator Name

Video →

Description:

Figure 5-videos-listing-wireframe

3- Page of viewing creator's contact information, and uploaded content (can be accessed by any user of the website):

Gifted

Logo

Logo

Personal Account

Logo

Full Name : Mohammad Hannoun

Phone Number : 07xxxxxxxx

Email : puplisher@email.com

Uploaded Videos

Video
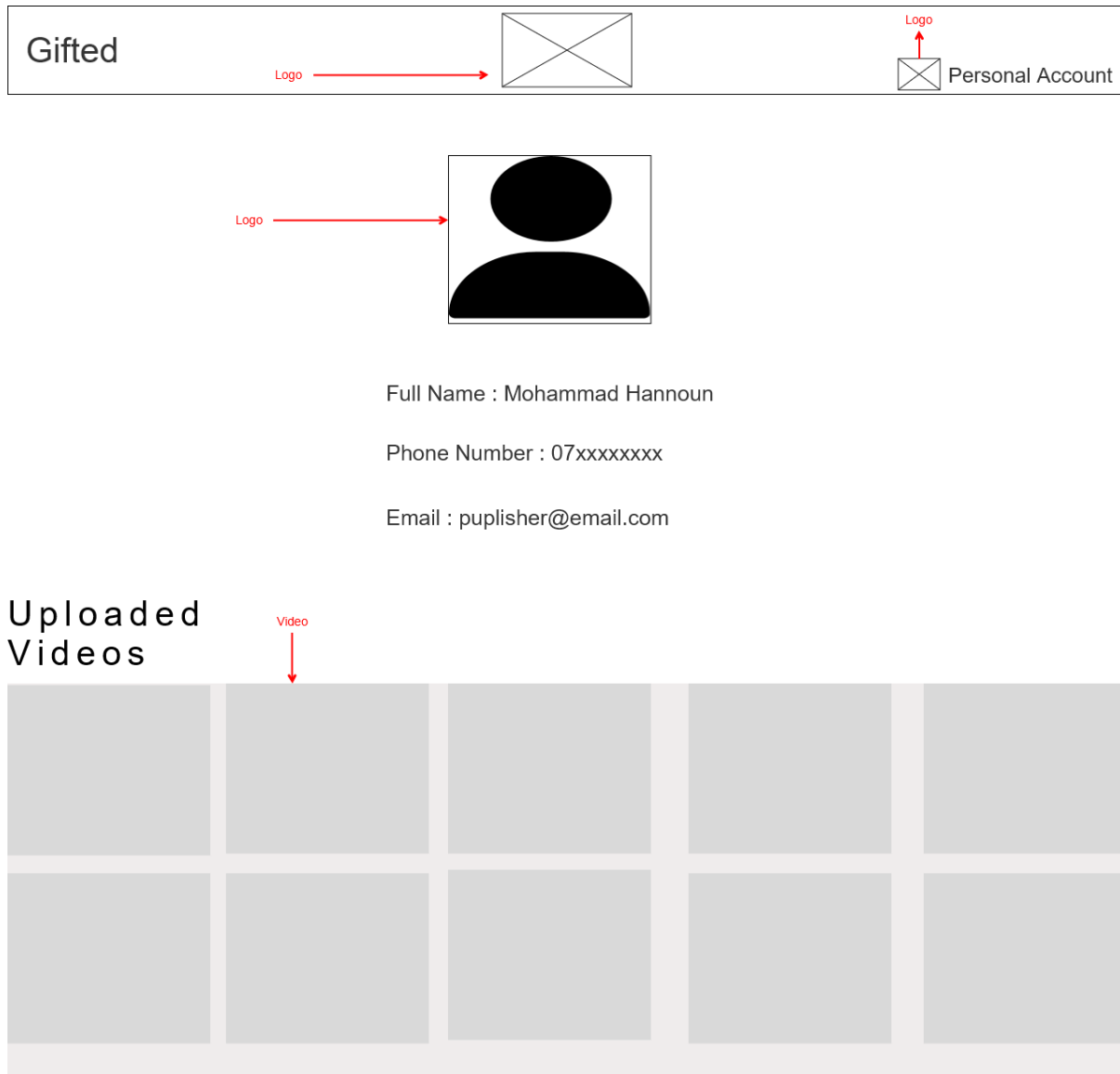
Figure 6-contact-info-wireframe

4- Page of logging in to the system:

Gifted

Logo →

*Note: Logging in is **ONLY** allowed to **Refugees** so if you are not a refugee you can go back, and watch the videos that were created by talented refugees.

Watch Videos

Login

Email
Enter Your Email Here

Password
Enter Your Password Here

Not Registered? Signup Now

Button → Login

Figure 7-login-wireframe

5- Page of signing up to the system:

Gifted

Logo →

Sign Up

*Note: Signing up in is **ONLY** allowed to **Refugees** so if you are not a refugee you can go back, and watch the videos that were created by talented refugees.

Button → Watch Videos

ID
Enter Your ID Here

First Name
Enter Your first name Here

Last Name
Enter Your last name Here

Email
Enter Your email Here

Phone Number
Enter Your phone number Here

Password
Enter Your password Here

Birth Date
04/14/2022

Sign Up ← Button

6- Page of viewing the creator (ONLY logged in users) his personal account:

Gifted

Logo

Logo

Full Name

Button → Update Personal Information

Button → Delete Created Video

Button

Figure 8-signup-wireframe

Uploaded Videos

Video

ID: 1   ID: 2   ID: 3

Figure 9-personal-account-wireframe

7- Page through which Only logged in users can update their personal information, except the ID:

Figure 10-update-information-wireframe

8- Page through which ONLY logged in users can delete their uploaded content:

Figure 11-delete-video-wireframe

9- Page through which ONLY logged in users can upload videos to the platform:

Gifted   Logo ————————→ ☒   ☒ Personal Account
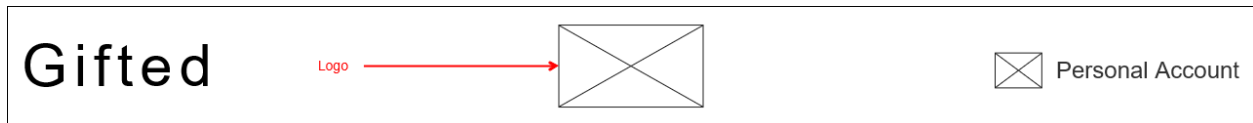
Upload a Video

Category

| Category Name | ▾ |

Upload Video

Browse...

Description

Enter a description to the video

Button ————————→ Upload

Figure 12-upload-video-wireframe

3.2.3. Mockups

The below images, show the Mockups of the website:

1- The index page of the website that everyone will have access to:

Gifted

Personal Account

Sports	Voice	Speech	Mathematics	Cooking	Technology	Others

Recent Uploaded Videos

Created By: Julia Someone

Description: This Video shows my voice skill while singing

Created By: Fernando Someone

Description: This Video shows my cooking skills while making some steaks

Figure 13-index-page-mockup

2- Page of viewing videos by category:

Gifted

Personal Account

Sports	Voice	Speech	Mathematics	Cooking	Technology	Others

Cooking

Created By: **Fernando Someone**

15:45

Description: This Video shows my cooking skills while making some steaks

Created By: **Gordon Ramsay**

GORDON
13:08 MSAY

Description: This Video shows my cooking skills while preparing rice

Created By: **Old Parents**

25:10

Description: This Video shows my cooking skills while making some steaks

Figure 14-video-listing-mockup

3- Page of viewing creator's contact information, and uploaded content (can be accessed by any user of the website):
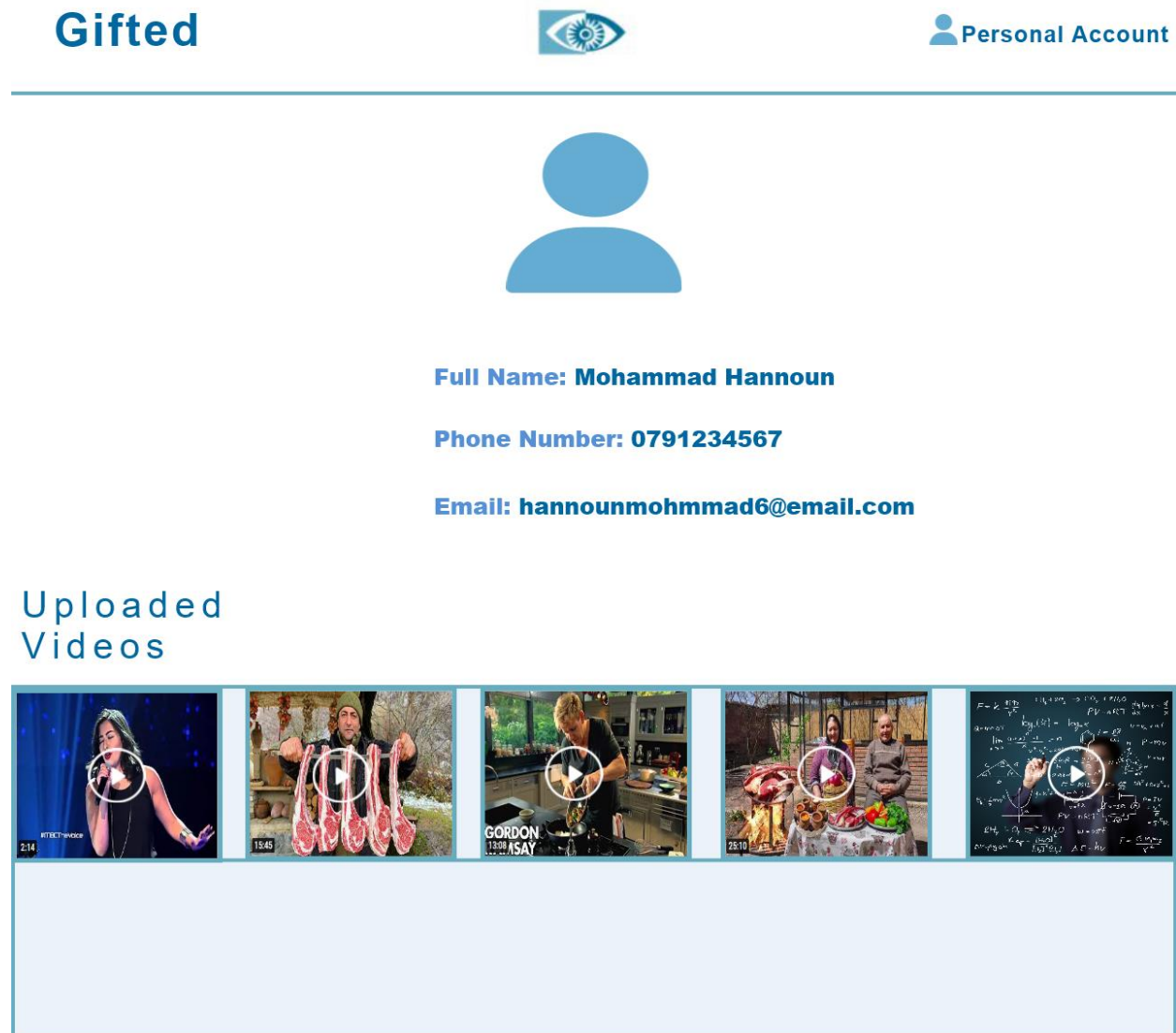
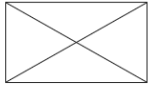*Figure 15-contact-info-mockup*

4- Page of logging in to the system:

Gifted

Note: Logging in is ONLY allowed to Refugees so if you are not a refugee you can go back, and watch the videos that were created by talented refugees.

Watch Videos

Login

Email

hannounmohmmad6@gmail.com

Password

● ● ● ● ● ●

Not Registered? Signup Now

Login

Figure 16-signin-mockup

5- Page of signing up to the system:

Figure 17-signup-mockup

Gifted

Sign Up

Note: Logging in is ONLY allowed to Refugees so if you are not a refugee you can go back, and watch the videos that were created by talented refugees.

Watch Videos

ID

20120042

First Name

Mohammad

Last Name

Hannoun

Email

hannounmohmmad6@gmail.com

Phone Number

0791234567

Password

● ● ● ● ● ●

Birth Date

04/14/2022

Sign Up

6- Page of viewing the creator (ONLY logged in users) his personal account:
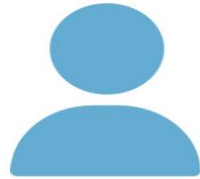
Gifted

Mohammad Hannoun

Update Personal Information

Delete Created Videos

Upload a Video

Uploaded Videos

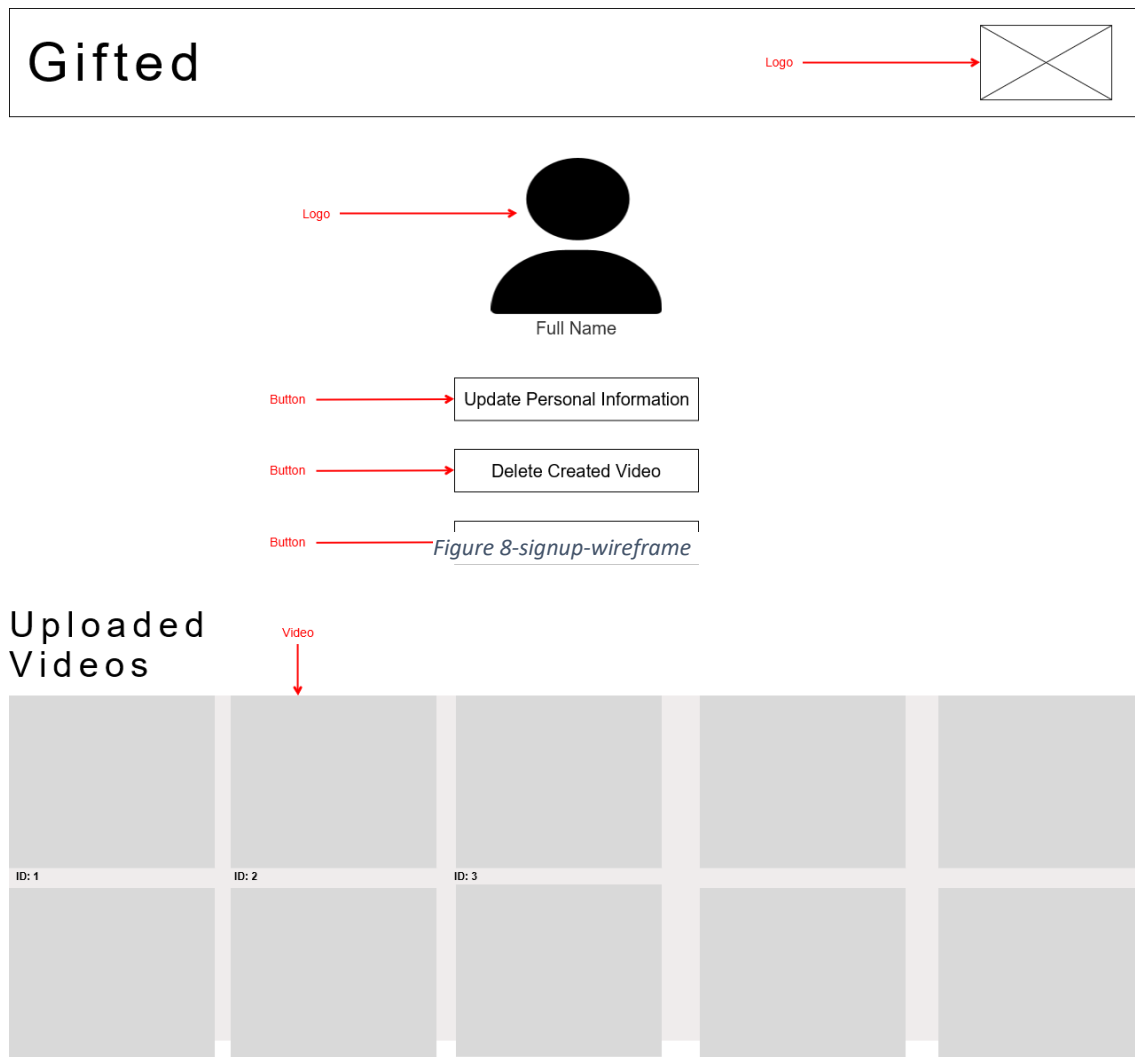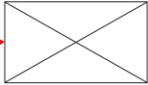ID: 1   ID: 2   ID: 3   ID: 4   ID: 5
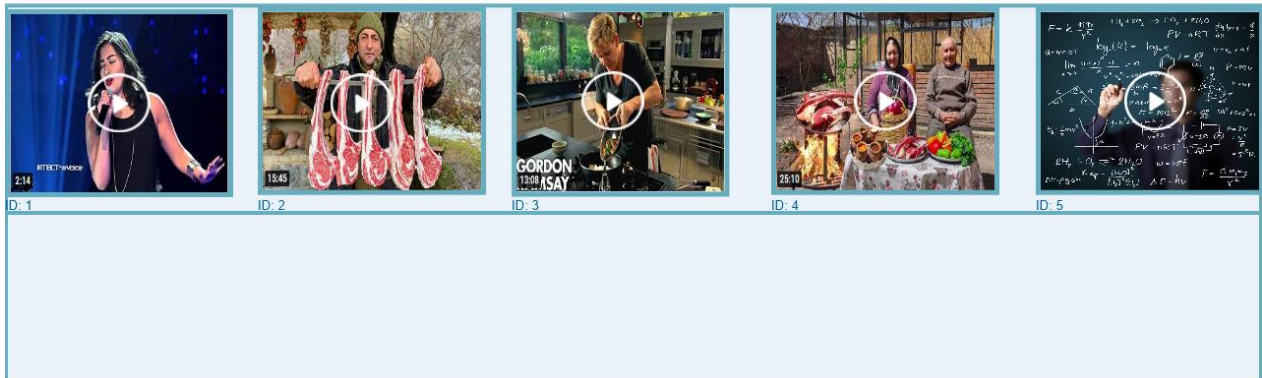
Figure 18-personal-account-mockup

7- Page through which Only logged in users can update their personal information, except the ID:

Gifted

Personal Account

Update Personal Information

ID

20120042

First Name

Mohammad

Last Name

Hannoun

Email

hannounmohmmad6@gmail.com

Phone Number

0791234567

Password

● ● ● ● ● ●

Birth Date

04/14/2022

Update

Figure 19-update-info-mockup

8- Page through which ONLY logged in users can delete their uploaded content:

Gifted   Personal Account

Delete Uploaded Video

ID

Enter the ID of the video

Confirmation

Write delete to confirm

Delete

Figure 20-delete-videos-mockup

9- Page through which ONLY logged in users can upload videos to the platform:

Gifted

👤 **Personal Account**

Upload a Video

Category

| Voice ▾ |

Upload Video

| C:\Users\USER\Desktop\Second-Semester-Second-Year\Application-Development\Assignments\Used-Pics\Voice.mp4 | Browse... |

Description

This Video shows my voice skill while singing

Upload

Figure 21-upload-video-mockup

3.3. Low Level Design

3.3.1. Entity Relationship Diagram (ERD)

The following image shows the entity relation diagram (physical model) of the database:
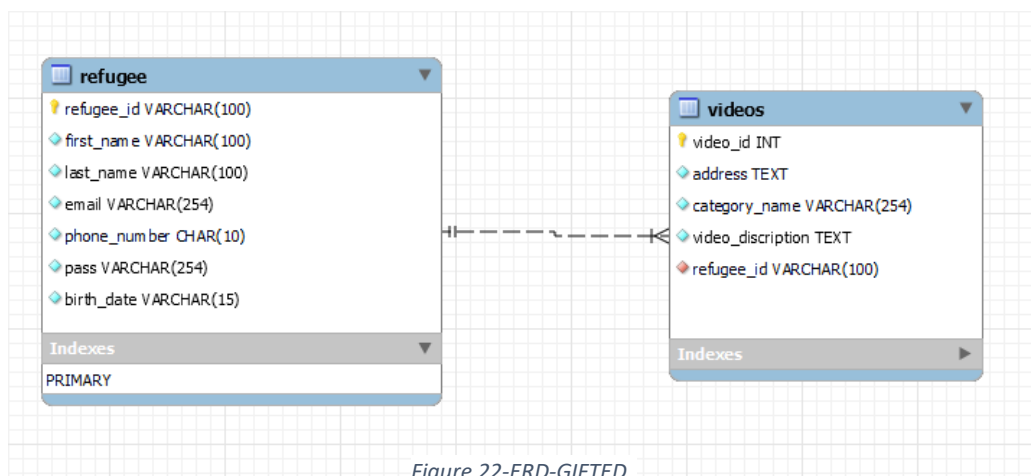
Figure 22-ERD-GIFTED

3.4. UML

3.4.1. Activity Diagram

The following diagrams show the activity diagrams of the website:

1- The below figure shows the activity diagram for the login functionality:
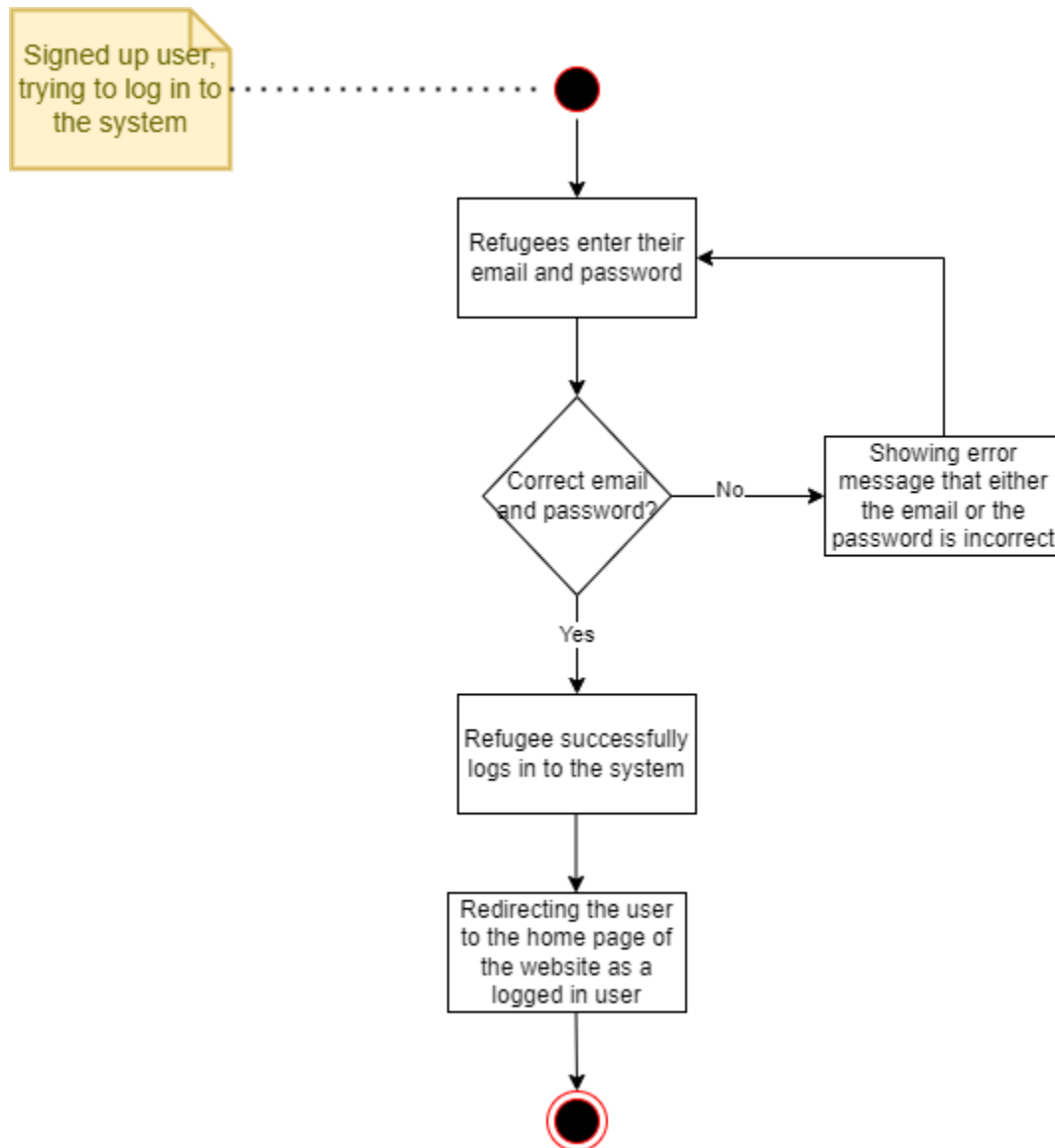
Figure 23-login-activity-diagram

2- The below figure shows the activity diagram for sign up functionality:
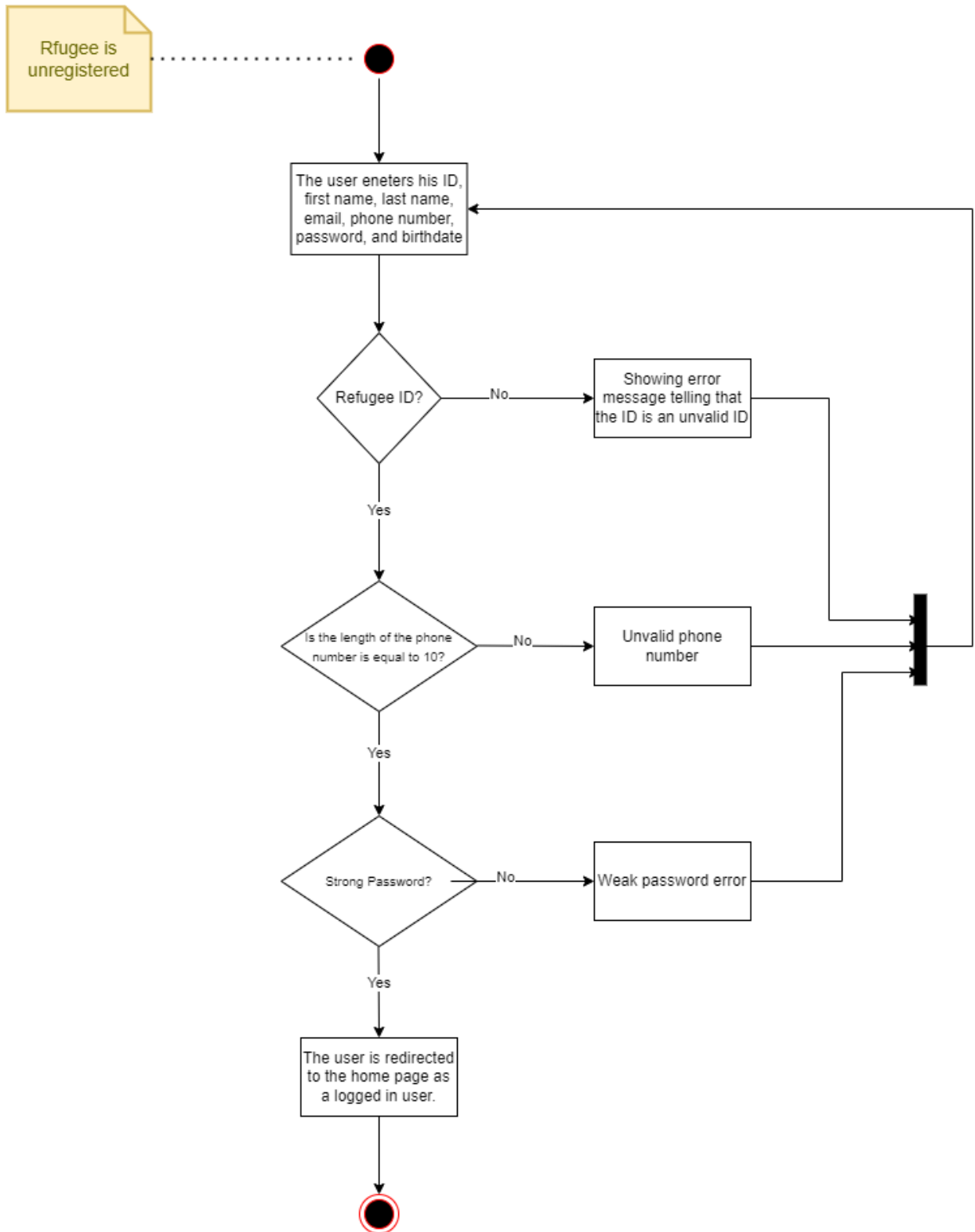
Figure 24-sign-up-activity-diagram

3- The below figure shows the activity diagram for deleting uploaded videos functionality:
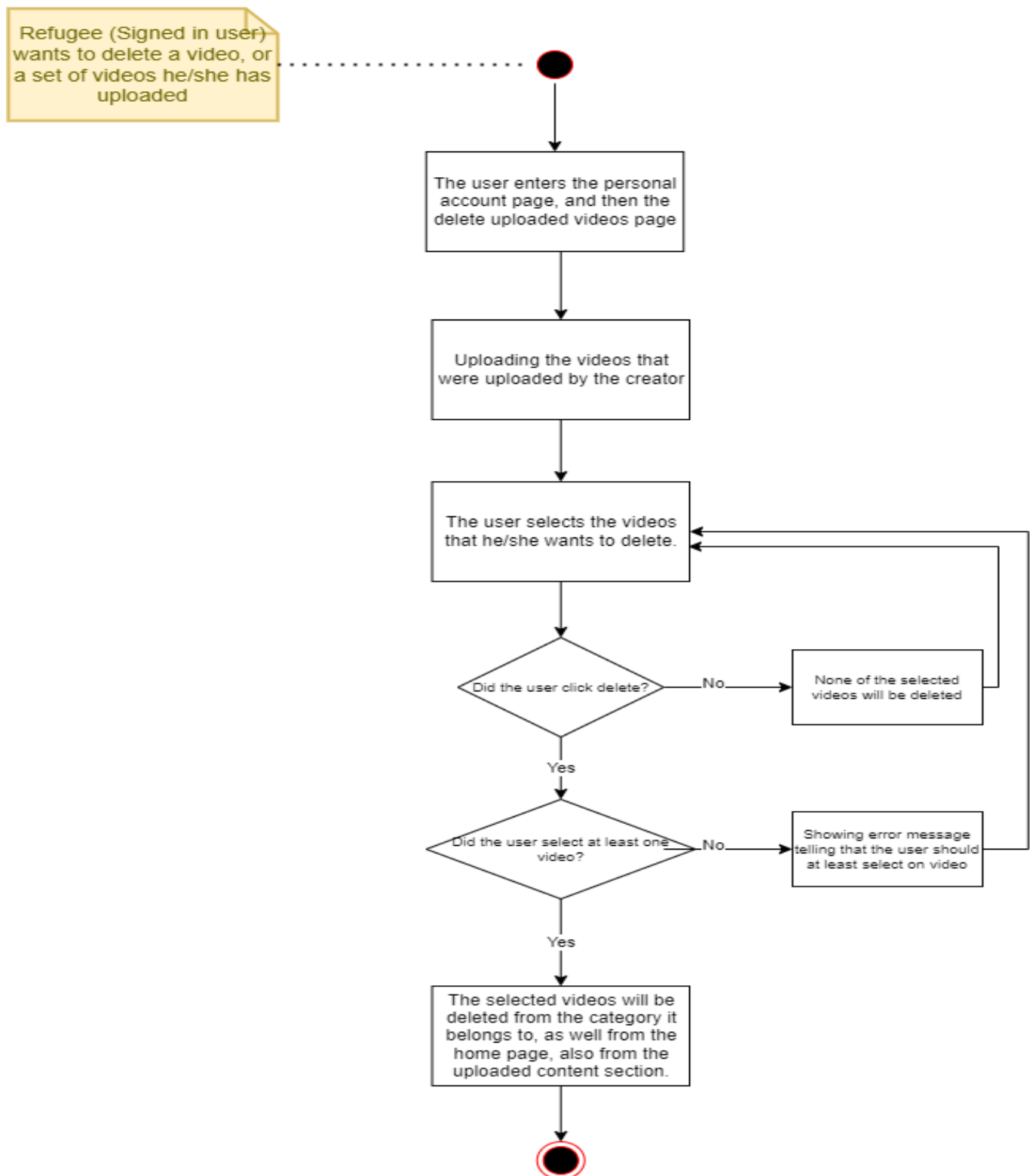
Figure 25-delete-videos-activity-diagram

4- The below figure shows the activity diagram for using the system by non-signed up system:

Any user of the website is trying to see the uploaded content by category, and view contact information of the creator

The user enter the home page of the website

The user clicks on a specific category

All the videos that belong to that specific category will be fetched and showed with the creator name, and description of each

Did the user clcik on the name of the creator — No → No action

Yes

The user will be redirected to the creator's contact information page

The full name, email, and phone number of the creator will be fetched, as well as the uploaded videos by that creator

Figure 26-non-signed up-activity-diagram

5- The below figure shows the activity diagram for uploading a video:
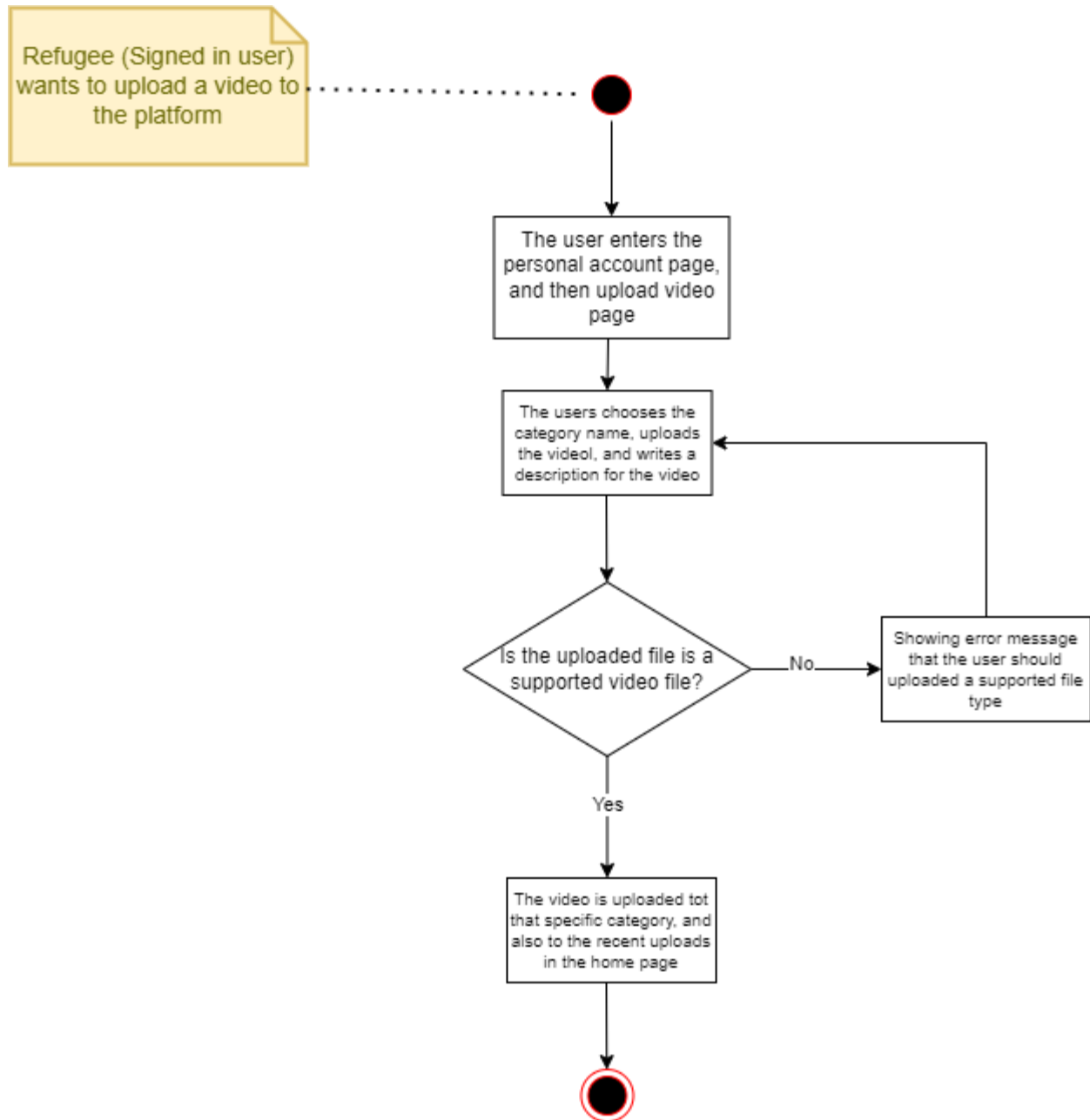
Figure 27-upload-video-activity-diagram

6- The below figure shows the activity diagram for viewing personal account, and uploaded videos:
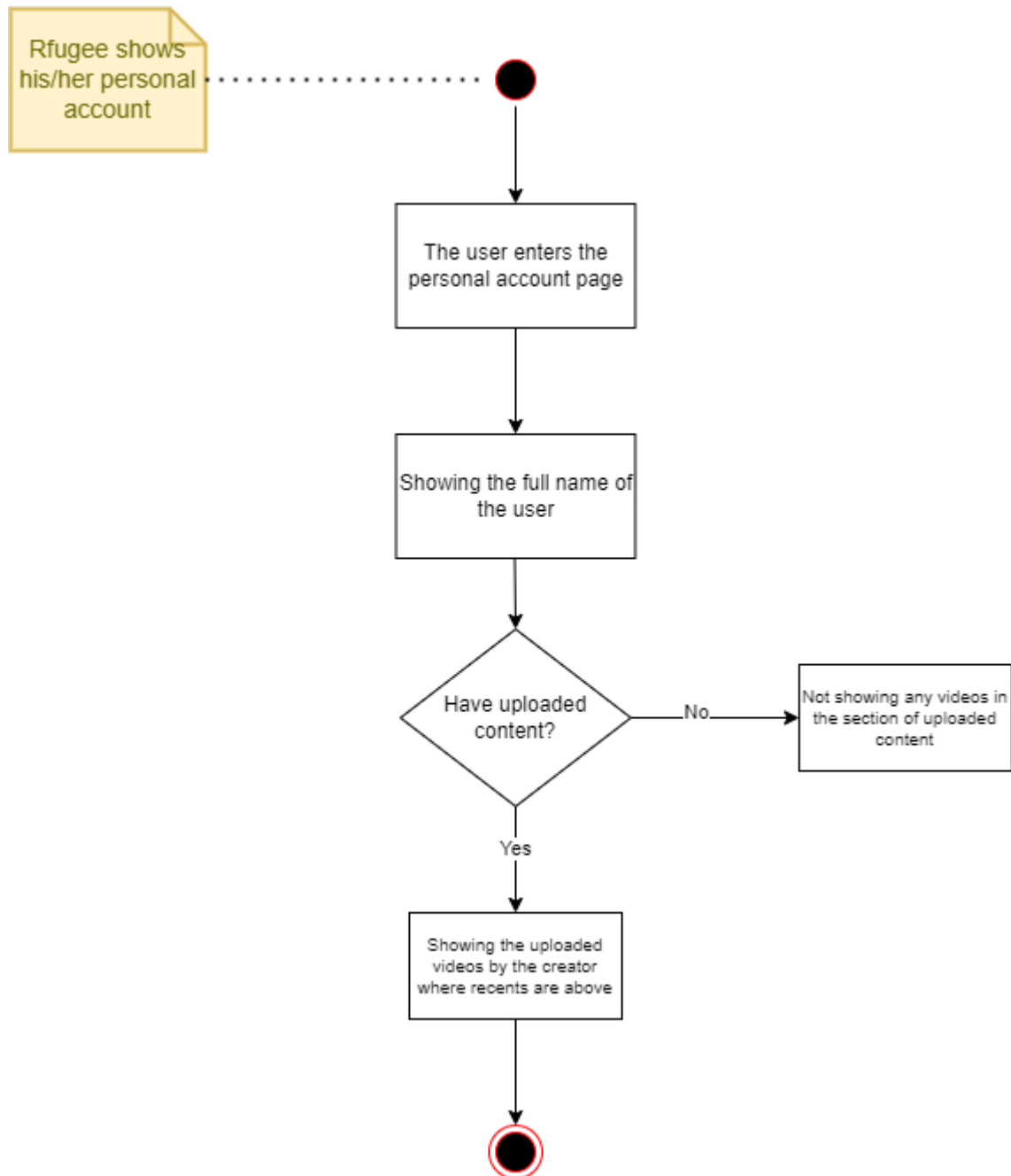
Figure 28-personal-account-view-activity-diagram

7- Activity diagram for update information:
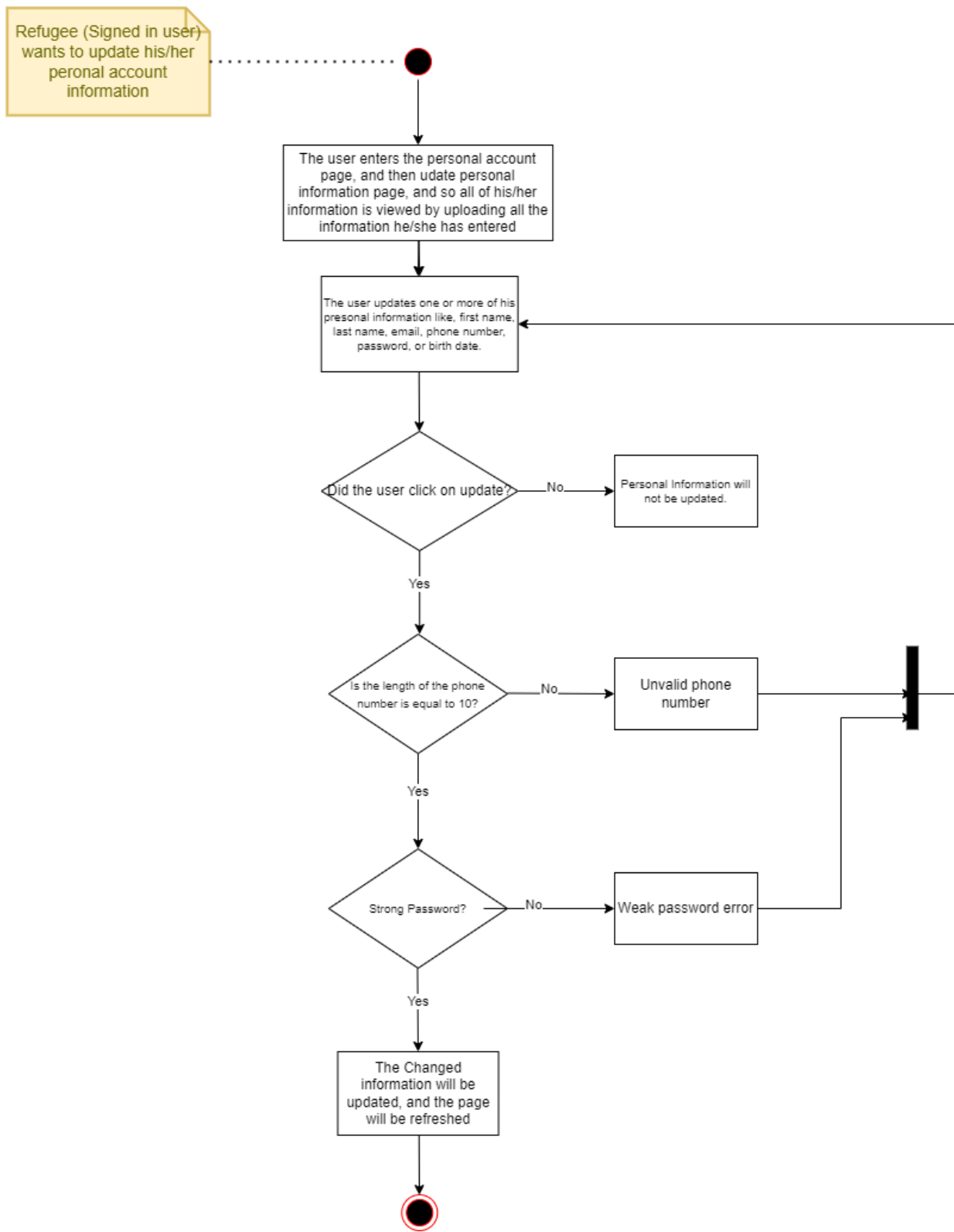
Figure 29-update-information-activity-diagram

3.4.2. Component Diagram
The below image shows the component diagram of the system:
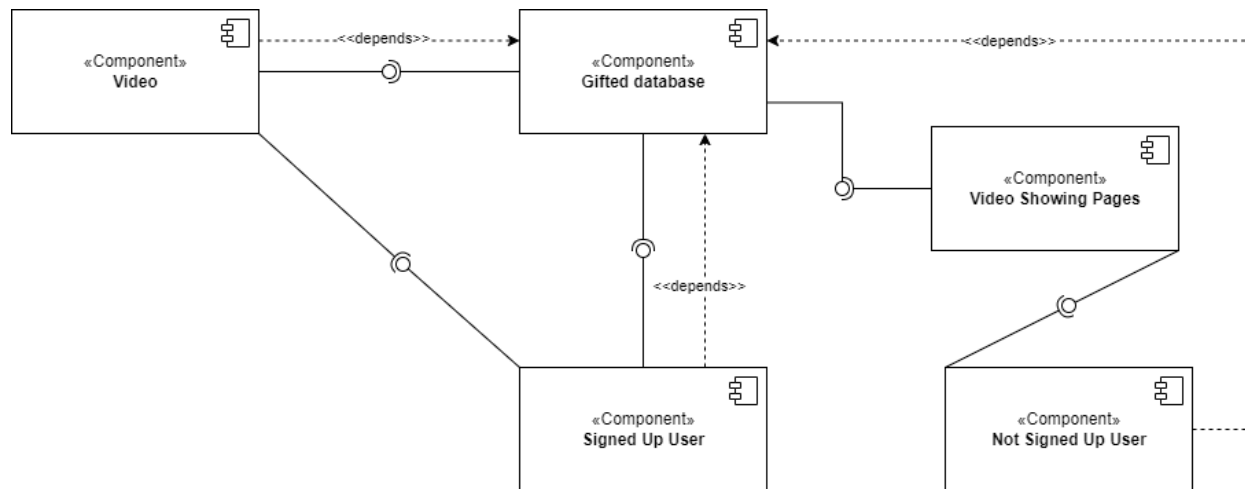
Figure 30-component-diagram-gifted

3.4.3. Class Diagram
The below image shows the class diagram of the system:
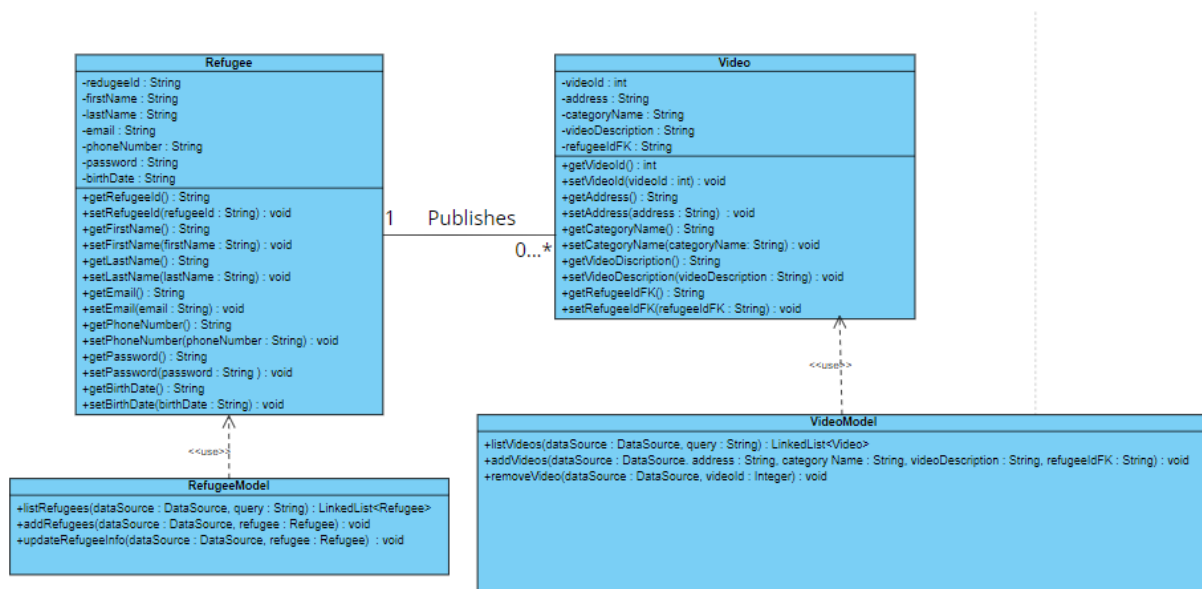
Figure 31-Class-Diagram

3.5. Overall Design Justification

As the development topology that is going to be followed is the waterfall methodology, and it focuses on finishing each stage from the SDLC fully, and not going back to it, performing the design stage correctly, and fully, using the right techniques, will help in implementing the waterfall methodology, also, by performing the design stage fully, the time needed for constructing, and creating the application will be minimized so much, and the process of construction will be just about writing suitable pieces of code. Consequently, the sitemap was created in order to set the number of pages of the website, and so the developers in the construction stage do not get lost in the pages of the application, also, gloomaps was used as the scope of the application is small, and the number of pages is small as well, and so the importing property which is not provided by gloomaps will not make any difference, as it will be a onetime creation for the sitemap, and then we will move to creating the wireframes, and mockups.

Moreover, by creating both of the wireframes, and the mockups using one tool which is justinmind, the process of redesigning the wireframes, after they are produced will be much easier and less time consuming, which will also shorten the time for creating the application, however, using gloomaps, and justinmind specifically and not using other design software like draw io, or AdobeXD was for those specific reasons:

- Gloomaps, and justinmind are made specifically for creating sitemaps, and (wireframs&mockups) respectively, which will shorten the time, effort, and resources needed for creating them as they have specific scope, whereas draw io is used for general design purposes, and the scope of it is huge, also, it is correct that AdobeXD is created for designing wireframes, and mockups, but it requires more a tougher learning curve than justinmind.
- Gloomaps is free, also, justinmind has a free version that enables the user from creating both of the wireframes, and mockups, whereas AdobeXD is paid, and even requires a credit card to get the trial, which may be a waste of resources especially if the team working on the project was not able to learn dealing with quickly, and so wasting more time.
- AdobeXD's key features are hidden in menus, as well as draw io, which means that more time will be wasted on finding the required features, and so more time, and resources needed to complete the project.

All in all, using the waterfall methodology, and implementing the design stage fully in a short time, and in an efficient manner will ease the process of constructing the application, and will require less time, and resources.

4. Overall Development

4.1. Development Overview

Finishing the stage of design leads to starting with the development phase, the phase in which the methodology of development is set, and followed to the end of developing the application, but what is a development methodology? A development methodology is an approach followed by

the developers to build the application. Consequently, there are three methodologies for development that can be used, which are:

1. Full Development: A methodology in which all the code is hand-written by the developer. However, this methodology is used in the following cases:
   o High-complexity: In case of having a project that includes implementing many customized, and complex features, that is hard to be implemented using other methodologies.
   o Enough resources: In case of having enough time, fund, expert team of developers, and enough number of employees that can finish the project within the deadline set.
   o Learning: Learners who are just starting out with the software engineering field will have a great chance to implement what they have learnt, also, to learn new things as having the ability to learn is an important skill that should every software engineer have. Moreover, building an application from scratch in the early stages of the software engineering journey lets the learner know the logic of building the website, as well publishing it, which are crucial points.
   o Skills strengthening, and experience: Software engineers learn all the time, but as it is said the defect in science is that it can be forgotten, which means that new learnt topics must be practiced to be experienced with implementing, or using them. Consequently, with more practice, and experience the learnt skill will be strengthened.
   o Adaptable, and scalable: In case of having a complex, and informative project that may include a lot of complex features, that may be needed to be improved in future circumstances, the full development methodology is the best choice to go with, as every feature is customized, also, as the developer has the full access to the code it will be much easier to make the application scalable.
2. Customization of a product: A methodology in which an already-built application is customized to suite the new requirements, or a new base application is created and set to be customized for future requirements, however, this methodology is used in the following cases:
   o The new project is in the same scope of the customized product, so the new project may include erasing, and adding features.
   o Being the idea of the project a popular one, so the idea is repeatedly in demand.
   o Not having enough requirements: In this methodology it is hard to get the first client, but once you have the first client a feedback will be received by him/her and so with the next clients, and so with the continuous feedback, and features adding, the customized product will include an enormous number of features, which will indeed give the new clients more choices.
   o Having less time, and a prebuilt product: when not having much time, and having a prebuilt project that is highly close to the scope of the new project, using this methodology is recommended as only small, and tiny changes will be made on the previous project.
3. RAD: A methodology in which less focus is put into the planning, analysis, and design stages and more focus is put into the development, as it depends on the rapid development, and continuous feedback. The following points demonstrates the types of the RAD:

- No code: A RAD methodology in which no code is needed to build an application, however, this methodology can be used in the following cases:
    - Having a simple project idea that doesn't include any customized, and complex features.
    - Having experience with the tools used to build application with no-code as having what can be implemented, and cannot be implemented with this type of RAD type is very important, as this type is usually used with simple projects, that include simple features.
    - Not having the enough experience, and skills to build a hand-coded application. (for beginners)
    - Not having enough resources including time, fund, and expertise.
- Low-Code: A RAD methodology in which low amount of code is written for having more optimized software, this methodology can be used in the following cases:
    - Having a medium complexity project, where semi-complex features are required to be implemented.
    - A need to customize the features that are already provided by the tool used, or add new ones.
    - Not having the enough experience, and skills to build a fully hand-coded application.
    - Not having enough resources including time, fund, and expertise.
    - The project idea is a popular one, and may have already made templates.
- Code Generation platforms: A RAD methodology in which the code for a specific feature, or the whole application is generated using a specific tool, this methodology can be used in the following cases:
    - The inputs to the code generation tool are clear, and set.
    - A need to avoid repetitive coding, which includes the main components of any website, like login pages, as they will be generated.
    - A need to save resources including the time needed to create the website, besides a need of adding customized features, as the code generation tools provide developers with the ability of writing code, as well as the fund, and expertise as having tools that can automatically create some components, or a whole application will require having less employees working on the project, which indeed lowers the costs needed to complete the project.

4.1.1. Development Techniques Comparison

Firstly, it is important to understand the meaning of a development technique before comparing the various development techniques that are available:

Definition of a Development Technique: The approach that is going to be followed along the development stage, and using which the final product will be produced, and developed, however, there are many techniques that can be followed in the development stage, and the following shows a full comparison between them:

1. Definitions

1.1. Full Development (From Scratch): A technique in which the application is fully hand-coded by a developer, or a team of developers, however, this does not mean that using some already-written code is forbidden, as the whole point of this technique is to give the developer the full access to the source code of the application.

1.2. Customization of a product: A technique in which an already built is customized in a way that it suits the requirements of the new application, also, it may include building a base a product that have a narrow scope, and so applications with the same scope will be a customized version of that base product.

1.3. RAD: A technique in which less focus is put into the planning, analysis, and design stages, and more focus is put into the development phase, as it depends on the quick development of a feature and then getting a feedback on it, however, there are three types of the RAD, which are:

1.3.1. NO-Code: A type of the RAD in which no code is hand-written at all, and it implements the WYSIWYG (What-You-See-Is-What-You-Get) principle so all the features can be implements by dragging and dropping elements, also, templates can be highly used.

1.3.2. Low-Code: A type of the RAD in which low amount of code is written usually to make the product more customized, by adding new feature, or editing existing ones, also, it applies the WYSIWYG (What-You-See-Is-What-You-Get) principle, which means that there may be ready-made templates, as well as the drag and drop functionality of elements.

1.3.3. Code Generation Platforms: A type of the RAD in which the code is automatically generated by a specific code generating tool according to a certain input which may be a database, and then the screens are generated according to that database, however, some of the tools enables the developer to edit the generated code.

2. Comparison: The following is a comparison among the different development techniques in terms of a specific factors:

2.1. Time, Cost, Employees, and expertise

2.1.1. FD: building an application from scratch means that the planning, analysis, and design stages must be taken into consideration seriously, also, there is no already-made templates that can be used as all of the code will be managed by a developer who hand-write the code, which means that more time is needed to build the application as the process of writing the code of the application is complex, which also means that the cost will rise as a result of the need of having more employees working on the project to get it done on the deadline set, also, as all of the code is hand-written, experienced employees must be handling the project, as there is no any already-made templates. Consequently, the cost needed to complete the project increases.

2.1.2. CP: Customizing an existing product that was built in the past by adding or removing some features indeed requires less time than it is required in the FD technique, as most of the code is already written and only small changes are going to be made, however, there is two scenarios, on first is that the product, or software

is already there, and only small changes are needed to be performed and this scenario requires less employees, and experienced employees which will indeed lower the cost needed to complete the new project, but the second scenario is when there is no base product, and it needs to be created and then used in the CP methodology, then the cost will increase of course, however, it will be lesser than the cost needed for the FD as building a base product means only the main, basic, and common functionalities will be implemented. However, in the long run CP highly lower the costs of building an application as there will be many enhanced versions of the base product as more clients require more functionalities, and may be also a very good methodology to be used when the client is not really sure about the requirements needed to be implemented in his project. All in all, this methodology saves time, money, and requires lesser number of employees compared to the FD technique.

2.1.3. NC: building an application without writing any line of code means that the developer uses the drag, and drop functionality which indeed follows the WYSIWYG (What-You-See-Is-What-You-Get) principle, also, as those tools are usually easy to use tools, and provide a set of elements, and functionalities that can be used to build the application, the time, money, and number of experienced employees needed for this type of the RAD technique is lesser than both of the FD, and CP, however, most of the NC tools cannot be fully used without a monthly or yearly subscription, and the free versions of them only provide the basic functionalities, also, it is recommended for the people who are not deeply involved in the software engineering field.

2.1.4. LC: This type of the RAD technique is very close to the NC technique, as it applies the WYSIWYG (What-You-See-Is-What-You-Get) principle, and usually provides the developer with ready-made templates, elements, and functionalities, but the key difference between the LC, and NC techniques is that using the LC technique some features can be edited, or removed to meet the requirements, as well as the ability of adding some new features. However, using this technique is less time, number of employees, and level of experience is needed which means a lower cost needed to develop the application, nevertheless it is important to note that when having the ability of editing a code that was not written by the developer who is now developing, or optimizing the software is a very hard process as many developers have worked on that software regardless to what their role was. Consequently, the level of experience needed to handle this type of projects is higher than the NC, but lower than the FD, and CP, which will indeed increase the cost comparing to the NC technique, but still lower than the FD, and CP. Moreover, more time required comparing to the NC technique.

2.1.5. CG: generating the code of an application, and so the interface of that application highly depends on the input, and the tool, so if the input for example was a database, and the tool generates the code of all the interfaces according to that database it will almost have no cost, but the cost needed to use the tool if it was not free, also the time needed will be very little, as well the need of originally having a developer

working on the project, however, in most of the cases it is not as simple as that, and code generators are only used to avoid repetitive coding, and generating the repeatedly used interface, in other words this technique is mostly used to generate some basic repetitive components of the software. Moreover, in most of the cases using code generating tools provides the developer with the ability of editing the source code, which means that the generated code may consist of a huge number of lines and so requires a certain level of technical experience to handle the editing process whether it was about adding, editing, or removing features. Consequently, the time, number of employees, and level of experience needed is lower than the FD, CP, and almost similar to the LC technique, but more than the NC technique, as a result, the cost needed is lower than the FD, CP, and almost similar to the LC technique, but more than the NC technique.

2.2. Functionalities, Design, and Professionalism

2.2.1.   FD: Using this technique any number of complex, and customized functionalities can be implemented, also, the design is usually unique as it is designed by professional designers. As a result of being the design, and the functionalities customized the product will provide a professional look.

2.2.2.   CP: Using this technique any number of complex, and customized functionalities can be implemented, also, the design is usually unique as it is designed by professional designers, however, it is important to note that using this technique and in the long run the design will be hugely enhanced, as well as the functionalities which is better than what we get using the FD technique. As a result of the continuous feedback about the design, and functionalities the product will be very professional in the long run more than the FD technique.

2.2.3.   NC: Using this technique there is a limited number of functionalities that can be provided, and they are usually simple ones, also, in order to get the full access to the functionalities some tools may need a paid subscription, although the features will never complex ones. However, the design of all the products that were created with the same tool will be the same even if the coloring, and placing of elements was different, the core is the same, especially is it was a template, then all of them will be exactly the same, which consequently leads to having a less professional product. All in all, less functionalities can be implemented, also, the design, and the professionalism of the product using this technique cannot be compared to the FD, and CP ones.

2.2.4.   LC: Using this technique new functionalities can be added to the software in addition to the added ones which also can be edited, or removed, however, it is usually difficult to implement very complex ones, also, the design can be customized as well, but the process of editing, adding, or removing code may lead to some unexpected errors whether in the design, or the system, that may take hours to discover, and solve as the developer have to read the code line, by line to discover the error. Consequently, the look, design, and function of the product will be more professional than the NC technique, but less than the CP, and FD techniques as a

result of being the product highly customized using them, and the developer what each line of code is for.

2.2.5. CG: Using this technique the functionalities can be edited, and new ones may be added, as well as the design of the product. However, the process of editing the generated code is very difficult, and may even lead to some unexpected errors whether in the design, or the system, that may take hours to discover, and solve as the developer have to read the code line, by line to discover the error. Consequently, the look, design, and function of the product will be more professional than the NC technique, also, it provides almost the same level of professionalism as the LC technique, but less than the CP, and FD techniques as a result of being the product highly customized using them, and the developer what each line of code is for.

2.2.6. It is important to note that, using the LC, NC, and CG techniques the application may be responsive as they highly depend on tools that have put an enormous effort on the design while as in the FD, and CP techniques the responsivity part is the developer responsibility.

2.3. Hosting, and Storage

2.3.1. FD, and CP: Using those techniques enable the programmer to host the software on any hosting service provider, also, they give the developer huge storage spaces with low cost. Moreover, with those techniques the host can be changed easily.

2.3.2. CG, LC, and NC: Using those techniques usually includes using a tool that includes buying a plan that covers the hosting, which means that the software is hosted using that tool, which makes it complex to change the host of the software, also, for most of the tools as more storage needed more money will be paid, just for the space needed which means more cost as well.

2.4. Scalability

2.4.1. FD, and CP: As the code is hand-written by a developer it is easier to make the application scalable, when the business grows in the future.

2.4.2. NC: As there is no code originally written in this technique, it is almost impossible to make the application scalable in the future, as scaling the product requires making major changes in the source code.

2.4.3. CG, and LC: Using those techniques the application can scale to a certain level, also, the scalability of the application is highly related to the possibility of changing the code, and with then number of features provided by the tool used in either of the techniques, however, the organization that has created the tool used in either of those techniques may not be willing to cooperate, as it grows which may lead the application to a dead end, where it should be rebuilt using the FD technique.

2.5. Speed: Using the LC, NC, and CG techniques the code of the application may contain huge number of lines, and much of those lines are metadata that are used for advertising especially with the free versions of those tools, and this metadata may include URLs which may highly affect the speed, and performance of the application, also, as the application grows more users will be using the application which means more requests on the server, so if the server were not able of handling huge amounts of requests this can decrease the performance of the application in a serious manner especially if the host

was provided with the plan as the changing process, if it was available, will be seriously difficult. On the other hand, using the FD, and CP techniques the code is genuine, and only contains the meta data that is needed, which makes their performance much better than the other techniques, also, the requests may be dealt with some certain algorithm for example, which makes it easier to the server to handle the requests.

4.1.2. Development Tools

The below table shows a full comparison among four different development tools:

Table 4-Development-Tools-Comparison

Tool Name	Usage	Advantages	Disadvantages
Adalo	Building native mobile application, or desktop web application, without the need of writing any code. (No-Code Tool)	-Provides the drag, and drop functionality with a lot of elements that are essential for creating an application. -Provides a set of ready-made templates for both of the mobile, and desktop applications. -Provides an internal database. -Enables users to integrate their application with an external database. -Enables the developer to preview, and simulate the application along with its screens, and functionalities. -Allows the developer to publish mobile applications in different forms like, an android, or iOS (Iphone Operating System) application. -Allows the developer, or the	-Difficulty of adding external database, and of integration generally. -Some of the features requires the user of the tool to upgrade to the paid version of the too like, publishing the mobile application as an Android application. -Inability of adding customized features, as there is no way to write code using this tool. -To change the design of an element, it is somehow difficult and needs some practice to get comfortable with. -Provides a limited set of functionalities when it is compared with other no code tools. -Back-end performance slows down on scale. -Difficulty of transferring the built application to another application building tools.

		creator of the application to show the analysis of the usage of the application by the users like, number of active users over a specific period of time, total signups to the system, and a lot more. -Colors, shapes, and placements of elements can be changed to suit the needs of the creator. -Screen can be linked together easily. -Does not require deep knowledge in programming as there is no code is written using this tool. -resources saving including time, money, human resources, and ease of usage.	
WordPress	Creating responsive web applications. (Low-Code)	-Provides the user with the ability of using his/her existing domain name, or registering a new one that can either be paid (if customized, and more professional), and free ones that include subdomains of the WordPress domain name. -Provides several choices to create a web application like, blogs, ordinary application, and	-Paid plans are required to be bought, to get the full access to the ready-made template, and other features. -Although it is easy to use, but it requires a very good amount of practice to get comfortable using the tool. Also, there are a lot of options which may confuse beginners. -Security issues especially with the templates, as it has the same front, and back ends, which means that if one template got hacked, others will be easily hacked too, which may threaten businesses that rely on it, and stores credit

		ecommerce web applications. -Ability of creating a website from scratch, as well as importing an existing website content. -Provides a library that contains a huge number of ready-made templates for various uses. -Ability of customizing the design by adding, editing, or removing code, and that is why it is called a low code tool. -Provides the drag, and drop functionality, as well providing a huge set of ready-made elements. -resources saving including time, money, human resources. -Ability of viewing the website on different devices like, laptops, tablets, and phones (Responsiveness), also, provides high quality designs as a result of the continuous development by the teams working on improving the tool.	cards, and passwords of the clients. -Sometimes there is difficulty adding some third-party plugins. -The generated code may have been developed by a lot of programmers, and each one has a different approach of programming, which makes it difficult to understand the written code, also, adding, editing, or removing some code may lead to errors, and with the previous mentioned difficulty it will take hours to know what the error is, also, this means that the developer need to have some deep technical skills to be able to analyze and discover the error, and then fix it. -Websites created for free using WordPress may include advertising, which means more lines of code, and URLs attached with the code, which may lower the performance of the created website. Also, increases the complexity, and length of the code. -Technical skills are required to enhance the ranking of the website in search engines.
Genexus	A tool that is used to generate code to create websites, IOS (Iphone Operating	-Offers a 14-days trial, which may give the user an opportunity to try out	-A desktop application with a huge size.

	System) applications, and android applications. (Low-Code, and Code generating tool)	the tool, and then decide to rely on, or not. -Provides some basic projects that can be created, using the tool for new users. -Provides a set of tools, and objects that cover the most repeated scenarios. -Ability of adding, editing, or removing generated code. -Supports integrating with third-party applications, or systems. -Supports Agile development. -Superb User Interfaces (UIs) designs, as well as providing users with an excellent experience. -Saves resources including time, effort, human resources, and money.	-Requires high amount of practice to get comfortable with (Include a learning curve). -Paid plans are required to be bought in order to get the full access after the trial period ends. -Difficulty of understanding generated code. -Created applications may suffer scalability issues. -Poor documentation.
Eclipse	A tool used to build web, or mobile applications usually from scratch usually using Java technology along with front-end technologies. (Full Development (form scratch) tool)	-Open source software, and free to use. -Code reusability, and refactoring. -Developer writes the whole code of the application, so developers have full access to the source code. -Scalability, applications built using this tool are easily enhanced, and maintained.	-The user should be highly experienced with a deep knowledge of programming concepts, as there will not be any ready-made templates, or drag and drop features. -requires a lot of time, effort, human resources, and money as a result of needing highly experienced employees. -Requires practice to get comfortable with using it. -Security issues, as a result of having all the code hand-written, the security part may

		-Ability of creating both of the front, and back ends using it, as it contains an IDE (Integrated Development Environment). -Ability of integrating with third-party libraries, frameworks, services, applications, and version control systems like, GitHub. -Provides a built-in debugger that facilitates the process of understanding the workflow of a process, or feature, and compile time syntax error checking while writing code. -Provide code auto-completion feature, as well as an excellent documentation rich with valuable information. -Using this tool, along with using Java as a programming language gives the developer/s a chance to gain more, and more experience. -Java is a universal programming language, that most of the huge systems in the world use, which mean that by gaining more experience, the developer will be able to take advantage of this experience in the future. (gives an	be an issue if it was not taken care of in a serious manner. -Difficulty of usage when writing (back-end) code in languages other than Java. -Projects coded with java require special type of hosting when they are published.

		industrial level of development) -Ability of generating code like, setters, getters, constructors, and more other functions.	

1. The preferable development tool and technique

Preferred development technique: Full Development (Development from Scratch).

Preferred development tool: Eclipse IDE (Integrated Development Environment).

The process of choosing a technique, as well as a tool highly depends on the project idea, functional, and non-functional requirements, code availability, professionalism, and scalability. Consequently, as the customer is the MD which is a governmental department, and the funder is the USAID which is an international agency, a high level of professionalism is expected, also, the idea of the project contains one major functionality which is video uploading which opens the doors for having a lot of future improvements, and this point is highly related with two quality attributes which are speed, and maintenance, the website should be as fast as possible with a very small latency margin, and uploading content is not an easy process and the best choice using which the uploading process can be as fast as possible is by writing customized algorithms that guarantee uploading the videos as fast as possible, moreover, the maintenance quality attribute is related with the improvements, and this part is highly crucial, as having an opportunity of having many future developments means that the process of maintaining the website should be as easy as possible, and to ensure having an easy to read, and maintained code, it is better to have a hand-written code with a an excellent documentation, also, building the application form scratch means that the application is hand-coded by a common universal programming languages which facilitates the process of handing over the application to another developer, or development team especially as the USAID is an international agency that may include some of their technical developers in future events, whereas using other techniques will make the process of finding a specialist with the tool hard. Additionally, the code availability is a very important point that should be taken into consideration as most of the techniques does not provide it, and as the FD technique provides this feature and the developer has full access to the source code, however, in the future when scalability becomes an issues because of the enormous growth in the usage of the application, the easiest way of handling this issue is to code from scratch as customizing the application, and making it more scalable is just about writing some lines of code, and algorithms, whereas it is very difficult to be handled using other techniques as the LC, and CG may lead to a huge crashes, and errors in the application when the source code is edited, also, those two techniques makes it very difficult to understand the code that was either written, or generated as most of the code has poor, and understandable documentation, and as the

NC is a technique set to be used for very simple applications, that are not expected to be scalable at all, and may require rebuilding the application from scratch when it grows more than it was expected using other techniques.

Nevertheless, the development tool chosen is also highly related with the development technique chosen, and as the Eclipse IDE (Integrated Development Environment) enables us of building, or applying the FD technique it was chosen. In addition, the reason of choosing Eclipse over other from scratch development tools, is the ease of usage, as well as being Java the most supported programming language by it, and the reason for choosing Java is that I have high experience using both of Eclipse, and Java programming language, which will facilitate, and speed the development process (shortens the time), also, Eclipse provides a huge set of third-part libraries, and facilitates the process of integrating with external libraries, frameworks, and applications, which is very important for easing the process of development. Also, Eclipse is a free, and open source software which will lower the cost needed to complete the project, moreover, using Eclipse is a great chance to sharpen my coding skills, and gain more experience with both. All in all, the needed time to finish the project will be also decreased as a result of providing Eclipse code auto-complete, syntax checking, and debugging features.

4.2. Software Development Methodology

There are several software development methodologies that can be followed in development which are:

- Waterfall: A methodology that focuses on the planning, and analysis stages of the SDLC, and then all the application is built according to the requirements gathered in the planning, and analysis stages.
- RAD (Rapid Application Development): A methodology that focuses on producing a working version of the application, and does not focus a lot on the planning, and analysis stages, where having a requirement requires implementing it. However, it is more suitable for prototyping as the developers, and the customers work with each other closely in order to gather feedback, and suit the desires of the customer. Consequently, making changes is very easy using this methodology.
- Agile: A methodology that focuses on building a feature at a time which are called sprints, and then iterate over that feature till it there is no feedback gathered from the customers. Consequently, the developers, designers, testers, and customers collaborate together, and work closely.

However, I have **chosen** to follow the **waterfall** methodology in developing the application, as there was a huge focus, and effort put on the planning, and analysis stages, and all of the requirements were set, and explained, also, all of the wireframes, mockups, sitemap are ready, and the following points show the advantages, and disadvantage of the waterfall methodology:

advantages

- Uses an organized, and obvious structure, as well as knowing what to do: As the waterfall methodology focuses on both of the planning, and analysis stages the requirements, design, implementation, and maintenance are all clear, and organized.

- Knowing the end goal: As it focuses on the planning, and analysis stages, the idea behind the application should be clear after planning, and analyzing the requirements, and so the idea of the application will be understood in an obvious way.
- Easier, and a clearer transformation from one SDLC stage to another: As using the waterfall methodology means that the seven stages of the SDLC are followed in order, as follows: planning → analysis → design → construction → testing → implementation → support.
- Can be used and followed in huge projects, as it provides one unifying plan which eases the process of building the application.

Disadvantages

- Difficulty of making changes: As the waterfall methodology focuses on building each stage, and then moving to the next stage, which may be a problem especially if the developing team did not understand the customer clearly, also, even if the customer was understood clearly the customer may ask for changes which forces the developing team to follow all the steps of the SDLC in order to make that change, which means that more money, and time will be needed.
- Customers are not highly involved in the process.
- Testing is delayed till all of the features of the application are implemented, which may lead to having many problems that need to fixed, and when we talk about development, having a problem means searching the whole code for the root cause, which may take much time, and resources than expected.
- Provides a high amount of risk, and uncertainty.

Moreover, it is better to use the waterfall methodology if the developing team has worked on a similar project before, also, if the budget is fixed, or the customer is not planning to be involved till the end of the project.

4.3. Development Plan Presentation

4.3.1. Peer review feedback

The overall impression that was given that all the work is good, and needs no changes, but the following points are all the comments that were given:

- The use case diagram is not made correctly; it would be better if you modify it so it includes the happy cases, also, the font is too small.
- For the class diagram two classes are not enough.
- For the ERD two tables are not enough.

### 4.3.2. Interpret the peer review feedback

1- Use case diagram:
   a. The major use of the use case diagram is to show the functionalities of the system, without considering the not happy cases, and so I think that remaking the use case diagram is going to be taken into consideration, also, the font size will be adjusted.

The following image shows the use case diagram before and after, respectively:
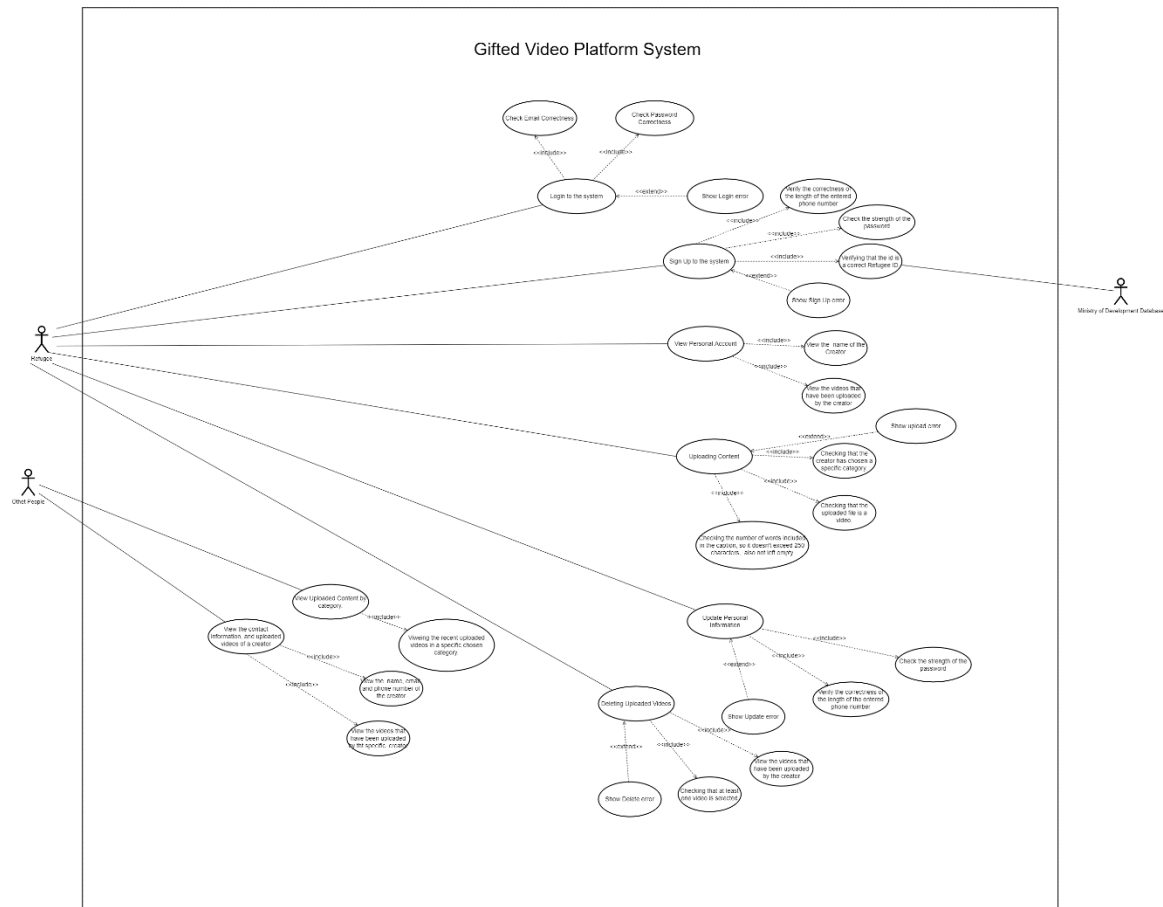
Gifted Video Platform System
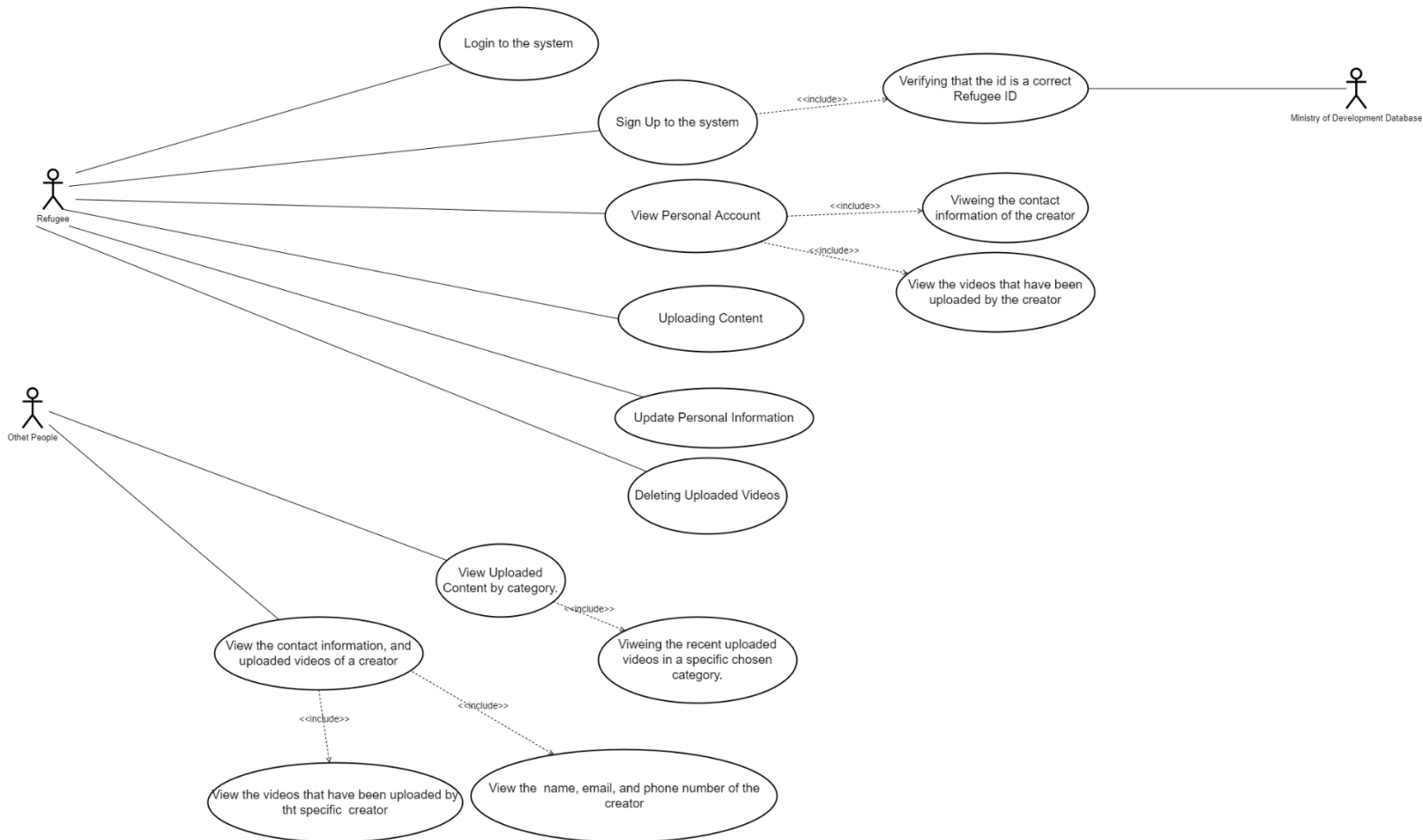
2- Class diagram
   a. It is true that two classes are not enough to make the system work perfectly, alternatively the two previously classes will be modified, and two new classes will be created to implement the MVC (Model View Controller) programming paradigm, or model, and so this feedback is going to be taken into consideration, and the following images show the class diagram before and after respectively:

Refugee

-ID : String
-firstName : String
-lastName : String
-email : String
-phoneNumber : String
-Password : String
-birthDate : String

+getID() : String
+setID(ID : String) : void
+getFirstName() : String
+setFirstName(firstName : String)
+getLastName() : String
+setLastName(lastName : String) : void
+getEamil() : String
+setEmail(email : String)
+getPhoneNumber() : String
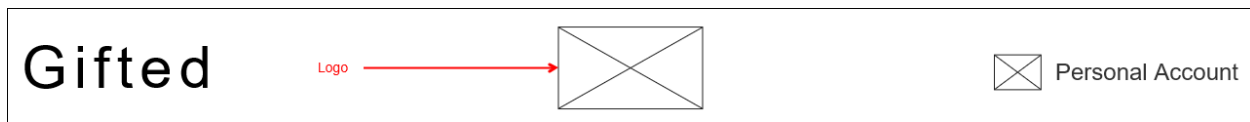+setPhoneNumber(phoneNumber : String) : void
+getPassword() : String
+setPassword(password : String) : void
+getBirthDate() : String
+setBirthDate(birthDate : String) : void

Video

-videoAddress : String
-videoCategory : String
-videoDescription : String

+getVideoAddress() : String
+setVideoAddress(videoAddress : String) : void
+getVideoCategory() : String
+setVideoCategory(videoCategory : String) : void
+getVideoDescription() : String
+setVideoDescription(videoDescription : String) : void
+uploadVideo(videoCategory : String, videoAddress : String, videoDescription : String) : void
+deleteVideo(id : int[]) : void
+showVideos() : void

1   Publishes
0...*

Refugee

-redugeeId : String
-firstName : String
-lastName : String
-email : String
-phoneNumber : String
-password : String
-birthDate : String

+getRefugeeId() : String
+setRefugeeId(refugeeId : String) : void
+getFirstName() : String
+setFirstName(firstName : String) : void
+getLastName() : String
+setLastName(lastName : String) : void
+getEmail() : String
+setEmail(email : String) : void
+getPhoneNumber() : String
+setPhoneNumber(phoneNumber : String) : void
+getPassword() : String
+setPassword(password : String) : void
+getBirthDate() : String
+setBirthDate(birthDate : String) : void

1   Publishes
0...*

Video

-videoId : int
-address : String
-categoryName : String
-videoDescription : String
-refugeeIdFK : String

+getVideoId() : int
+setVideoId(videoId : int) : void
+getAddress() : String
+setAddress(address : String) : void
+getCategoryName() : String
+setCategoryName(categoryName: String) : void
+getVideoDiscription() : String
+setVideoDescription(videoDescription : String) : void
+getRefugeeIdFK() : String
+setRefugeeIdFK(refugeeIdFK : String) : void

<<use>>

RefugeeModel

+listRefugees(dataSource : DataSource, query : String) : LinkedList<Refugee>
+addRefugees(dataSource : DataSource, refugee : Refugee) : void
+updateRefugeeInfo(dataSource : DataSource, refugee : Refugee) : void

<<use>>

VideoModel

+listVideos(dataSource : DataSource, query : String) : LinkedList<Video>
+addVideos(dataSource : DataSource. address : String, category Name : String, videoDescription : String, refugeeIdFK : String) : void
+removeVideo(dataSource : DataSource, videoId : Integer) : void

3- ERD

  a. Having two entity types is more than enough, especially that the scope of the application is so tight, as well as that the insertion to the database will be made automatically, and the categories will be as a selection, and so the user will not be able of inserting any different categories. Consequently, the feedback will not be reflected neither on the SDD nor on the application.
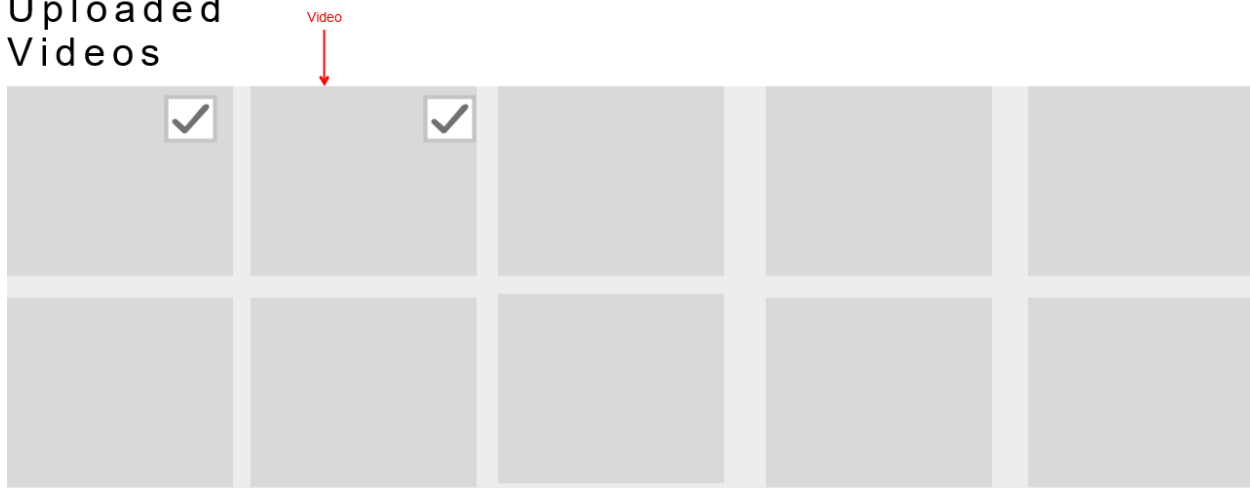
4.3.3. Identify and evaluate new opportunities

- For deleting created videos, it would be better not to allow users to select and delete the videos, and it would be better if they deleted it by id, in order to make the process of deleting videos harder, and so have more content on the platform, because it is known that most content creators go through a stage of hope, or passion losing, and then they delete all of their content, but with id, and confirmation it will be harder.
  - Deleting videos page before:

  - Deleting videos page after

Gifted   Logo ——————————>   [ ] Personal Account

Delete Uploaded Video

ID

| Enter the ID of the video |

Confirmation

| Write delete to confirm |

| Delete |

- Also, when a user shows a specific category's videos, the user is redirected into that specific category page, but the categories bar disappear which forces the user to go back to the index page. Consequently, an update has been made to add the categories' bar in the categories' pages, the following shows the difference before, and after respectively:
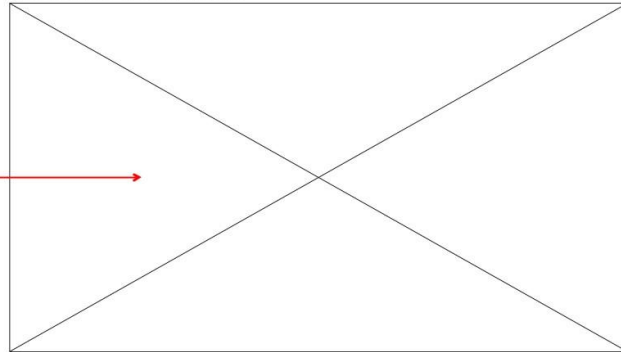
Gifted

Logo →

Logo

Login   Personal Account

Category Name

Created By: Creator Name

Video →

Description:

Created By: Creator Name
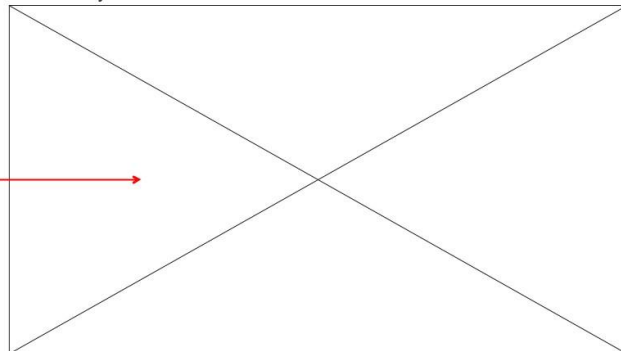
Video →

Description:

Created By: Creator Name

Video →

Description:

Gifted

Logo

Logo

Personal Account

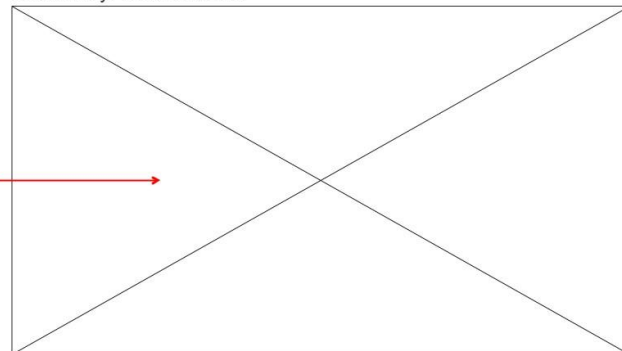| Category Name	Category Name	Category Name	Category Name	Category Name	Category Name

Category Name

Created By: Creator Name

Video

Description:

Created By: Creator Name

Video

Description:

Created By: Creator Name

Video

Description:

- Moreover, for the feedback that was gotten, new opportunities were taken into consideration as well, when the change of the use case diagram was implemented as the use case diagram mostly shows the functionalities of the system without the conditions related with it and so it was taken. Moreover, for the class diagram it was not enough just to have two classes in order to implement the backend of the website, and so another two classes were created to implement the MVC (Model View Controller) model as much as possible and so it was taken. Finally, for the ERD it was not taken into consideration as the insertion into the database will be automated, and limited with the categories that are being selected when a refugee uploads a video, and so it was not taken into consideration.

4.4. Application Development
4.4.1. Database

Database: It is an organized group of information usually managed by a Database Management System, however, databases are used in order to store the data of the users of the application and so identify the users of the application, also, the entities that are being used in the application like the images, or videos are usually stored in a database, and so it provides a place to store the information, however, databases are also used in order to make the applications dynamic, by dynamically, storing and retrieving the data, or information in, and from the database.

The type of the database that was used in making Gifted application is MySQL.

Moreover, a relational database was used which is MySQL which stores the information in tables called entity types, and those tables have columns which are the common properties that group specific entities, and each entity has a row, and those tables are connected together using foreign keys, and each table has a primary key. For example, the database that was used in Gifted, had two entity types, which are:

- Refugee: common properties (columns): refugee_id, first_name, last_name, email, phone_number, password, and birth_date.
- Videos: common properties (columns): video_id, category_name, description, address, and refugee_id(which is a foreign key from the refugee table).

So each refugee is an entity that belongs to an entity type called refugee, and each video is an entity that belongs to an entity type called videos.

4.4.2. Screenshots of the application:

1- Index Page

Figure 32Index-Page-App

2- Specific Category's page

Figure 33-Specific-Category-App

3- Specific creator contact information page:

Figure 34-Creator-Contact-App

4- Login page:

Figure 35-Login-App

5- Signup Page:

Figure 36-Signup-Page

6- Personal Account Page:

Figure 37-Personal-Account-App

7-   Uploading videos page:

Figure 38-Upload-App

8- Delete Videos page:

Figure 39-Delete-Video-App

9- Update Personal Information page:

Figure 40-Update-Personal-Information

The Following screenshots shows evidences of using the tools mentioned for design, and development:

- For the mockups, justinmind was used:
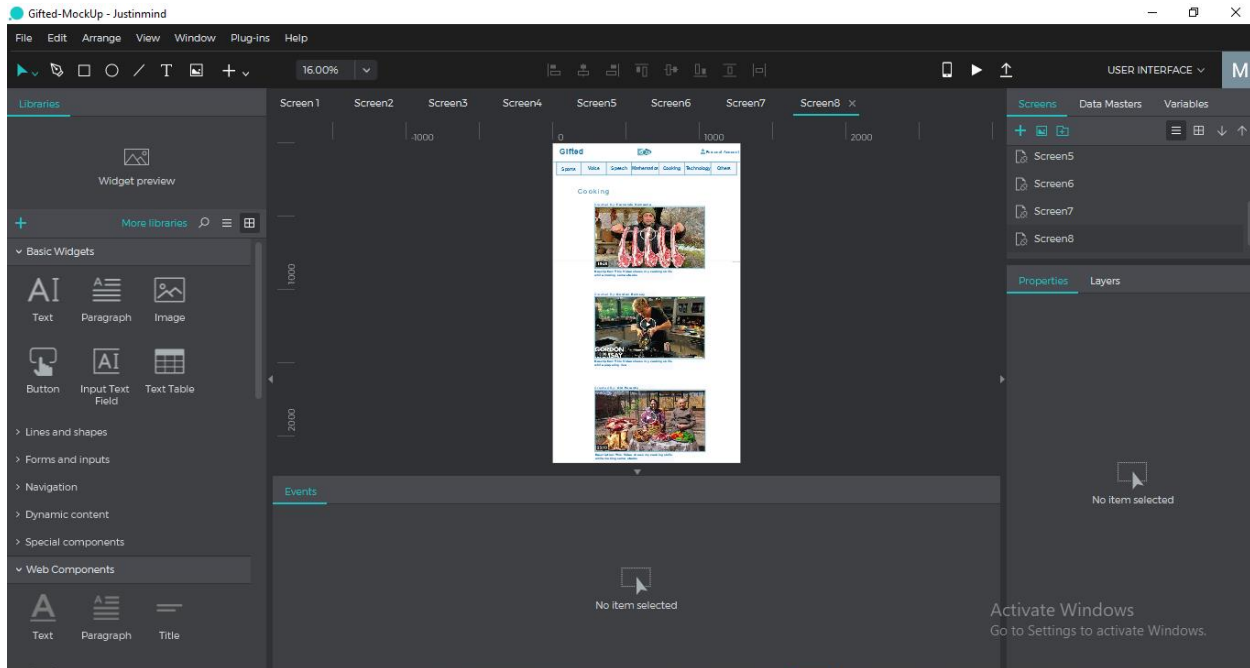
Figure 41-MockUps-Evidence

- For the wireframes, justinmind was used:
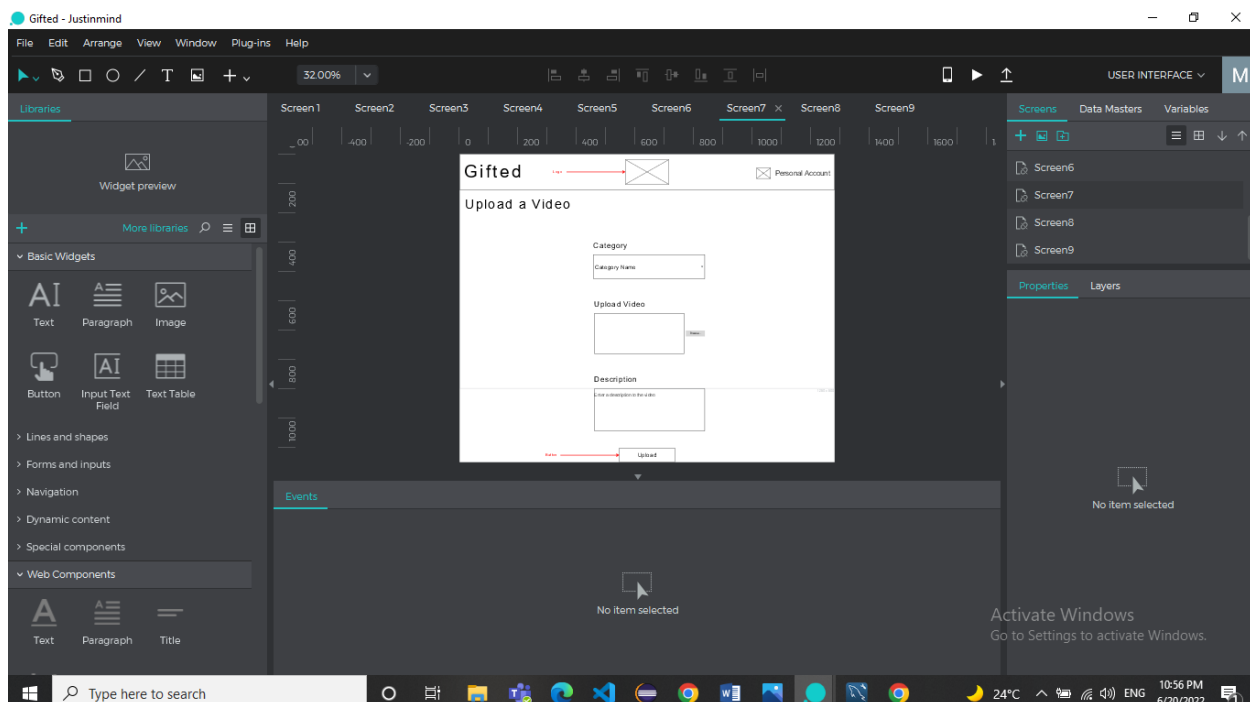
Figure 42-Wireframes-Evidence

- For the sitemap gloomaps was used:
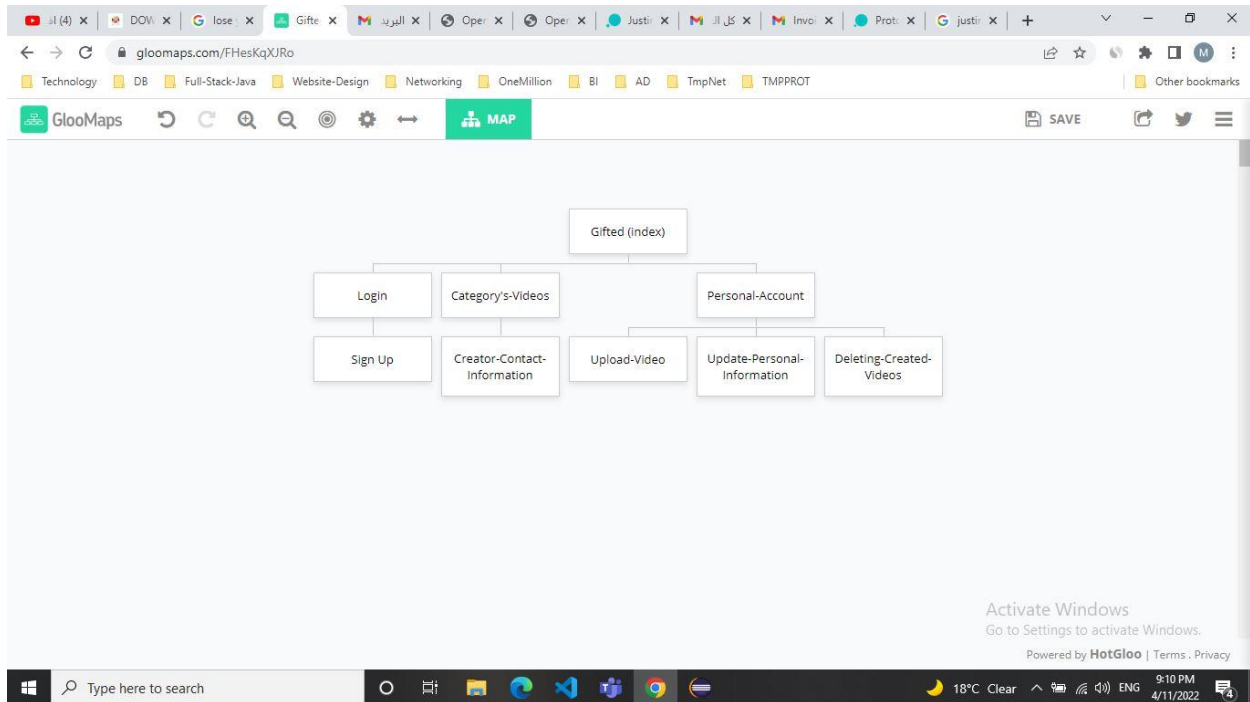
Figure 43-Sitemap-Evidence

- For the database MySQL workbench was used (The database called cutter):
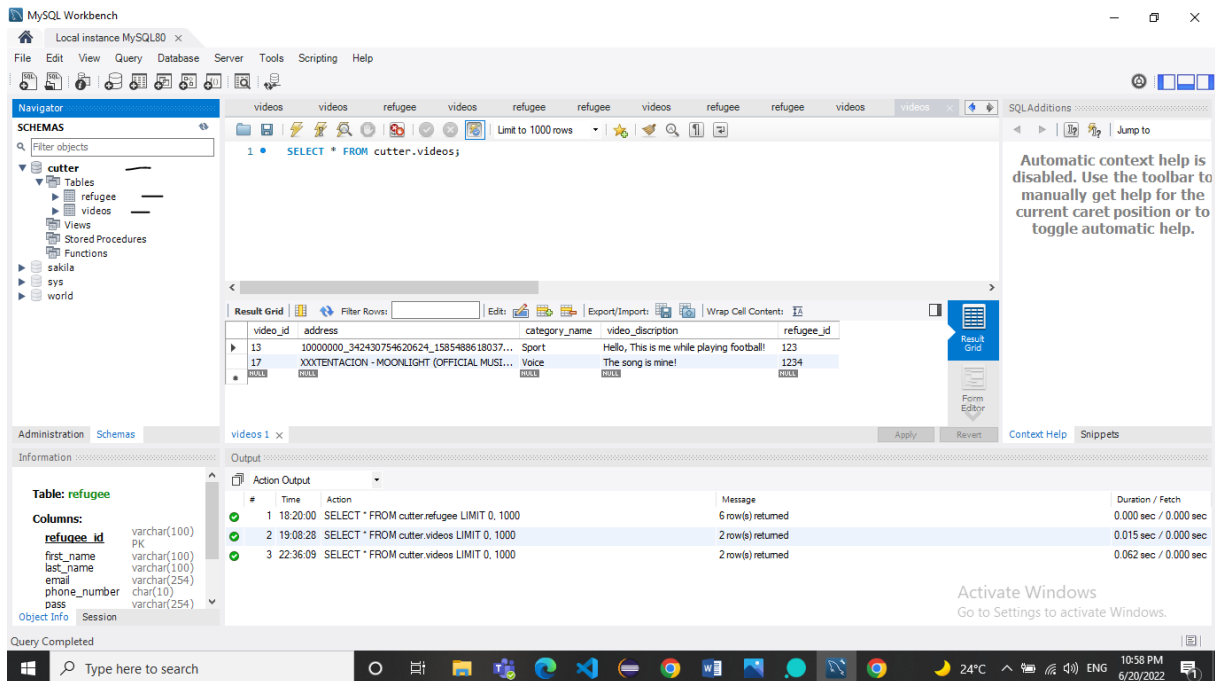
Figure 44-DataBase-Evidence

- For the development eclipse was used:
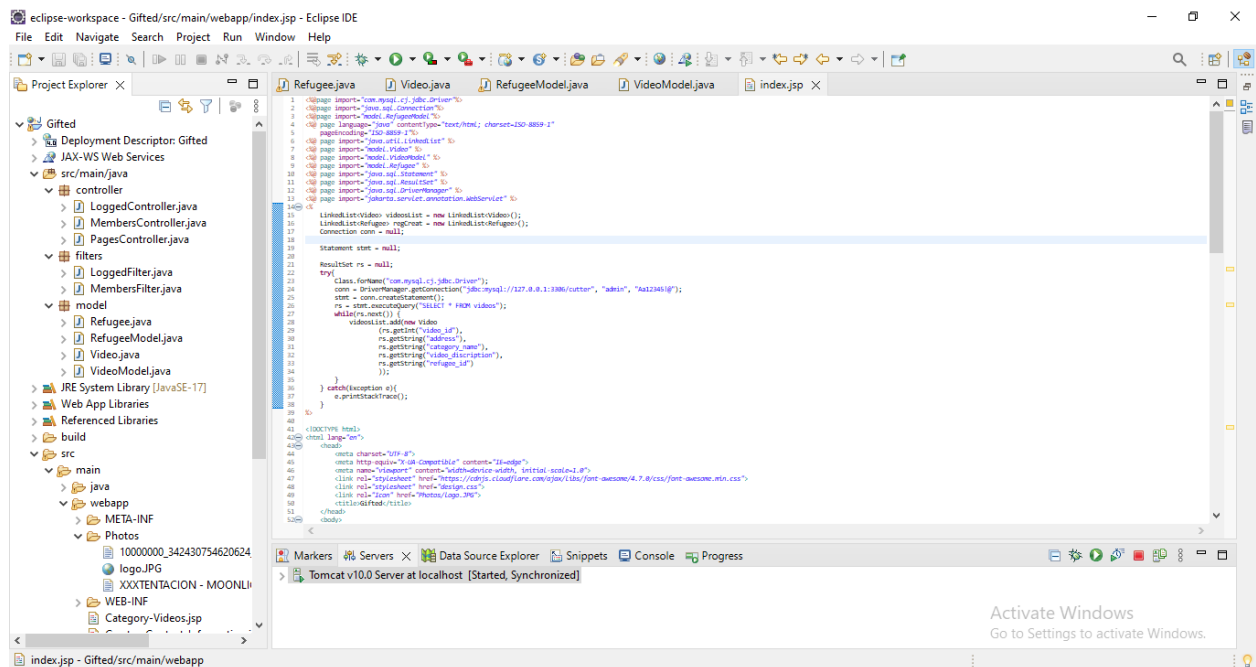
Figure 45-Eclipse-Evidence-1
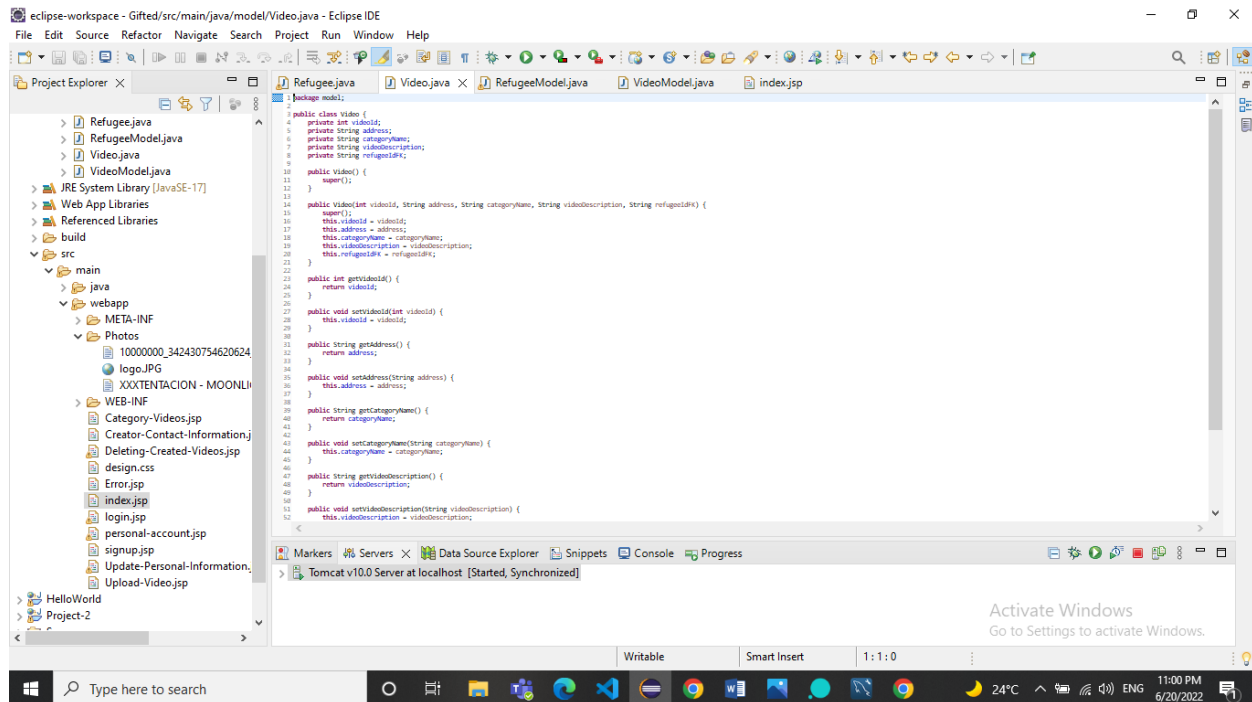
Figure 46-Eclipse-Evidence-2

5. Testing
5.1. Testing Plan

Testing is the phase where the overall system is tested, in order to look for any bugs, or errors, or even to check whether the system is working properly or not. However, each test case will be tested in three paths which are:

- Happy path: The happy case scenario where everything is going as expected.
- Alternative path: The path that alternatively gets the user to the happy path.
- Exceptional path: The path that shows any failures in the user experience.

*Note: The id of the test is the number of the test case.

1- (Functionality testing)
   a. Module Name: Login to the system
   b. Test Data:
      i. Email: mohmmadhannoun76@gmail.com
      ii. Password: 1234
   c. Preconditions: The user clicks on the personal account icon from the index page
   d. Test Priority: High
   e. Test Scenario: After clicking on the personal account icon, and being redirected to the login page, we will try entering the email, and password mentioned above.
2- (UI testing)
   a. Module Name: Navigating to a specific category
   b. Test Data: Trying to navigate to the sports category
   c. Preconditions: The user clicks on the sports category from the index page categories' bar, or by using a mobile phone using the hamburger menu
   d. Test Priority: High
   e. Test Scenario: We will try to click on the sports category from the categories' bar which is for the big screens, and on the sports category from the hamburger menu which is from smaller screens.
3- (Database testing)
   a. Module Name: Showing personal information
   b. Test Data:
      i. Email: mohmmadhannoun76@gmail.com
      ii. Password: 1234
   c. Preconditions: Clicking on the personal account icon from any of the pages that contain it
   d. Test Priority: High
   e. Test Scenario: The information of a specific user should be retrieved from the database correctly.
4- (Performance Testing)
   a. Module Name: Uploaded videos must be shown rapidly in the category they belong to.
   b. Test Data will be performed using the following account:
      i. Email: mohmmadhannoun76@gmail.com
      ii. Password: 1234
   c. Preconditions: after a successful login to the system, and clicking on the uploading videos, and also filling the upload videos information, and then hitting upload
   d. Test Priority: Medium
   e. Test Scenario: After uploading a video, the category that the video belong to will be checked directly, to see whether the video is uploaded or not.
5- (Database Testing)
   a. Module Name: removing uploaded videos.

b. Test Data will be performed using the following account:
    i. Email: mohmmadhannoun76@gmail.com
    ii. Password: 1234
c. Preconditions: Going to the personal account, and then clicking on delete created videos
d. Test Priority: Low
e. Test Scenario: deleting a video by writing its id, and the confirmation word "delete"

Table 5-Testing

Test Id	Steps of happy path	Steps of alternative path	Steps of exceptional path	Expected result	Actual result
1	Entering a correct email, and password, and then clicking login, and then getting redirected to the personal account page.	Clicking on not registered in the bottom of the login page, and then entering correct information to sign up to the system, and the user gets automatically logged in, and redirected to the personal account page.	Leaving one or both of the email, and password empty→ The user will not be able of clicking the login button. OR Entering a wrong email, → Getting a message saying "Sorry, the email entered is not correct " OR Entering a wrong password for a correct email→ Getting a message saying "Sorry, the password	PASS	PASS

			entered is not correct ,,		
2	Clicking on the sports category from both of the big screens, and small screen which is by clicking on the sports from the categories bar, or from the hamburger menu in the index page respectively, and then get redirected to the sports category page.	Clicking on the sports category from both of the big screens, and small screen which is by clicking on the sports from the categories bar, or from the hamburger menu in any category's page respectively, and then get redirected to the sports category page.	Clicking around the sport category and not getting redirected to the sport category page.	PASS	PASS
3	Getting redirected to the personal account page, and all of the personal information is retrieved correctly.	Not being signed in, and login to the system using a correct email, and password, and then get redirected to the personal information page, and all of the personal information is retrieved correctly.	Entering the personal account page through the URL, while not being logged in, and getting redirected to the login page.	PASS	PASS
4	Uploading the video,	Uploading the video,	Uploading the video,	PASS	PASS

	and then checking that specific category's page, and be able of finding the video that have been uploaded instantly.	and then checking that the video has been uploaded to the recent uploaded videos in the index page instantly.	and waiting for 5-10 seconds till the video shows, as the number of uploads to the server is huge.		
5	Entering the id of a video that was uploaded by the logged in user, and then writing the confirmation word "delete", and the video gets deleted from the personal account page, as well from the database.	Signing up to the system, and then upload a video, and then remove it immediately, by entering the id of the video, as well as the confirmation word, and the video gets deleted from the personal account page, as well as the from the database.	Entering a random video id that does not exist, or maybe was uploaded by another user, and getting a warning message telling "The video wasn't uploaded by you!"	PASS	PASS

5.2. Performance review

The application has implemented all of the functional requirements that were researched, and asked to be implemented. Consequently, the application has provided the refugees, with the ability of logging in to the system, signing up to the system, as well as the application contain all the suitable features that allow refugees from updating personal information and not allowing them of changing the id, also, the application has allowed refugees of signing up to the system using same phone numbers, or emails in order to ease the process on them of signing up to the system, especially that they have limited resources like phone numbers for example, also, the signing up feature has contained some condition where the user fails to sign up like leaving any of the fields empty, or entering an already used refugee id by showing the suitable messages for

both of the cases, moreover, the login feature had some conditions helping the user to know what is wrong whether with the email, or password entered, also, if any of the fields were left empty, warning messages will be shown to the user. Additionally, the uploading videos feature has been implemented, and the uploading process was synchronized so once the user uploads a video, the videos will be directly uploaded to the personal account, specific category's, and index pages instantly, also, if the user tries to leave any of the fields empty the user will not be able of uploading the video, and will get warning messages showing that there are empty fields. In addition, the removing videos feature was implemented perfectly so when a user tries to delete an uploaded video, and the video was uploaded by him/her, he/she will get a message showing that the video has been deleted, and the video will be instantly deleted from the database, and the personal account, category's, and index pages, also, if the user tries to delete a video that was not uploaded by him, he will get a warning message that the video was not uploaded by him, and if any of the fields were left empty he will get warning messages, also, if the user does not write the confirmation word which is "delete" a message telling that the user should fill the confirmation word field properly. Moreover, when a user tries to update his personal information he will be able of updating any field, but the id field it is not changeable, also if any of the fields were left empty the user will not be able of updating till filling the empty fields. Also, when showing the creator's contact information page, the un-logged in users were able of showing the personal account page for that specific creator, also, the videos that are recently uploaded will be shown on the top of the previously uploaded videos, so the users can see the newly uploaded videos. Consequently, all of the features were implemented correctly, and most of the unexpected cases were handled by the application, also, when a user tries to navigate to any of the personal account, upload-videos, delete-uploaded-videos, update personal information pages, and the user is not logged in the user will be redirected to the login page, which increases the level of security of the application, and enhances the UX. Moreover, all of the UI elements have taken unified shapes, and styling so there is consistency in the UI, and so providing a better UX.

All in all, the application has successfully met all of the as of the functional, and non-functional requirements as they were applied, and taken into consideration. Also, for all of the pages, the application was a reflection for the mockups, and wireframes that were created, and the sign in, sign up, upload video, delete video, and update personal information's entered information was as mentioned in the requirements, as well as showing the videos, and the creator contact information. Moreover, the application is reliable, maintainable as all of the code was written carefully and in an organized manner, as well as portable as it is responsive, and usable as it consists of simple, and non-complex instruction, and components. Also, no one can sign in to another user's account unless he enters exactly the right credentials. Also, the non-logged in users were fully able of viewing the recently uploaded videos, as well as specific category's videos, and so available to be accessed from anywhere, all the time. However, the integration part was not performed, and the integration will be performed with the MD database instantly after we have access to their databases.

5.3. Overall business application review

5.3.1. Critical Review for all application development phases

In the design stage, the sitemap was created firstly using gloomaps tool which was not the best choice as that too does not provide the importing previous work functionality, which may make it harder to modify anything in it, but however it was a good tool for creating a simple sitemap that contains a small number of pages. Also, the wireframes, and mockups were created using justinmind tool which was really a good choice to be taken as justinmind supports making both of the wireframes, and mockups using it which has made the process of making the mockups really easy as the structure of the pages has been already set using the wireframes, however, if the wireframes, and mockups of the smaller devices (mobile phones) were created I think that this will have made the process of making the website responsive much easier. Also, the techniques that were followed were the sitemaps, wireframes, and mockups, I believe that using the prototyping technique would have enhanced the system's features and user experience as there will be multiple iterations before starting constructing the application by code, also, by prototyping the construction process would have been easier as the logic behind it will be implemented in the prototype which is an easy to make. Moreover, in the design stage the use case diagram was created, and it was modified so it suits the changes that were asked to be implemented, however, the use case diagram did not help too much, and maybe the time that was put into making it was not worth it, as all of the requirements have been set previously, but also it was a good way using which the non-technical people were able to understand the system's functionalities more clearly.

For the development stage, the waterfall methodology was used, as well as the "from scratch" development technique along with the eclipse as a development tool, however, it was really good combination as the waterfall focuses on gathering requirements, and the "from scratch" technique focuses on building everything from scratch, and the too which is eclipse was a tool originally used for "from scratch" development, and by using the waterfall technique all of the requirements where gathered, and then the wireframes were created as well as the mockups, and then the feedback was gotten on them, and the changes were reflected on them, and so when the time for building the application came, all of the requirements were set, as well as the design of the pages, and coloring in the design stage, which has made the process of constructing the application from scratch with one shot very easy, as much research was made, and all I had to do is writing the suitable pieces of code, also, the ERD, class diagram, component diagram, and the activity diagrams were created in the design stage, which has made the process of creating the database, java application, and understanding the logic of the application much easier. All in all, by finishing the design process fully, and then moving to the construction stage with all of the designs that were made, the process of constructing was very clear, and it was not interrupted at all by any new changes.

For the testing stage, all of the features that were asked to implemented and have been implemented were tested fully, by conducting various types of testing, and setting the priority of the test case, as well as the scenario, precondition, testing data, and the three different paths happy, alternative, and exceptional, however, in the report just five of them were included, also, the expected, and actual results were filled with the data that was used in the testing, however, I

believe that the testing stage were fully implemented, and all of the cases were covered, even if they are not included in the report. All in all, I think that the testing stage was a little late, but the waterfall methodology has forced us to perform the testing after finishing the whole construction stage, which may have been led to having many issues, and so if the testing was performed on each feature after getting constructed, the process of finding errors will be much easier.

All in all, the factors that may really affect the performance of the application are many, and to be honest no one can know what will exactly affect that application, however, the following shows some of the factors that may affect the performance of the application:

- Having many requests on the server, which may lead for having some latency in the application.
- Having a lot of people uploading videos in the same time, which will affect the performance of the application, as uploading videos is a complex, and heavy process, as the size of the videos is huge.
- Not providing the application with the suitable maintenance, or giving up on the application as the number of users using the application is not as expected, and much lower in the early stages of the application.
- The functional requirements did not include that refugees should be able of resetting their passwords if they forget it, which may cause a problem in the performance of the application, as the people who lose access to their accounts may leave the platform and stop creating videos, and so the number of users reduces, and so the interest in the application as well, which will result in the above point.

As a conclusion, all of the areas of risks were taken into consideration, from the first stages of creating the application. Consequently, the time shortage was managed by letting a team that has been worked on a similar project previously, work on that project, and so shortening the time needed for development. Also, the conflict was managed by understanding, and listening to both conflicted parties' opinions, and then forming a neutral team instantly in order to judge between them, and so the conflict has been managed, and no time was wasted on it. Moreover, the lack of resources was managed by employing a team that have previously worked on a similar project, and understands the situation that the refugees live in, and advertisings were made to gather a team that is experienced, and empathetic, who would be happy helping refugees. Finally, for the feedback, the process of gathering feedback was encouraged with telling refugees that giving their feedback will change their lives forever, as they will use that application in order to show their gifts, which will attract different investors, who will be happy sponsoring their gifts, and taking care of them, and so the feedback gathering risk was managed, although that some people tended not to talk to us at all.

5.3.2. Application evaluation and future development

Strengths of the application:

- The process of uploading videos is really fast and almost the same as using a real-time database, as well as the processes of removing videos, and updating personal information.

- The verifying processes when logging in, signing up, updating personal information, removing videos are tough.
- The session control in the application is highly managed, and the users have specific time of not being active, and after that specific time they will get logged out of the system.
- The application is responsive for both of the laptops, and mobile phones, and so can be used by both of them.
- According to a usability testing that has been performed, the feedback was "The application is really easy to use, and have great coloring especially for the mobile version".
- Provides Meaningful, and interesting user experience in the mobile version.
- Multiple refugees can use the same email, and phone number, as a way of understanding their financial situation.
- The videos showed in both of the index, and a specific category pages are arranged from the recent ones in the top, to the old ones in the bottom.

Weaknesses of the application

- The laptops, or big screens pages are not as interestingly designed as the pages for the mobile phones.
- Users cannot reset their password.
- A relational database(MySQL) was used, which stores the url of the video, and uploads the video to a local folder, and retrieves it by url.
- The website only supports videos with a specific height, and width, and if other sizes were uploaded problems in design may occur.
- Being refugees able of using the same phone number, and email for multiple accounts may lead to vandalism, and inequality, as they will be creating new accounts each time they forget the password, using other people's refugee id.
- The MVC model in development was not followed in some of the pages, which may make the process of maintain the application a little bit harder.

Opportunities of improvements, and further development

- Using NoSQL database, so the videos can be uploaded directly to the database as objects.
- Adding the reset password functionality.
- Improving the application so it accepts all video sizes, without having design issues.
- Rearranging the code so all of the code follows the MVC model, and so the code, and the application are easier to be maintained.
- Adding the liking, and commenting features.
- Adding the chatting feature, so third parties can contact the refugees directly from the application.
- Providing third parties with the ability of creating accounts, so they can contact the refugees.

6. Implementation and support

The application will be deployed into a server that has the JVM (Java Virtual Machine), as java applications require special type of deployment, also, it would be better if the website was deployed to a paid hosting, so the process of uploading videos be easy, and so the application be available all the time, without facing any performance issues caused because of a bad hosting service. Moreover, the application will be supported, and maintained as follow:

- For the first month 24/7 support will be provided to the application, then.
- Each month a check will be made on the database connectivity, and on the performance of the application.
- Each three months, new features will be added to the application.
- Each year the hosting will be renewed.