

## Higher Nationals

### Internal verification of assessment decisions – BTEC (RQF)

INTERNAL VERIFICATION – ASSESSMENT DECISIONS			
Programme title	BITEC Higher National Diploma in Computing		
Assessor	Miss.Gayani Nisansala	Internal Verifier	Mr.Lakindu Premachandra
Unit(s)	Unit 40- User Experience and Interface Design		
Assignment title	User experience design for E-music cloud		
Student's name	Ranudi Gayathmie Kariyapperuma		
List which assessment criteria the Assessor has awarded.	Pass	Merit	Distinction
INTERNAL VERIFIER CHECKLIST			
Do the assessment criteria awarded match those shown in the assignment brief?	Y/N		
Is the Pass/Merit/Distinction grade awarded justified by the assessor's comments on the student work?	Y/N		
Has the work been assessed accurately?	Y/N		
Is the feedback to the student: Give details: • Constructive? • Linked to relevant assessment criteria? • Identifying opportunities for improved performance? • Agreeing actions?	Y/N Y/N Y/N Y/N		
Does the assessment decision need amending?	Y/N		
Assessor signature		Date	
Internal Verifier signature		Date	
Programme Leader signature (if required)		Date	

Confirm action completed			
Remedial action taken Give details:			
Assessor signature		Date	
Internal Verifier signature		Date	
Programme Leader signature (if required)		Date	

## Assignment Feedback Form

Student Name/ID	Ranudi Gayathmie Kariyapperuma KIR/X - 00104243		
Unit Title	Unit 40- User Experience and Interface Design		
Assignment Number		Assessor	
Submission Date	30.11.2023.	Date Received 1st submission	
Re-submission Date		Date Received 2nd submission	

### Assessor Feedback:

**LO1 Research what aspects of User Experience and Interface Design are necessary and appropriate to satisfy end-user emotions, desires and attitudes when using a user interface concept.**

Pass, Merit & Distinction P1 ☐ P2 ☐ M1 ☐ M2 ☐ D1  
Descripts

**LO2 Plan an appropriate User Experience map and Interface Design for a User Interface concept with a specific target end user in mind and outline the tests you mean to conduct.**

Pass, Merit & Distinction P3 ☐ P4 ☐ M3 ☐ M4 ☐ D2  
Descripts

**LO3 Build a User Interface concept and test it with users to see if it satisfies their emotions, desires and attitudes as planned.**

Pass, Merit & Distinction P5 ☐ P6 ☐ M5 ☐ M6 ☐  
Descripts

**LO4 Evaluate user feedback, test results and insights gained from end users interacting with your User Interface concept to determine success or failure and steps to improve in future versions.**

Pass, Merit & Distinction P7 ☐ P8 ☐ M7 ☐ D3 ☐  
Descripts

Grade:	Assessor Signature:	Date:
Resubmission Feedback:		
Grade:	Assessor Signature:	Date:
Internal Verifier's Comments:		
Signature & Date:		

\* Please note that grade decisions are provisional. They are only confirmed once internal and external moderation has taken place and grades decisions have been agreed at the assessment board.

## Assignment Feedback

<b>Formative Feedback: Assessor to Student</b>			
<b>Action Plan</b>			
<b>Summative feedback</b>			
<b>Feedback: Student to Assessor</b>			
<b>Assessor signature</b>		<b>Date</b>	
<b>Student signature</b>		<b>Date</b>	

# Pearson Higher Nationals in Computing

## Unit 40: User Experience and Interface Design Assignment

### General Guidelines

1. A Cover page or title page – You should always attach a title page to your assignment. Use previous page as your cover sheet and make sure all the details are accurately filled.
2. Attach this brief as the first section of your assignment.
3. All the assignments should be prepared using a word processing software.
4. All the assignments should be printed on A4 sized papers. Use single side printing.
5. Allow 1" for top, bottom, right margins and 1.25" for the left margin of each page.

### Word Processing Rules

1. The font size should be **12** point, and should be in the style of **Time New Roman**.
2. **Use 1.5 line spacing**. Left justify all paragraphs.
3. Ensure that all the headings are consistent in terms of the font size and font style.
4. Use **footer function in the word processor to insert Your Name, Subject, Assignment No, and Page Number on each page**. This is useful if individual sheets become detached for any reason.
5. Use word processing application spell check and grammar check function to help editing your assignment.

### Important Points:

1. **It is strictly prohibited to use textboxes to add texts in the assignments, except for the compulsory information. eg: Figures, tables of comparison etc. Adding text boxes in the body except for the before mentioned compulsory information will result in rejection of your work.**
2. Carefully check the hand in date and the instructions given in the assignment. Late submissions will not be accepted.
3. Ensure that you give yourself enough time to complete the assignment by the due date.
4. Excuses of any nature will not be accepted for failure to hand in the work on time.
5. You must take responsibility for managing your own time effectively.
6. If you are unable to hand in your assignment on time and have valid reasons such as illness, you may apply (in writing) for an extension.
7. Failure to achieve at least PASS criteria will result in a REFERRAL grade.
8. Non-submission of work without valid reasons will lead to an automatic RE FERRAL. You will then be asked to complete an alternative assignment.
9. If you use other people's work or ideas in your assignment, reference them properly using HARVARD referencing system to avoid plagiarism. You have to provide both in-text citation and a reference list.
10. If you are proven to be guilty of plagiarism or any academic misconduct, your grade could be reduced to A REFERRAL or at worst you could be expelled from the course

### **Student Declaration**

I hereby, declare that I know what plagiarism entails, namely to use another's work and to present it as my own without attributing the sources in the correct form. I further understand what it means to copy another's work.

1. I know that plagiarism is a punishable offence because it constitutes theft.
2. I understand the plagiarism and copying policy of Pearson UK.
3. I know what the consequences will be if I plagiarise or copy another's work in any of the assignments for this program.
4. I declare therefore that all work presented by me for every aspect of my program, will be my own, and where I have made use of another's work, I will attribute the source in the correct way.
5. I acknowledge that the attachment of this document signed or not, constitutes a binding agreement between myself and Pearson UK.
6. I understand that my assignment will not be considered as submitted if this document is not attached to the assignment.

**ranudigk@gmail.com**

**Student's Signature:**  
**(Provide E-mail ID)**

**Date: 30.11.2023.**  
**(Provide Submission Date)**

## Higher National Diploma in Business

### Assignment Brief

Student Name /ID Number	Ranudi Gayathmie Kariyapperuma KIR/X - 00104243
Unit Number and Title	Unit 40: User Experience and Interface Design
Academic Year	2021/22
Unit Tutor	Miss.Gayani Nisansala
Assignment Title	User Experience Design for e-music cloud
Issue Date	29.10.2023
Submission Date	30.11.2023.
IV Name & Date	

#### Submission format

The submission should be in the form of an individual report written in a concise, formal business style using single spacing (refer to the assignment guidelines for more details). You are required to make use of headings, paragraphs, and subsections as appropriate, and all work must be supported with research and referenced using Harvard referencing system. Please provide in-text citation and a list of references using Harvard referencing system.

**The recommended word count is 4,500–5,000 words excluding annexures..**

**Minimum word count – 4,500**

**Maximum word count – 5,000**

	Unit Learning Outcomes:
	<p>LO1. Research what aspects of User Experience and Interface Design are necessary and appropriate to satisfy end-user emotions, desires and attitudes when using a user interface concept.</p> <p>LO2. Plan an appropriate User Experience map and Interface Design for a User Interface concept with a specific target end user in mind and also outline the tests you mean to conduct.</p> <p>LO3. Build a User Interface concept and test it with users to see if it satisfies their emotions, desires and attitudes as planned.</p> <p>LO4. Evaluate user feedback, test results and insights gained from end users interacting with your User Interface concept to determine success or failure and steps to improve in future versions.</p>



Assignment Brief and Guidance:
<p><b>Scenario</b></p> <p>e-music cloud (EMC) is an emerging, cloud based, online music platform developed in Sri Lanka by a tech start-up founded by a group of young graduates. EMC team is hiring you as an Associate User Experience Engineer, putting you in-charge with designing UI of the EMC system.</p> <p>You need to thoroughly consider about following features when you are designing the UI,</p> <ul style="list-style-type: none"> <li>• <b>EPN: e-music producer network:</b> A music producer can register, sign up, publish or unpublish their work, monitor the distribution of their published songs, view their account balance and to withdraw the balance through a cheque.</li> <li>• <b>eMusic Discovery:</b> A registered users can look up artists, albums, and find music they like. Once the eMusic Discovery is made, the user has options to             <ul style="list-style-type: none"> <li>○ Rent a song for 3 months: Song will be available in <b>My Library</b>.</li> <li>○ Own a song: Song will be available in <b>My Library</b> until user cancels the subscription.</li> </ul> </li> <li>• <b>My Library:</b> Include all music videos &amp; playlists available to the user at that time. User has options to view and sort by Artist, Album, Genera, Year, Source (Rented, Own, Gifted) and etc. User has options to select a song and             <ul style="list-style-type: none"> <li>○ Preview it</li> <li>○ Add it to a playlist</li> <li>○ Gift it to a friend (for a week, Permanently, just one listen) (<i>* When gifted, it will be greyed out from My Library for the 'Gifted duration'. If it is a permanent gift, clicking on it will bring user back to the eMusic Discovery and indicate" already selected"</i>)</li> <li>○ "Find Music Like This" will take the user to discovery section to find similar music's, artists and albums.</li> </ul> </li> <li>• <b>eM Player:</b> When user plays a song or a list, the user will be brought to the eM Player which gives play controls and allow different playlist manipulations. It also contains</li> </ul>

records of previous play-lists and gives user to rate the presently playing music. In addition, player also contains the previously discussed “Music Like This” and “Gift” options which can be applied to the selected song or selected play-list.

- **Settings:** Will give user the options to manage visual appearance, language settings, payment options and options to manage devices connected to user’s EMC account.

	Activities / Tasks:
	<p><b>Activity 01:</b></p> <p><b>1.1</b> Write an elaborative report to the board of directors of EMC to convince them why they need to increase their focus on the user interface and user experience in addition to the system's feature set to achieve the company's corporate goal. This report should include following areas.</p> <ul style="list-style-type: none"> <li>• Present an overview of UX and UI design and assess standard tools available in UX &amp; UI design.</li> <li>• Recognize and review different forms of UX-UI and their end-user testing requirements by referring to advantages and disadvantages of them for different testing outcomes.</li> </ul> <p><b>1.2</b> Analyze the Impact of UX &amp; UI methodology in Software Development life Cycle and evaluate specific forms of UX-UI. Justify their use in a User Interface concept method available for testing for user requirements against the UX-UI design.</p> <p><b>Activity 02:</b></p> <p><b>2.1:</b> Review different end users of EMC using user categorizations, classifications and behavior modelling techniques and select a specific end user from those identified. Appraise and develop user 'Persona' for the identified user. Present your empathy map, experience map and customer journey map.</p> <p><b>2.2:</b> Apply a relevant development methodology to develop interaction / interface for the Persona developed in 2.1 and devise a plan to test User Interface Design methodology and tools selected against end user requirements. Justify your selection.</p>

**Activity 03:**

**3.1:** Examine and employ appropriate tools that can be used to develop the interface/ interaction designed in activity 2

**3.2:** Conduct a user experiment for the developed interface and examine feedback. Evaluate feedback received and make multiple iterations of the interface based on the outcome of the evaluation.

**Activity 04:**

**4.1:** Critically Evaluate the feedback and tests results received for the multiple iterations and the final version of the interface developed in 3.2. and compare it against the original plan/ use requirements.

**4.2:** Discuss your insight in using prototyping by critically evaluating the overall success of concept of the interface you developed. Suggest ways in which any future versions of the UI you developed can be improved.

## ACKNOWLEDGEMENT

At last author would like to share the experience while doing the project. Author learns many new things about the projects. The best thing which author can share is that author developed more interest in this subject. This Module gave an interest to the author to find more information about it. .

A very special thanks to Miss.Gayani Nisansala who teach us this subject and Author thanks for who helped author to do this kind of project. Thank you!

Regards,

The author,

Ranudi Kariyapperuma.

## Contents

Different forms of user experience .....	17
Different forms of user interface.....	19
Specific forms of user experience and user interfaces .....	24
Advantages and disadvantages of different forms of user interface. ....	25
User Experience Tools .....	28
User Interface Design Tools .....	29
The Author used Interface Design Tools .....	30
Music discovery users (listeners).....	31
Music producers(publishers).....	32
Persona .....	34
Tools for UI and UE for EMC-Music .....	36
Wireframes of EMC.....	38
Design Interfaces For EMC .....	48
Prototype of the interfaces .....	53
End user experiments and examine feedback .....	54
Future improvement of EMC application .....	61
The Software Development Life Cycle (SDLC).....	62

## Table of Figures

Figure 1 : CLI.....	19
Figure 2 : GUI.....	20
Figure 3 : Menu-Driven Interfaces.....	21
Figure 4 : Form Based Interface .....	22
Figure 5 : Natural Language Interface .....	23
Figure 6 : Cody .....	34
Figure 7 : Rizmi .....	35
Figure 8 : Kavindana.....	35
Figure 9 : First Page .....	38
Figure 10 : Login Interface .....	39
Figure 11 : Registration Page.....	40
Figure 12 : Home Page.....	41
Figure 13 : Publish Interface .....	42
Figure 14 : Music .....	43
Figure 15 : Menu interface.....	44
Figure 16: Emusic Libarary .....	45
Figure 17 : EPN Balance Interface .....	46
Figure 18 : Emusci Discovery.....	47
Figure 19 : first page .....	48
Figure 20 : Signup interface.....	49
Figure 21 : Sign in.....	50
Figure 22 : Home page.....	51
Figure 23 : Music play Interface .....	52
Figure 24 : feedback form 1 .....	54
Figure 25 : Feedback Form 2 .....	55
Figure 26 : Feedback Form 3 .....	56
Figure 27 : Feedback Form 4 .....	57
Figure 28 : Pie chart 1 .....	58
Figure 29 : pie chart 2 .....	58
Figure 30 : pie chart 3 .....	59

Figure 31 : pie chart 4 .....	59
Figure 32 : pie chart 5 .....	60
Figure 33 : pie chart 6 .....	60



## **Different forms of user experience**

### **Physical Experience**

Real-time engagement with surroundings, interfaces, or goods is what is meant to be experienced by users through physical interaction. It includes all of the senses, including taste, smell, touch, sight, and sound. Using a touchscreen device, for example, entails three distinct physical experiences: tapping on the screen, feeling the vibrations of the device, and seeing the screen react to your touch. Users and the product can establish a direct and instantaneous connection through a well-designed physical experience, which can promote a deeper knowledge and engagement. It can be difficult to design inclusively, though. To ensure that everyone, regardless of physical constraints, has an equally engaging and user-friendly experience, it is imperative to ensure accessibility for users with various physical abilities.

### **Mental Experience**

When interacting with a product or system, the user's mental experience revolves around cognitive engagement, which includes thoughts, perceptions, and decision-making processes. It has to do with how people cognitively traverse systems, absorb information, and interpret user interfaces. Users cognitively engage when utilizing sophisticated software applications, for example, by digesting information, making decisions, and comprehending the functionality of the system. Positive mental experiences have the advantage of being adaptable to complicated interactions, enabling users to interact with intricate systems. Preventing cognitive overload is a difficulty, though, particularly in interfaces that present a large amount of information. Clearness and richness of information must be balanced for a satisfying mental experience..

### **Emotional Experience**

The emotions and reactions sparked by interacting with a system or product are referred to as the emotional user experience. It includes a broad range of feelings, such as happiness, contentment, and delight as well as frustration, perplexity, and disappointment. When utilizing a mobile

application, for example, consumers could be delighted if the UI is clear and visually appealing, but they might become frustrated if it's cluttered and difficult to use. A satisfying emotional connection has the power to foster significant brand affinity and user commitment. However, given individual differences in tastes and experiences, anticipating and controlling a range of emotional reactions can be difficult. Fostering long-term user involvement requires designing interfaces that continuously elicit good feelings while limiting negative ones.

### Social Experience

In a social environment, user experience refers to how users engage with a system or platform. It centers on fostering a sense of community, teamwork, and communication among users of the same good or service. On a social media site, for example, users interact socially by connecting, exchanging material, and interacting with others. A well-designed social event can strengthen bonds, improve teamwork, and give people a feeling of community. On the other hand, handling disputes or unpleasant user interactions might be difficult. Maintaining a supportive and welcoming social environment on the interface requires the implementation of efficient moderation and communication techniques..

### Virtual/Simulated Experience

A virtual or simulated user experience takes place in artificially or digitally manufactured environments. It gives consumers access to an engaging and dynamic platform. These simulations frequently replicate situations that may not be safe or realistic in the real world. The ability to create controlled environments for entertainment, education, or training is advantageous. But for effective user engagement, it becomes important to make sure that these simulated interfaces are accessible and have intuitive navigation. These settings can only be created and maintained by high-quality technology, which may restrict accessibility for users who do not have access to these resources. Furthermore, creating user-friendly interfaces for these virtual environments is crucial to creating an engaging and comfortable experience

## Different forms of user interface

### Command Line Interface (CLI)

Text-based commands are used to operate the CLI, or Command Line Interface. Typing particular instructions or commands onto a terminal allows users to communicate. It is effective for seasoned users and automation activities since it provides exact control over system operations. CLI interfaces are strong for sophisticated operations, scripting, or system management because they are mostly text-based and lack visual components. However, because CLI interfaces require specialized syntax and instructions, they may be intimidating to beginners. They frequently call for memorizing commands, which could result in mistakes if they are typed incorrectly. Despite this, CLI is still a reliable and effective interface for power users or those needing complex system control.

```
Displays a list of files and subdirectories in a directory.

DIR [drive:][path][filename] [/P] [/W] [/A[:attribs]] [/O[:sortord]]
    [/S] [/B] [/L] [/C[H]]

[drive:][path][filename] Specifies drive, directory, and/or files to list.
/P      Pauses after each screenful of information.
/W      Uses wide list format.
/A      Displays files with specified attributes.
attribs  D Directories  R Read-only files      H Hidden files
          S System files A Files ready to archive - Prefix meaning "not"
/O      List by files in sorted order.
sortord  N By name (alphabetic)      S By size (smallest first)
          E By extension (alphabetic) D By date & time (earliest first)
          G Group directories first  - Prefix to reverse order
          C By compression ratio (smallest first)
/S      Displays files in specified directory and all subdirectories.
/B      Uses bare format (no heading information or summary).
/L      Uses lowercase.
/C[H]   Displays file compression ratio; /CH uses host allocation unit size.

Switches may be preset in the DIRCMD environment variable. Override
preset switches by prefixing any switch with - (hyphen)--for example, /-W.

C:\>_
```

Figure 1 : CLI

## Graphical User Interface (GUI)

To facilitate user interaction, GUI uses visual components such as buttons, menus, and icons. It provides an easy-to-use interface that lets users browse through graphical representations and visually show information. GUIs are popular because they are simple to use and can be used by both new and seasoned users. They increase accessibility by lowering the requirement to learn syntax and commands. Nevertheless, GUI interfaces have the potential to overwhelm users with information, particularly in complicated systems, which could lead to decision fatigue or make it difficult to locate certain tasks hidden away in menus or options. Because they are so user-friendly, GUIs continue to be the most often used interface even in this regard..

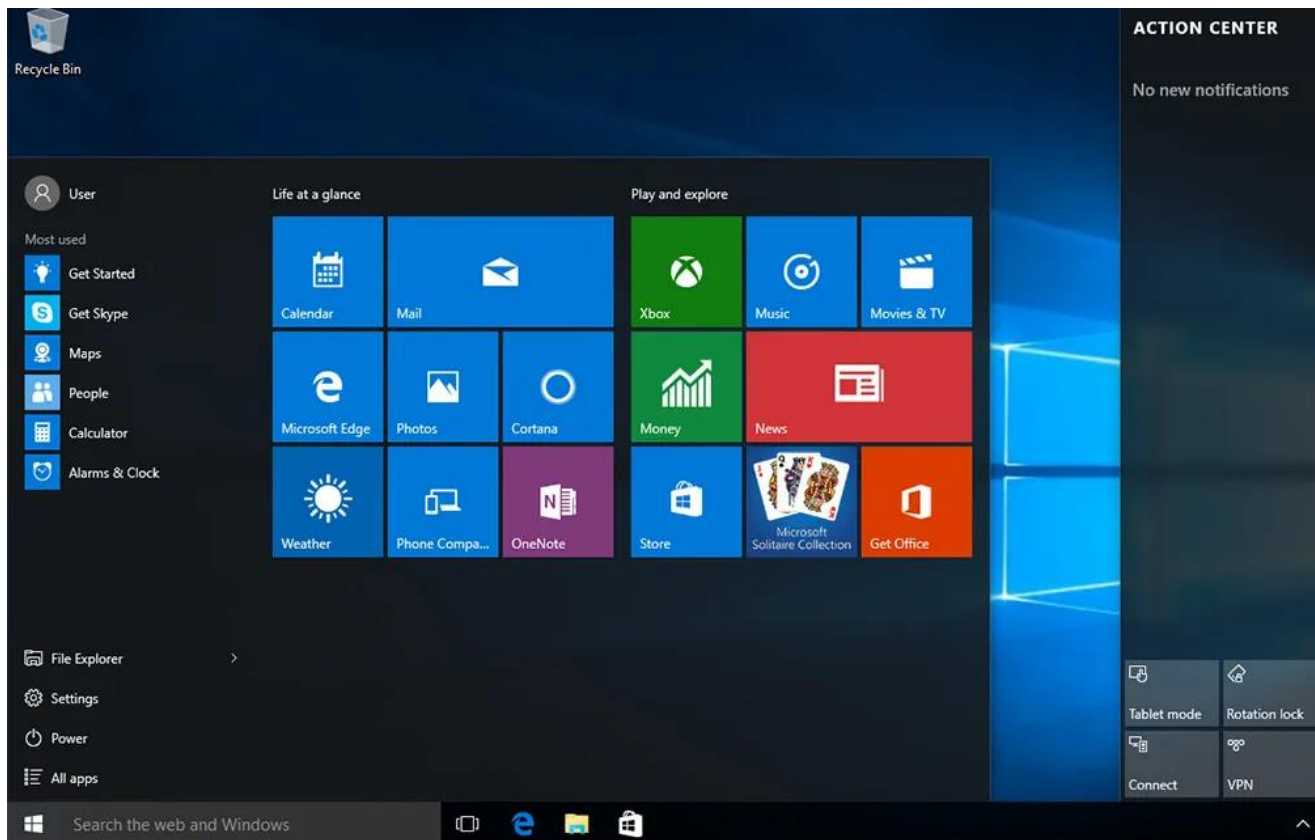


Figure 2 : GUI

## Menu-Driven Interfaces

These interfaces provide alternatives for actions or operations while guiding users through a sequence of organized menus or panels. By offering a hierarchy of options and letting users choose desired actions one at a time, they streamline engagement. Simple and easy to use, menu-driven interfaces are appropriate for users with different levels of technical proficiency. They may, however, restrict flexibility, particularly for consumers who want more rapid or personalized interactions. It could take a while to navigate through several menu layers, especially for users accustomed to quicker interaction paradigms or for complex activities.

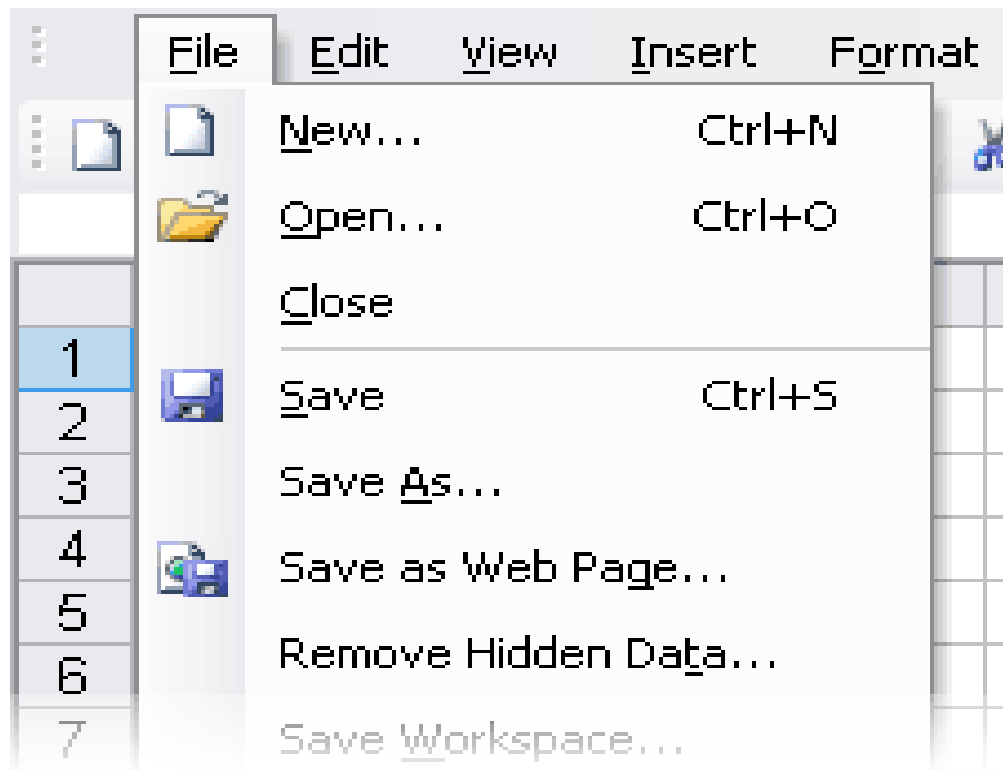


Figure 3 : Menu-Driven Interfaces

## Form-Based Interface

Form-Based Interfaces give users options and input fields to finish tasks or send data. They provide standardized input formats and prompt users to fill in fields or choose from pre-defined options as they enter data. Form-based interfaces are appropriate for jobs needing specific data formats because they guarantee accuracy and consistency in information collection. On the other hand, users may become overwhelmed by complicated forms or heavy data entry, which could result in mistakes or weariness. Adapting form-based interfaces to different user preferences or non-standard inputs may also provide difficulties.



The screenshot shows the SBB Travel Online interface. At the top is a blue header with the SBB logo and the text "SBB Travel Online". Below the header is a sidebar on the left with a "Search" button and a list of links: "Door-to-Door Timetable", "Ticket Shop", "Info on the offers", "Dialogue", "Travelling in Europe", "Guests from abroad", and "Shopping Cart". The main content area is titled "Timetable, Fare and Ticket order" and contains several input fields and buttons. The fields are: "Departure" (with a "Search" button), "Destination" (with a "Search" button), "Via" (with three empty input fields and "Search" buttons), "Travel date" (with a date picker showing "(DD.MM.YYYY)" and radio buttons for "Today" and "Tomorrow"), and "Time" (with a time picker showing "(HH-MM)" and radio buttons for "Departure" and "Arrival"). There is also a checkbox for "With all available carrier" and an "Options" button. At the bottom, there are radio buttons for "Normal" and "Light", a "Start query" button, a "Return trip" button, and a "Reset" button.

Figure 4 : Form Based Interface

## Natural Language Interface

These interfaces allow users to communicate with technology in a natural language that is akin to a discussion between two people. They provide a conversational and intuitive paradigm for interaction, enabling users to express instructions or requests in normal language. Natural language interfaces are accessible to a broad spectrum of people and are easy to use. Nonetheless, there are still several difficulties in correctly recognizing a variety of linguistic styles, comprehending context, and managing ambiguity in user input. Natural language interfaces (NLIs) are still being developed. Two main areas of focus are making sure the system comprehends a variety of linguistic nuances and precisely structuring orders or inputs.

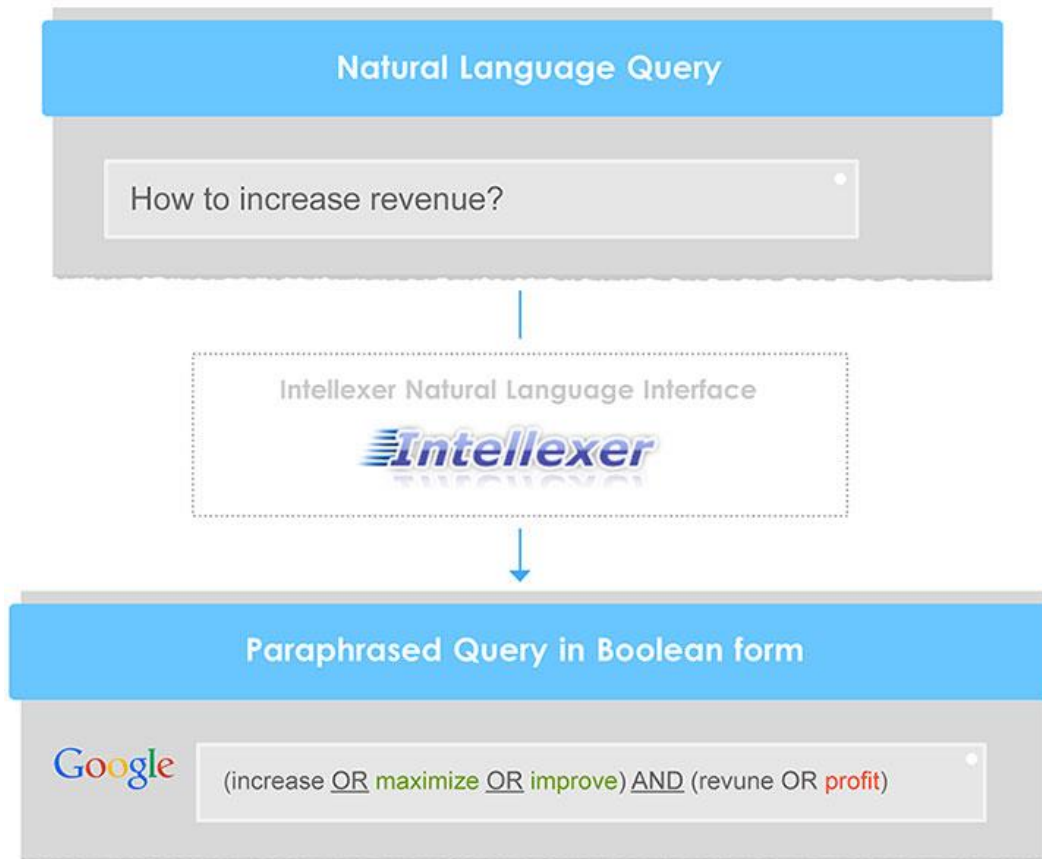


Figure 5 : Natural Language Interface



## **Specific forms of user experience and user interfaces**

### **Command Line Interface (CLI):**

CLI operates through text-based commands where users type specific commands to perform tasks. Its interface primarily revolves around text, offering direct control and efficiency, especially for experienced users. The user experience is tailored for those comfortable with command-based interactions. However, CLI interfaces might be challenging for novices due to the need for specific syntax and commands. They lack visual aids, making complex operations more challenging for users who prefer a more visually intuitive interface.

### **Graphical User Interface (GUI):**

GUI utilizes visual elements like icons, buttons, and menus to facilitate interaction. Its interface is intuitive, providing a visually driven interaction paradigm suitable for a broad audience. The user experience is user-friendly, reducing the reliance on memorizing commands. However, GUI interfaces might overwhelm users with excessive information or options, potentially causing decision fatigue or making it challenging to find specific functions within the interface.

### **Menu-Driven Interfaces:**

Menu-driven interfaces guide users through a structured sequence of menus or screens, presenting options for actions or operations. Its interface offers straightforward navigation, making it suitable for users with varying technical expertise. The user experience focuses on step-by-step interaction, simplifying complex processes into manageable steps. However, these interfaces might limit flexibility and depth of choices, leading to frustration for users seeking quicker or more personalized interactions. Additionally, navigating through multiple levels of menus could be time-consuming for tasks requiring extensive options.

### **Form-Based Interface:**

Form-based interfaces present users with input fields and options for task completion or information submission. Its interface guides users through data entry, offering structured input formats. The user experience prioritizes accuracy and consistency in information collection. However, extensive data entry might overwhelm users, leading to fatigue or errors. Customization



for non-standard inputs could pose challenges within the interface, potentially limiting flexibility in certain contexts.

#### Natural Language Interface:

Natural Language Interfaces allow users to interact with systems using everyday language, resembling human conversation. Its interface offers an intuitive and conversational interaction paradigm. However, accurately interpreting varied language styles, understanding context, and handling ambiguity in user input present challenges. While user-friendly, designing for precise language understanding remains an ongoing area of development within Natural Language Interfaces.

### **Advantages and disadvantages of different forms of user interface.**

#### Command Line Interface (CLI):

##### Advantages:

The CLI offers unparalleled efficiency, enabling advanced users to swiftly execute tasks through specific commands, fostering streamlined workflows. Its resource efficiency is noteworthy, consuming minimal system resources compared to GUIs, optimizing overall system performance. Automation capabilities allow for scriptable commands, facilitating the automation of repetitive tasks, enhancing productivity and consistency.

##### Disadvantages:

However, the CLI presents a steep learning curve for novice users due to its requirement for command memorization and syntax understanding. Its lack of visual aids poses challenges, making complex operations less intuitive, potentially leading to errors. Typing errors or incorrect commands can result in unintended consequences, making the interface error-prone for inexperienced users.

## Graphical User Interface (GUI):

### Advantages:

GUIs stand out for their user-friendly nature, offering an intuitive and visually appealing environment that reduces the need for memorizing commands. Its accessibility caters to users of varying technical expertise, providing a welcoming interface for all. Visual representation through graphical elements aids in system comprehension and navigation, promoting ease of use.

### Disadvantages:

However, GUIs tend to be resource-intensive, consuming more system resources compared to CLI. In complex systems, they might overwhelm users with an abundance of information or options, potentially causing confusion. Moreover, GUIs may offer limited customization options, restricting user flexibility compared to other interfaces.

## Menu-Driven Interfaces:

### Advantages:

Menu-driven interfaces boast simplicity, enabling straightforward navigation via step-by-step instructions, making them accessible to users with limited technical knowledge. Their structured interaction guides users methodically through complex tasks, ensuring a systematic approach to interaction.

### Disadvantages:

However, their limitation lies in restricted flexibility, potentially constraining user choices or customization. Navigating through multiple menu levels might be time-consuming for intricate tasks, hindering efficiency. Moreover, these interfaces might not meet the needs of users seeking faster or more personalized interactions, impacting user satisfaction.

### Form-Based Interface:

#### Advantages:

Form-based interfaces excel in structured input, ensuring accuracy and consistency in data entry, fostering reliability. They provide clear input formats, facilitating users in providing accurate information efficiently.

#### Disadvantages:

Yet, extensive data entry might overwhelm users, leading to fatigue or errors during prolonged interactions. Accommodating non-standard inputs or diverse user needs, particularly in the context of complex forms, can pose challenges, potentially hindering user experience and interaction efficiency.

### Natural Language Interface:

#### Advantages:

Natural language interfaces stand out for their user-friendly nature, simulating human conversation for intuitive interaction. Their conversational style appeals to a wide user range, requiring less training for user adoption.

#### Disadvantages:

However, challenges arise in interpreting varied language styles and contexts, impacting the interface's ability to understand user inputs accurately. Handling ambiguity or unclear inputs necessitates sophisticated algorithms, impacting precision and potentially leading to misunderstandings in user interactions. Achieving a precise understanding of user intent remains an ongoing challenge, affecting overall interface accuracy.

## User Experience Tools

### Sketching:

The first stage of the design process involves the creation of rough drawings or sketches by designers in order to explore concepts, put thoughts on paper, and generate ideas for solutions. Before beginning a formal design project, it's a quick and low-fidelity method to brainstorm and share ideas. Before beginning more in-depth design work, designers can quickly iterate, investigate variations, and polish concepts using sketches. Usually, pencil and paper are used, or tablets and styluses are used when doing it digitally.

### Wireframing

Producing low-fidelity visual representations of a product or interface layout is known as wireframing. Without getting into specifics about color schemes and typefaces, it's merely a structural plan that shows where components, content, and functionality should go. Designers can lay down the basic foundation of a design with wireframes, which concentrate on the functionality, hierarchy, and user flow of the layout. The most popular tools for making wireframes are Balsamiq, Sketch, Adobe XD, and Figma.

### Prototyping

The process of prototyping entails building clickable, interactive models that mimic the appearance and operation of an interface or finished product. With prototypes, users may test features, interact with designs, and navigate between screens and pages. Before spending money on extensive development, they assist in discovering usability problems, confirming design principles, and obtaining feedback. With the help of prototyping technologies like as InVision, Axure RP, Adobe XD, Figma, and Proto.io, designers may produce interactive prototypes that range in fidelity from high-fidelity interactive models to low-fidelity wireframes.

## User Interface Design Tools

**Sketch:** Sketch is a highly popular vector-based design tool known for its intuitive interface and robust features specifically tailored for creating interfaces, icons, and prototypes. It offers a streamlined workflow, making it a favorite among designers, particularly those in the macOS ecosystem. Its extensive plugin ecosystem enhances functionality, allowing users to expand its capabilities as per their project requirements.

**Figma:** Figma stands out for its collaborative capabilities, operating entirely within a web browser. It facilitates real-time collaboration among team members, enabling multiple users to work simultaneously on a project. Its strength lies in its cloud-based approach, offering seamless sharing, commenting, and version control, making it an ideal choice for remote teams and large-scale projects.

**Adobe XD:** As part of the Adobe Creative Cloud suite, Adobe XD provides a comprehensive set of tools for UI/UX design and prototyping. It offers a familiar interface for Adobe users, combining vector design, wireframing, and prototyping features. Its integration with other Adobe applications streamlines the design-to-development workflow.

**InVision:** InVision is revered for its prototyping capabilities, allowing designers to create interactive mockups and share them for feedback and user testing. It enables seamless collaboration, iteration, and versioning, making it a go-to choice for teams emphasizing design collaboration and user testing throughout the design process.

**Axure RP:** Axure RP is a robust tool catering to complex and interactive designs. It specializes in creating wireframes, prototypes, and specifications for applications and web platforms. Known for its powerful interaction capabilities, it enables designers to create highly interactive and dynamic prototypes suitable for testing and validation.

**Adobe Photoshop/Illustrator:** Although primarily image editing tools, both Photoshop and Illustrator are widely used in UI design for their capabilities in creating graphics, icons, and visual

elements. Designers leverage these tools for their extensive feature sets, allowing for detailed and customized designs.

**Marvel:** Marvel offers a platform for both design and prototyping, enabling designers to create interactive mockups swiftly. It focuses on user-friendly prototyping and testing, making it an ideal choice for designers seeking a seamless and straightforward design-to-prototype workflow.

**Balsamiq:** Balsamiq specializes in wireframing and low-fidelity mockups, making it an excellent tool for initial design and ideation stages. Its focus on simplicity and speed allows designers to quickly translate ideas into visual representations.

**Proto.io:** Proto.io is a feature-rich platform enabling the creation of interactive prototypes for web and mobile applications. Its strength lies in its ability to create complex animations and interactions, making it a valuable tool for designers focusing on highly interactive designs and user experiences.

### **The Author used Interface Design Tools**

Because the Figma tool can produce high fidelity wireframes and prototypes, the writer decided to use it for the production. Furthermore, this technology has the ability to improve the product's user experience. You don't need to worry about file storage because this utility is cloud-based and automatically saves data to the cloud drive.

## **Music discovery users (listeners)**

### **Physical Attributes:**

Listeners accessing the e-music cloud (EMC) platform encompass a diverse age range, spanning from young adults to older individuals. Gender distribution is varied, indicating no specific bias. In terms of physical attributes, catering to various screen sizes and resolutions is crucial. Ensuring the UI's adaptability to different devices and providing clear visual angles for ease of navigation are paramount. Consideration for font sizes and contrast levels aids users with varying visual needs.

### **Physical Workplaces:**

Listeners engage with the EMC platform across diverse settings, from home environments to public spaces. Thus, the platform's adaptability to various software versions, devices, and screen sizes is imperative. Optimal sound levels, especially in public spaces, and compatibility with different lighting conditions support uninterrupted engagement. Ensuring compatibility across multiple operating systems and devices enhances user accessibility and usability.

### **Perceptual Abilities:**

Their auditory perception is critical for music enjoyment; thus, the platform should prioritize audio quality and offer adjustable settings for hearing preferences. Additionally, clarity in visual elements, including text, icons, and images, ensures usability for users with varying vision abilities. The platform's adaptability to high contrast or dark mode options caters to different perceptual needs.

### **Cognitive Abilities:**

Catering to varying reading levels and memory spans is vital for optimal user experience. The UI's readability should be comprehensible across different reading levels. Users should easily recall preferences, playlists, or previously explored content, emphasizing the importance of intuitive navigation and memorable UI elements.

### **Personality and Social Traits:**

Listeners prefer an intuitive and user-friendly interface for effortless music exploration. Quick access to desired content and playlists is essential, aligning with their preferences for seamless discovery. While seeking efficiency, they expect the platform to be engaging and reflective of their music tastes, highlighting the importance of personalized recommendations.

#### Cultural and International Diversity:

To accommodate the platform's global reach, supporting multiple languages and culturally diverse music libraries is essential. Icons, symbols, and UI elements should have universal understanding to ensure accessibility for users worldwide. Dialog boxes and symbols should transcend language barriers for seamless interaction.

#### Special Populations (Dis)Abilities:

Ensuring accessibility for users with disabilities is imperative. Incorporating features like screen reader compatibility, high contrast options, and keyboard navigation enhances accessibility. Attention to color contrasts and alternative text descriptions assists users with visual impairments, aligning with inclusive design principles.

### **Music producers(publishers)**

#### Physical Attributes:

Music producers using the EMC platform comprise a diverse range in age, typically spanning from younger adults to middle-aged individuals, with no specific gender bias. Their physical attributes necessitate accessibility to a range of screen sizes, resolutions, and input devices. Visual angles are crucial for efficient navigation and publishing, emphasizing the need for clear visibility and accessibility across various devices and screen orientations.

#### Physical Workplaces:

Their work environments demand adaptability to different software versions and compatibility across various operating systems and devices. Optimal sound levels are essential for audio editing and publishing tasks, while adequate lighting ensures clear visibility of screens and equipment. Ensuring ergonomic seating and desk heights promotes comfort during prolonged periods of audio



production and editing.

#### Perceptual Abilities:

Producers heavily rely on their hearing abilities for music production and editing. Therefore, the platform must support high-quality audio playback and precise adjustments to accommodate varying hearing preferences. Additionally, clear visibility of UI elements and color contrasts caters to different vision abilities among producers.

#### Cognitive Abilities:

Their cognitive abilities vary, influenced by their musical training and memory spans. Consideration for intuitive workflows, memory-efficient UI layouts, and quick access to settings or editing tools aids in efficient music production. Clear and easily understandable text and instructions support various reading levels.

#### Personality and Social Traits:

Producers prioritize efficiency and streamlined workflows in the platform's UI. Their preferences lean towards interfaces that offer quick access to tools, customizable settings, and organized libraries. Patience is required for handling complex editing processes and ensuring accuracy in publishing content.

#### Cultural and International Diversity:

The platform should support multiple languages and intuitive symbols to accommodate the global user base. Dialog boxes and UI elements should transcend language barriers for seamless interaction. Additionally, a standardized and intuitive flow in dialog boxes and symbols aids producers from diverse cultural backgrounds.

#### Special Populations (Dis)Abilities:

Ensuring accessibility is crucial for producers with disabilities. Incorporating features such as screen reader compatibility, high contrast options, and keyboard navigation supports users with visual impairments or mobility limitations. Color contrasts and alternative text descriptions contribute to an inclusive design.

## Persona

In the realm of e-music cloud (EMC), developing personas becomes pivotal to comprehending the diverse user base. These personas encapsulate different user types, representing their distinct needs, motivations, and behaviors within the platform. For instance, Rita, the Casual Listener, seeks seamless access to various music genres, emphasizing simplicity in navigation and discovery. On the other hand, Alex, the Music Enthusiast, prioritizes tools for managing his music, tracking analytics, and earning revenues. Maya, the Music Curator, values collaborative playlist features and social sharing options for her playlists. Lastly, Liam, the Emerging Artist, requires visibility and engagement tools to promote his music and connect with his audience. Crafting personas like these grants the EMC team an empathetic understanding of user preferences, driving the platform's design and functionality to cater effectively to these diverse user needs, fostering an inclusive and engaging music experience for all

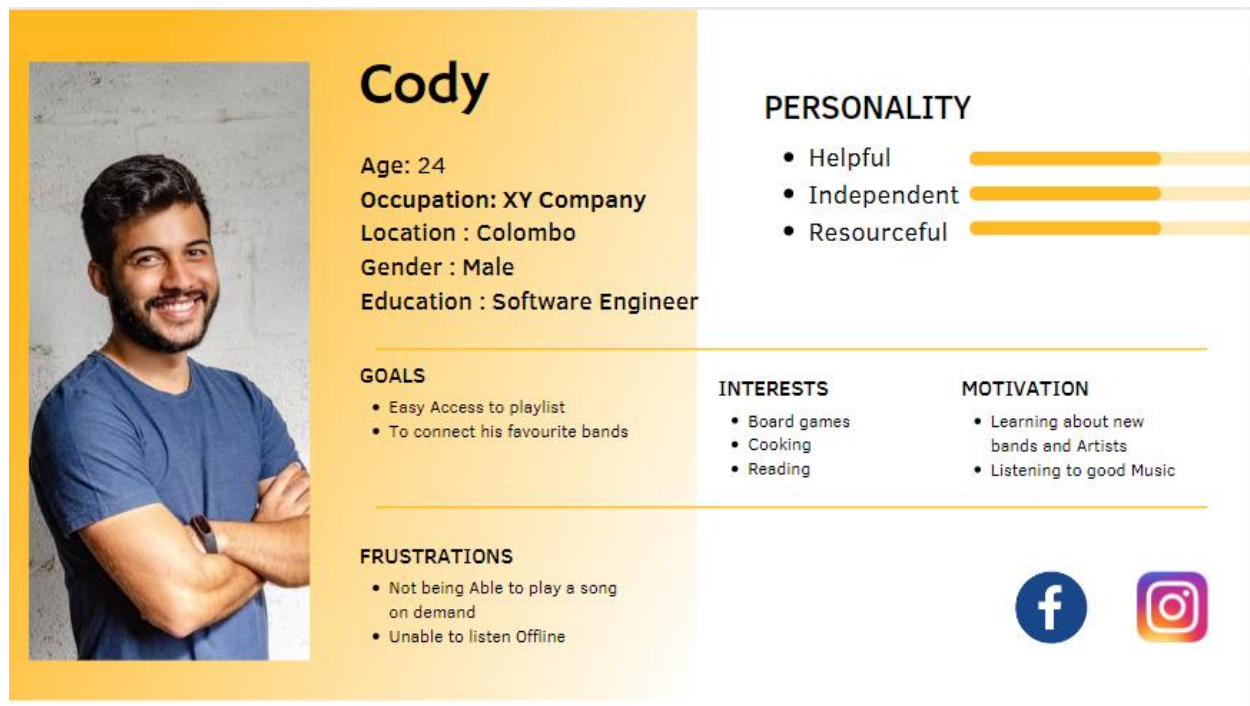


Figure 6 : Cody



Figure 7 : Rizmi



Figure 8 : Kavindana

## Tools for UI and UE for EMC-Music

### Figma for UI Design:

**Collaborative Environment:** Figma's cloud-based platform facilitates real-time collaboration, allowing designers, developers, and stakeholders to work together seamlessly. Given the distributed nature of teams in modern software development, Figma enables remote collaboration and ensures everyone involved can contribute and provide feedback throughout the UI design process.

**Prototyping Capabilities:** Figma's prototyping features enable designers to create interactive prototypes, enabling the EMC team to visualize and test UI interactions before the development phase. This helps in refining UI elements and ensuring a smooth user flow within the application.

### InVision for Prototyping and UX Testing:

**Interactive Prototyping:** InVision's prototyping capabilities enable the creation of interactive mockups that closely resemble the actual user experience. This allows stakeholders and potential users to interact with the design, providing valuable feedback and insights early in the design process.

**Usability Testing:** InVision's user testing features facilitate remote usability testing, enabling the EMC team to gather feedback from a diverse user base. This helps in identifying pain points, usability issues, and areas for improvement in the UX design, ensuring a user-friendly interface.

### Adobe Analytics for UX Analytics:

**Comprehensive Data Insights:** Adobe Analytics offers powerful analytics tools that provide in-depth insights into user behavior, preferences, and engagement metrics. By implementing this tool, EMC can track user interactions within the application, understand user journeys, and identify areas that require UX enhancements.

**Data-Driven Decision-Making:** Leveraging data from Adobe Analytics allows the EMC team to make informed decisions based on user behavior patterns. It helps in prioritizing UX improvements and optimizing features to align with user preferences and usage patterns.

### UsabilityHub for User Testing:

**Diverse Testing Methods:** UsabilityHub offers various user testing methods that cater to different aspects of UX, such as preference testing, navigation testing, and click testing. This diversity allows the EMC team to gather insights into various aspects of the user experience, from interface preferences to navigation efficiency.

**Iterative Design Approach:** Using UsabilityHub for iterative user testing enables EMC to continuously refine the application's design based on user feedback. It supports an iterative design approach, where improvements are made incrementally, ensuring a user-centric and refined UX. These tools collectively empower the EMC team to collaborate effectively, gather valuable insights, and iterate on design decisions to deliver a compelling and user-friendly music streaming platform. Their combined capabilities facilitate a holistic approach to UI/UX design and ensure the application meets user needs and expectations.



Wireframes of EMC



Figure 9 : First Page

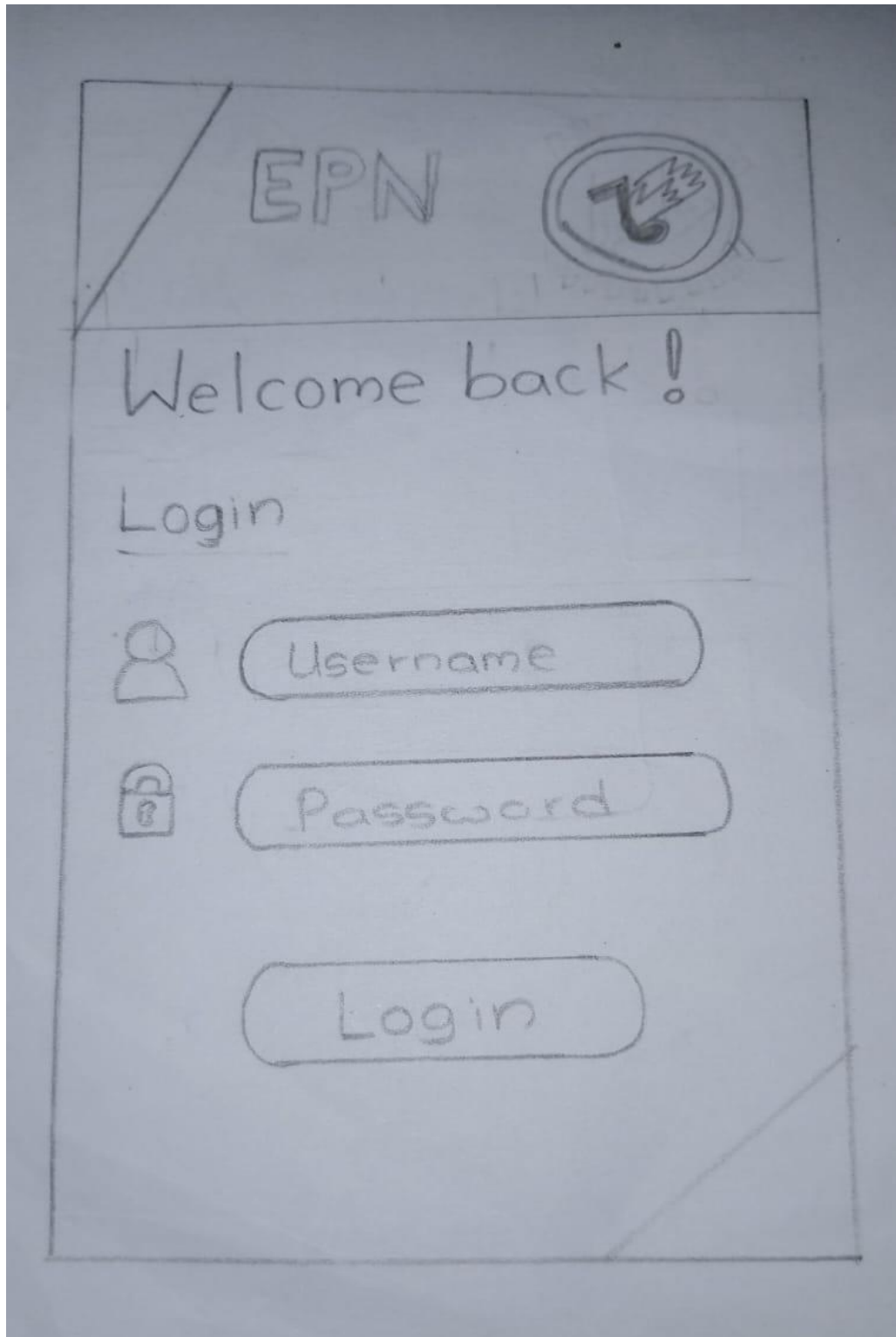
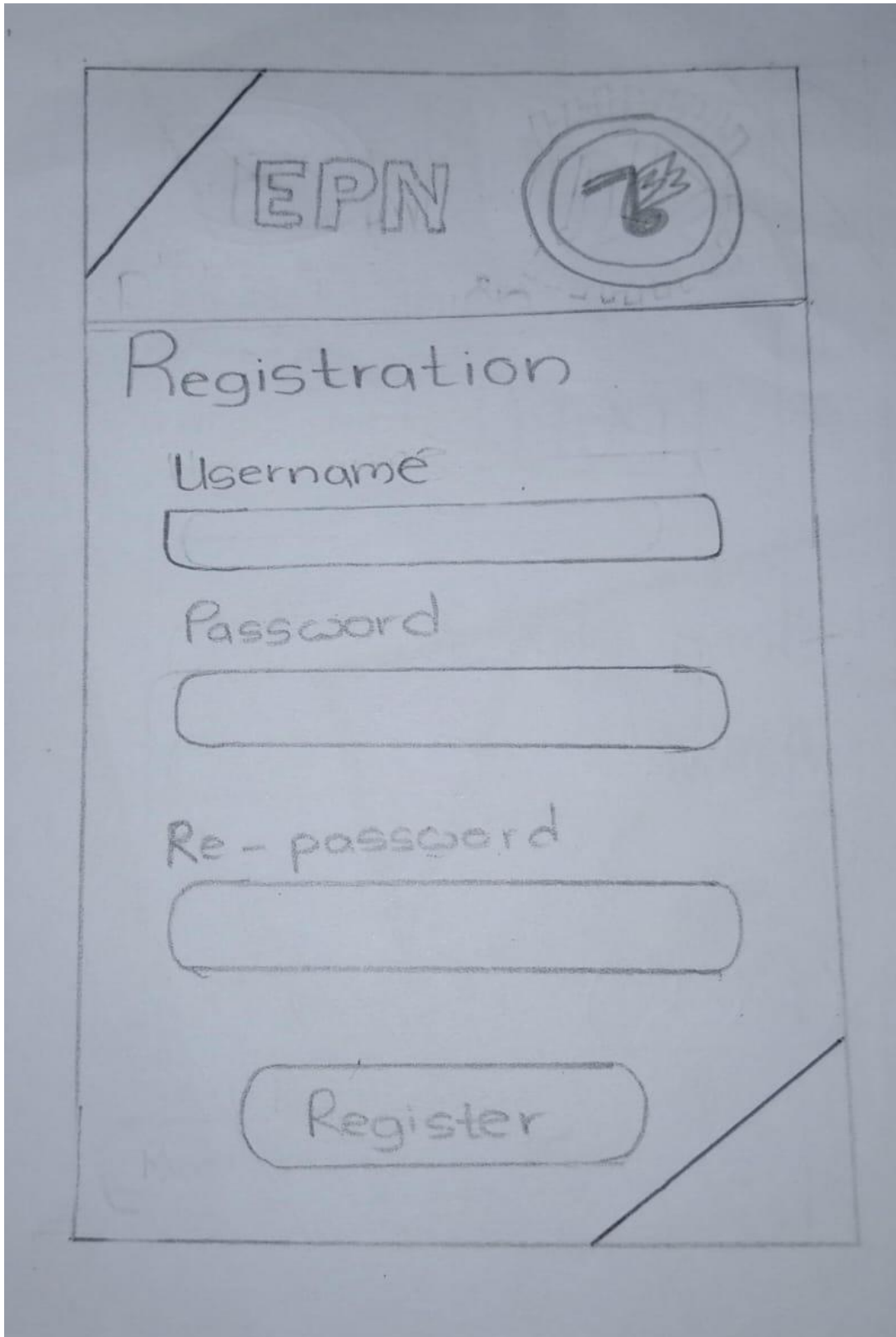


Figure 10 : Login Interface



A hand-drawn sketch of a registration page. At the top left, the text "EPN" is written in a bold, sans-serif font. To its right is a circular logo containing a stylized bird or wing design. Below these elements, the word "Registration" is written in a large, cursive script. Underneath, there are three input fields: "Username", "Password", and "Re - password", each followed by a rounded rectangular box. At the bottom center, there is a rounded rectangular button labeled "Register". The entire sketch is enclosed in a rectangular border with diagonal lines in the top-left and bottom-right corners.

Figure 11 : Registration Page



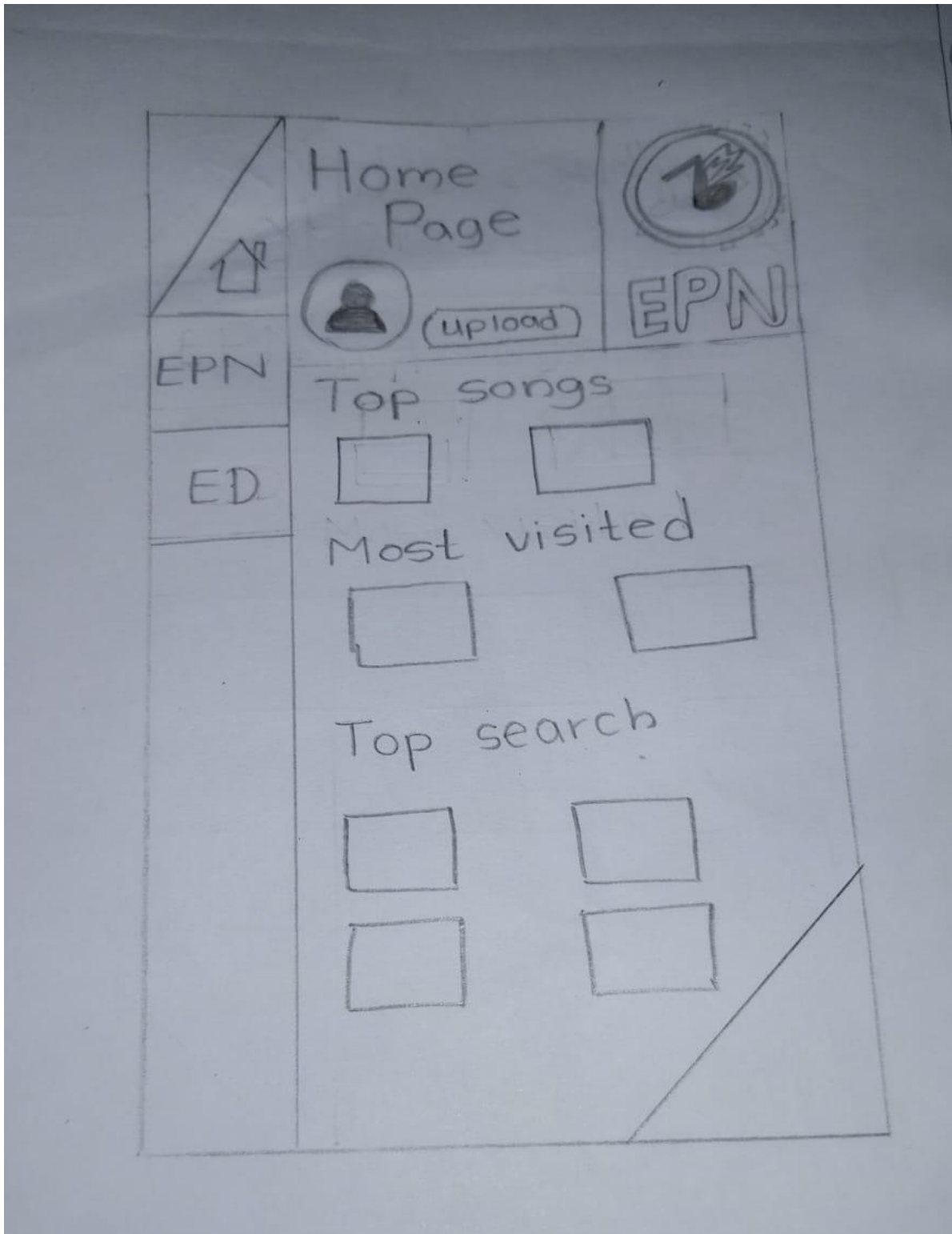


Figure 12 : Home Page

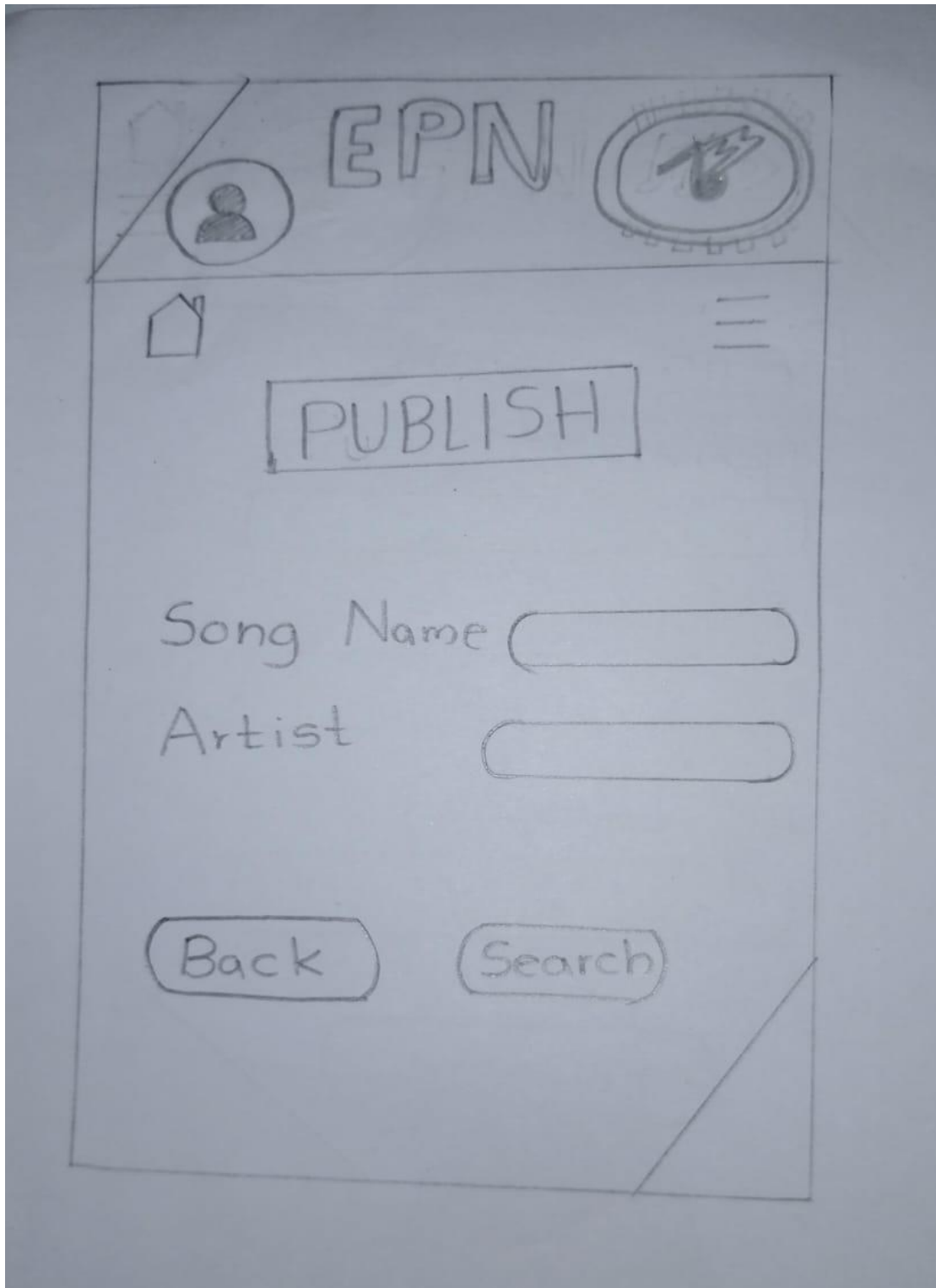


Figure 13 : Publish Interface

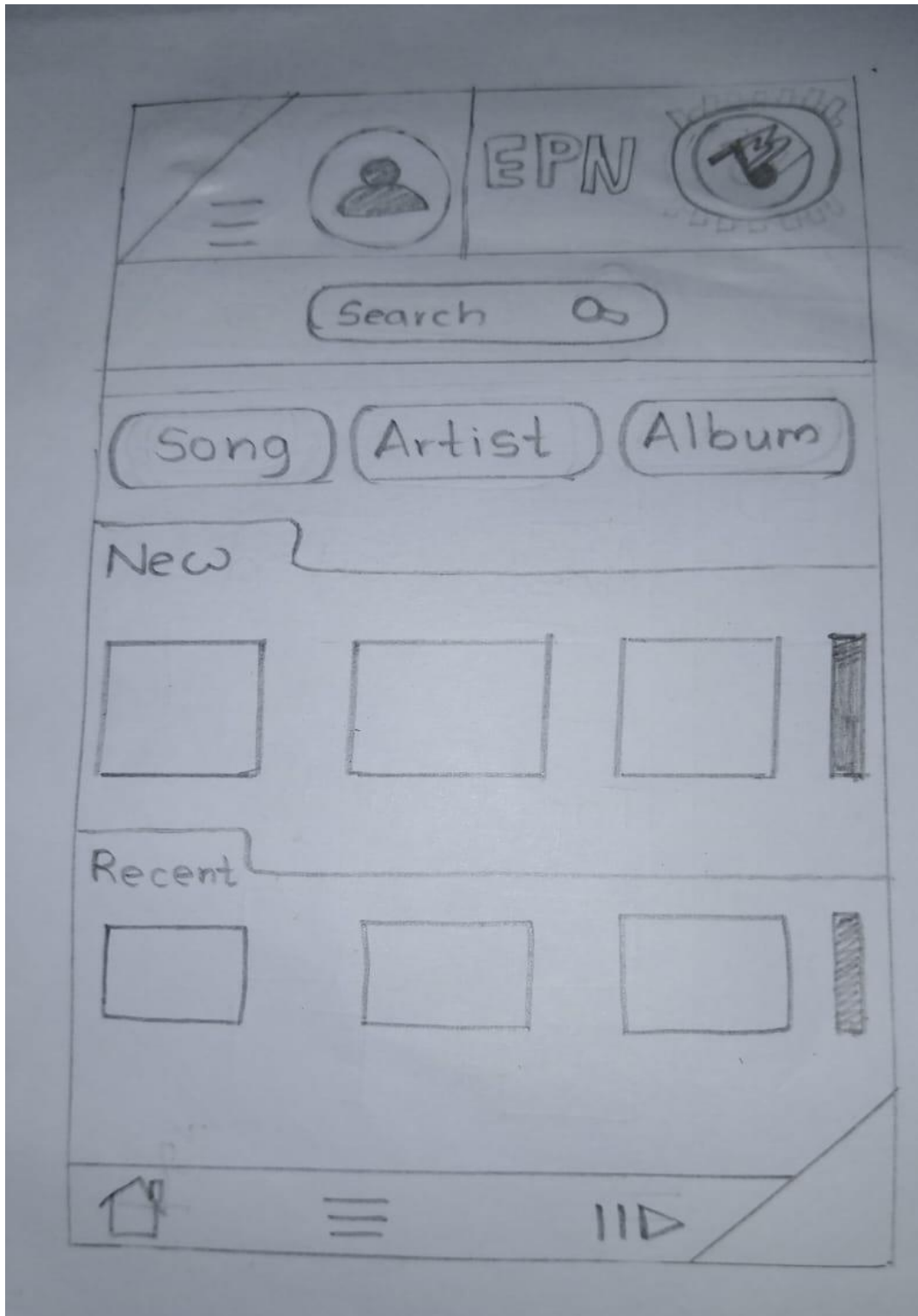


Figure 14 : Music

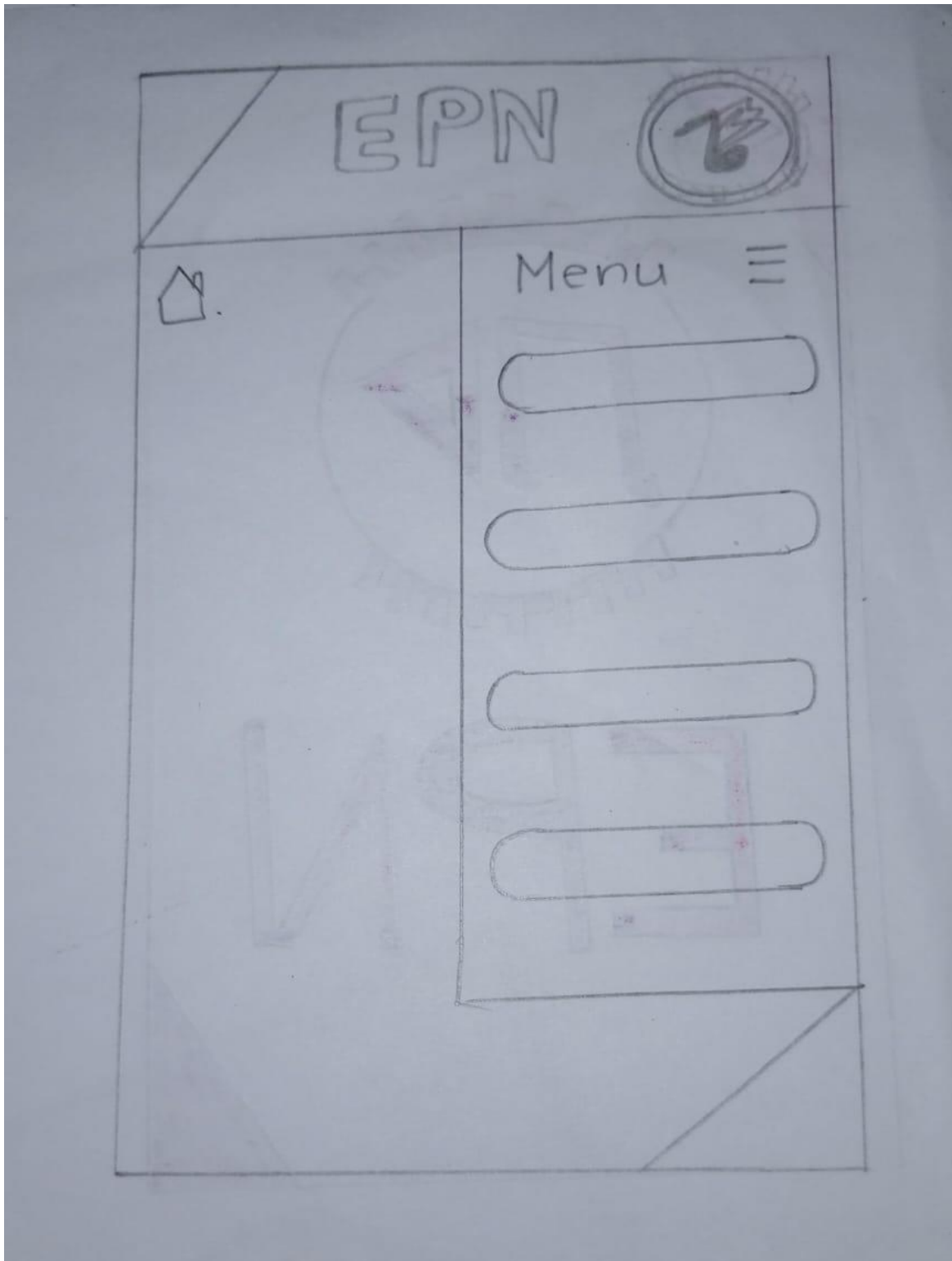


Figure 15 : Menu interface

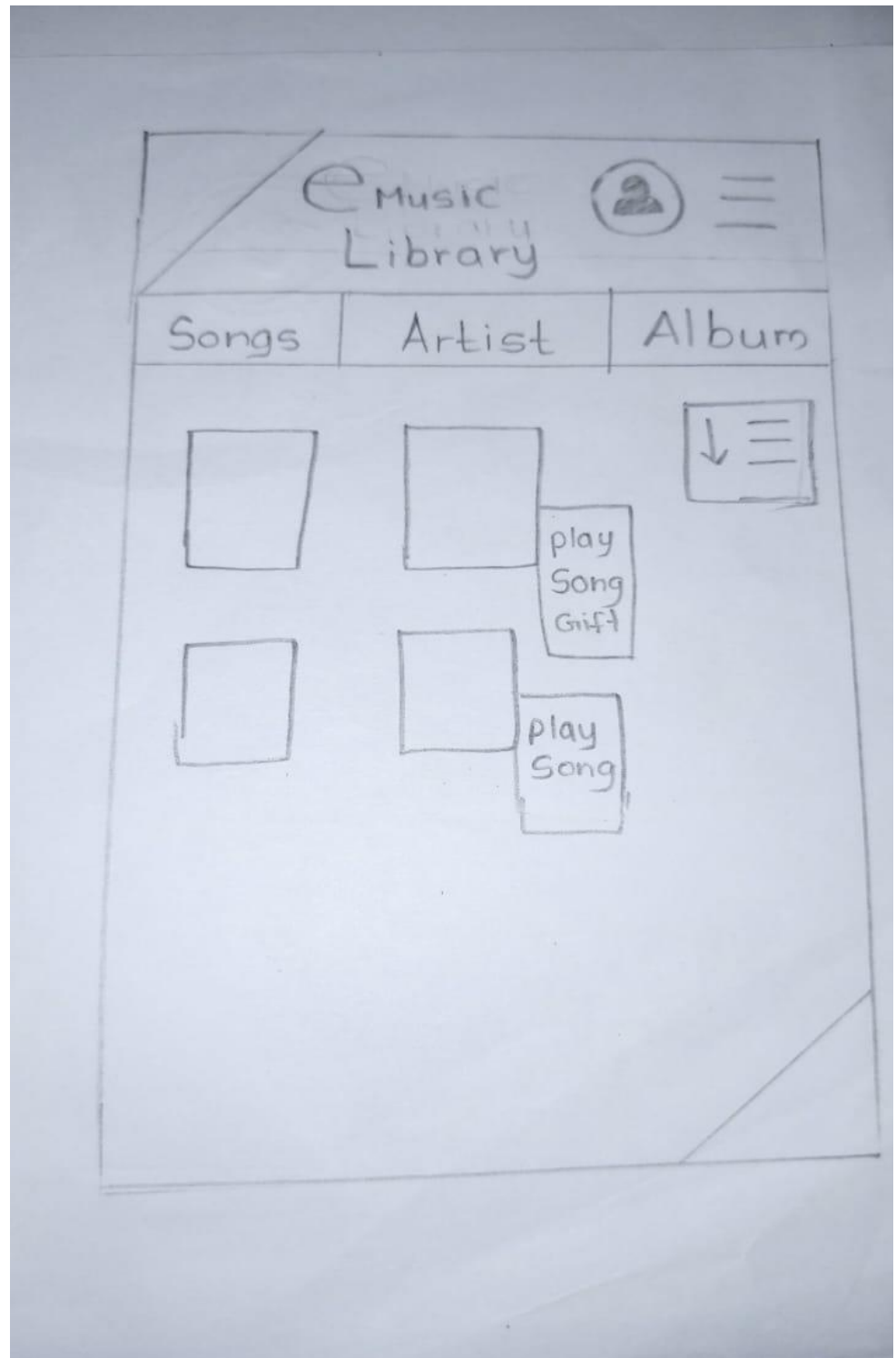


Figure 16: Emusic Libarary

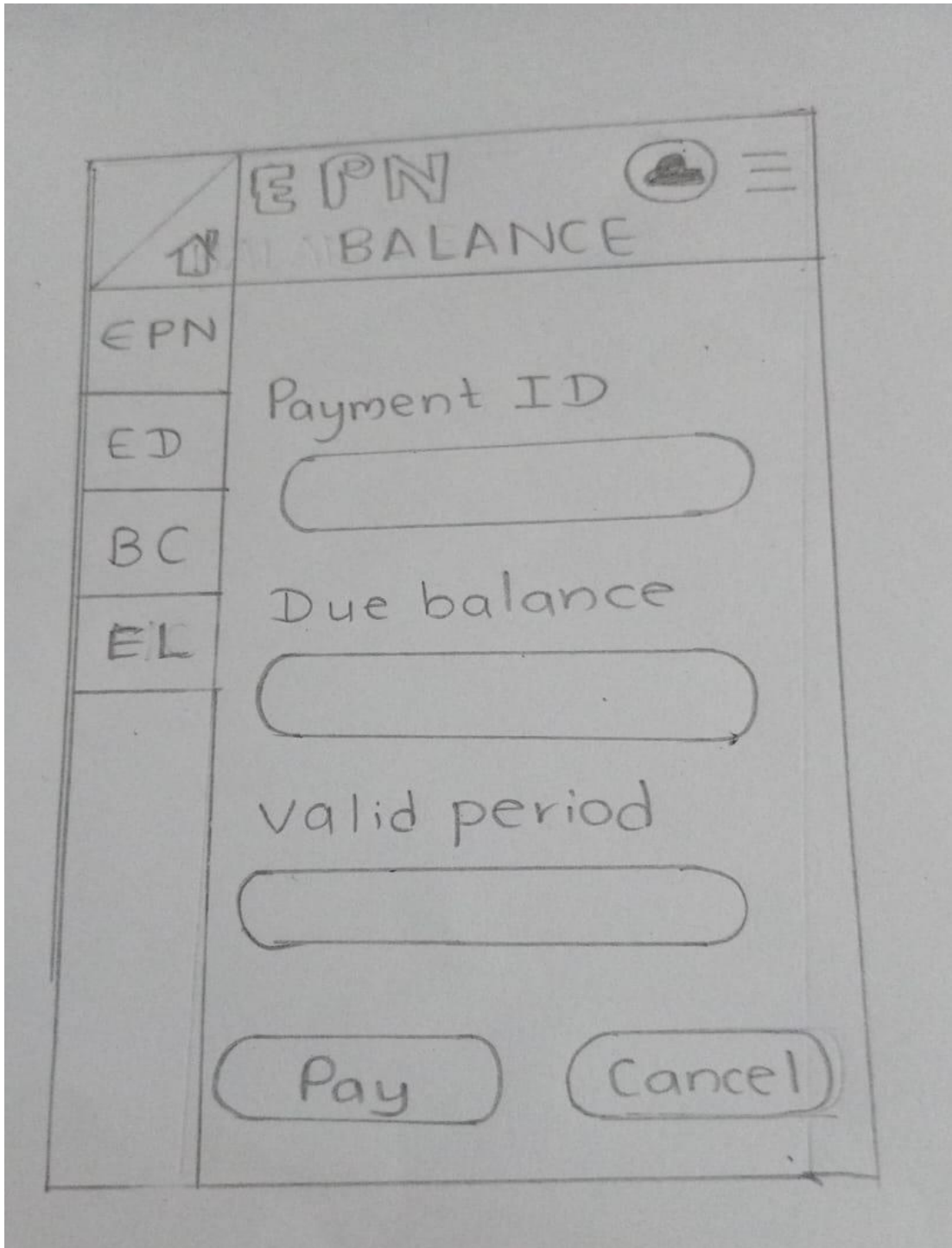
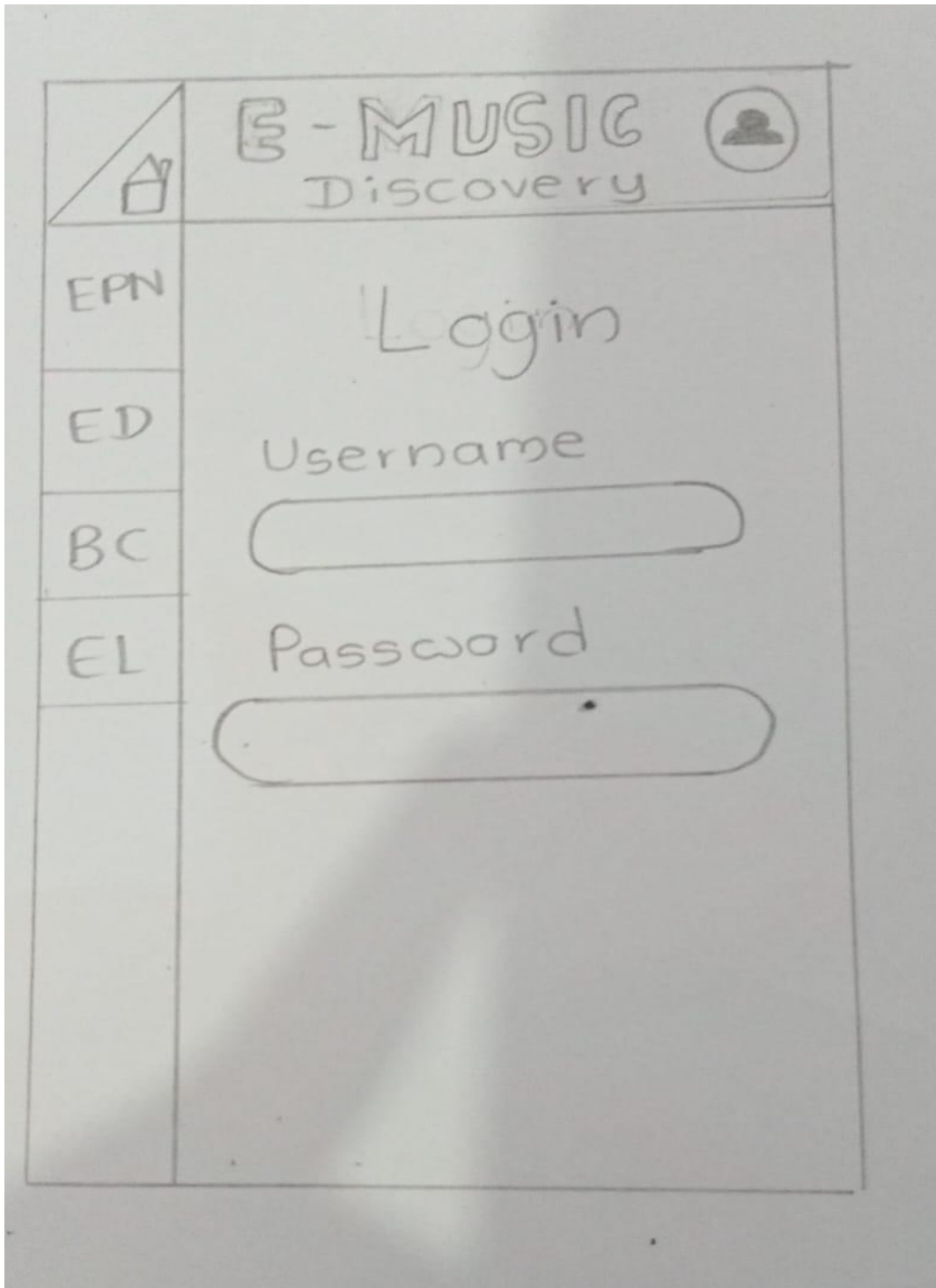


Figure 17 : EPN Balance Interface




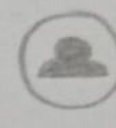
<div>  <div> E-MUSIC Discovery </div>  </div>	
EPN	Login
ED	
BC	
EL	
	Username
	<input type="text"/>
	Password
	<input type="password"/>

Figure 18 : Emusci Discovery




## Design Interfaces For EMC



Figure 19 : first page

The user interface shown above shows the first page of EPN. If the user have sign in this before then the user can click the sign in button if the user is not a registerd person then go to the sign up button .





The image shows a mobile application sign-up screen. At the top, there is a back arrow icon on the left, the text "EPN" in a large, bold, serif font in the center, and a circular logo with a musical note on the right. Below "EPN" is the tagline "ART OF THE MUSIC". The main content area is a white rounded rectangle with the title "Sign Up" at the top. Below the title are three input fields: "Username", "Password", and "Re-Password". At the bottom of the white area is a "Sign Up" button. The background of the app is a vibrant, colorful bokeh effect with a smiling person's face visible in the lower right.

Figure 20 : Signup interface

When user click the sign up button user have to enter new username ,password and also user should enter the password to confirm the password after that user can clicj the sign up button



Figure 21 : Sign in

When clicking the sign in button user can enter the username and password after that click the sign in button then user can go to the home page

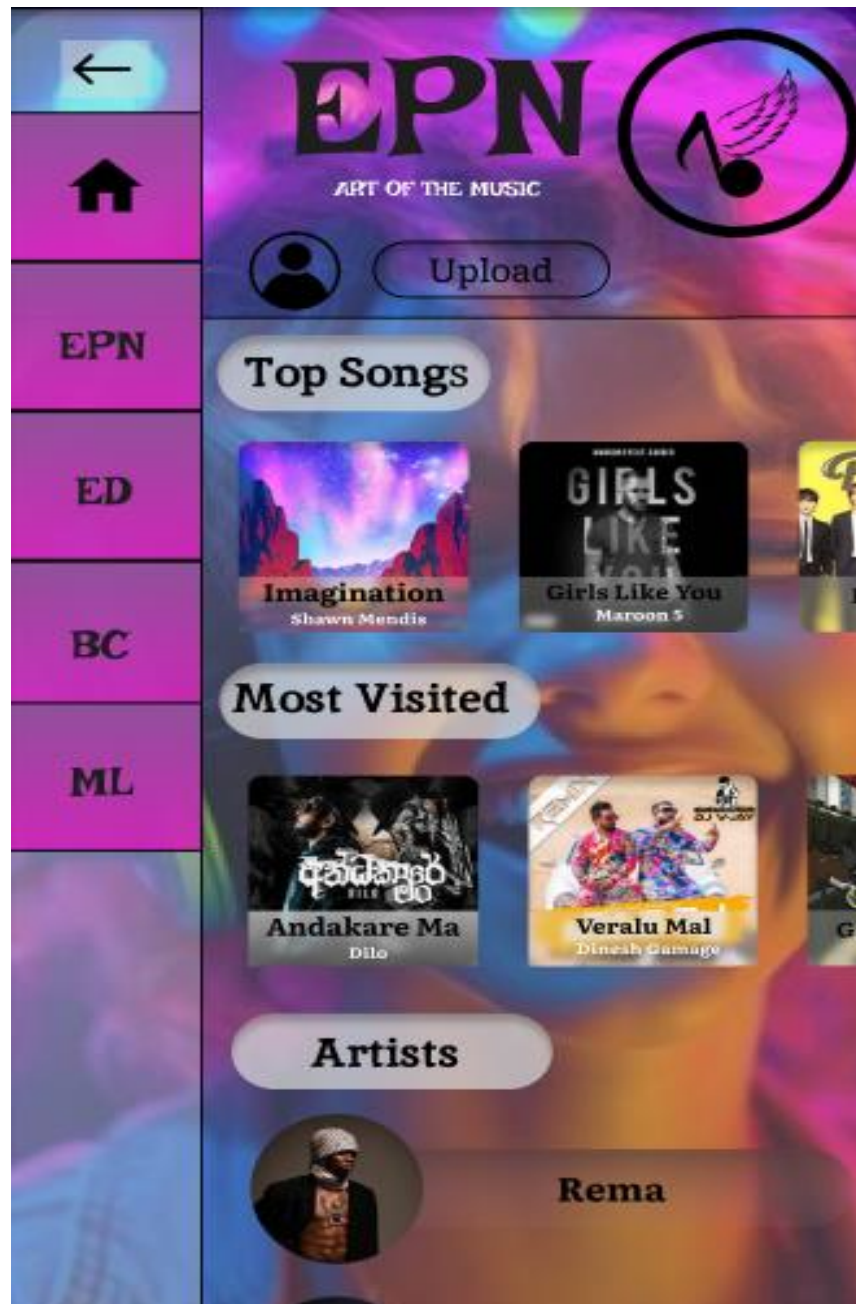


Figure 22 : Home page

In home page there are so many thing in topsongs user can select a song to listen and in most viewed category user can view it in artist categori user can select the artist and can listen to the the songs .Also there in a home button that go to the home page.

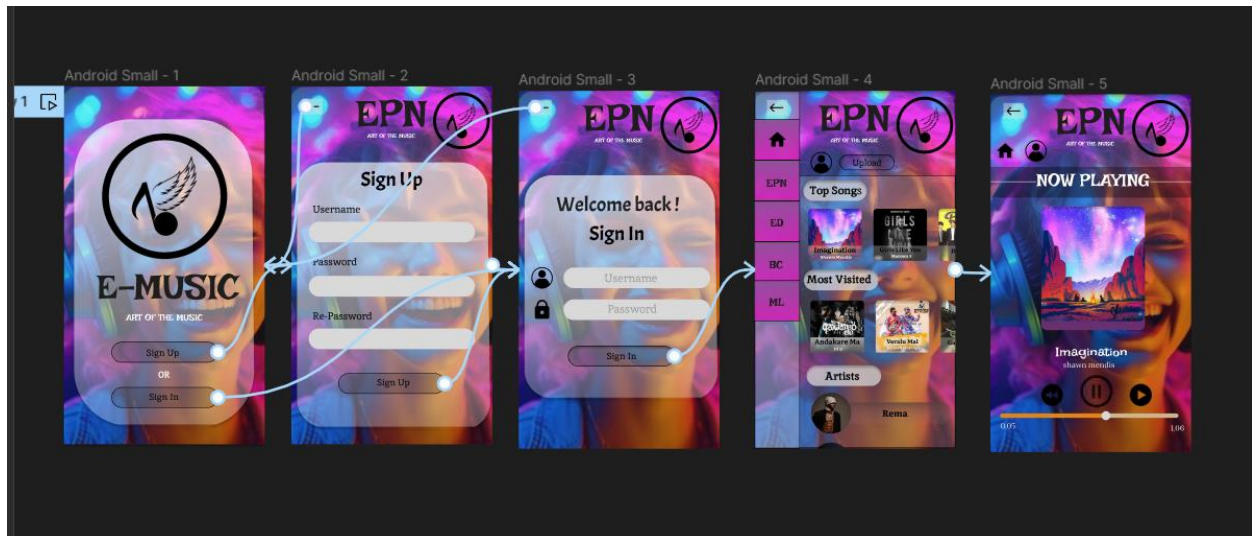


Figure 23 : Music play Interface

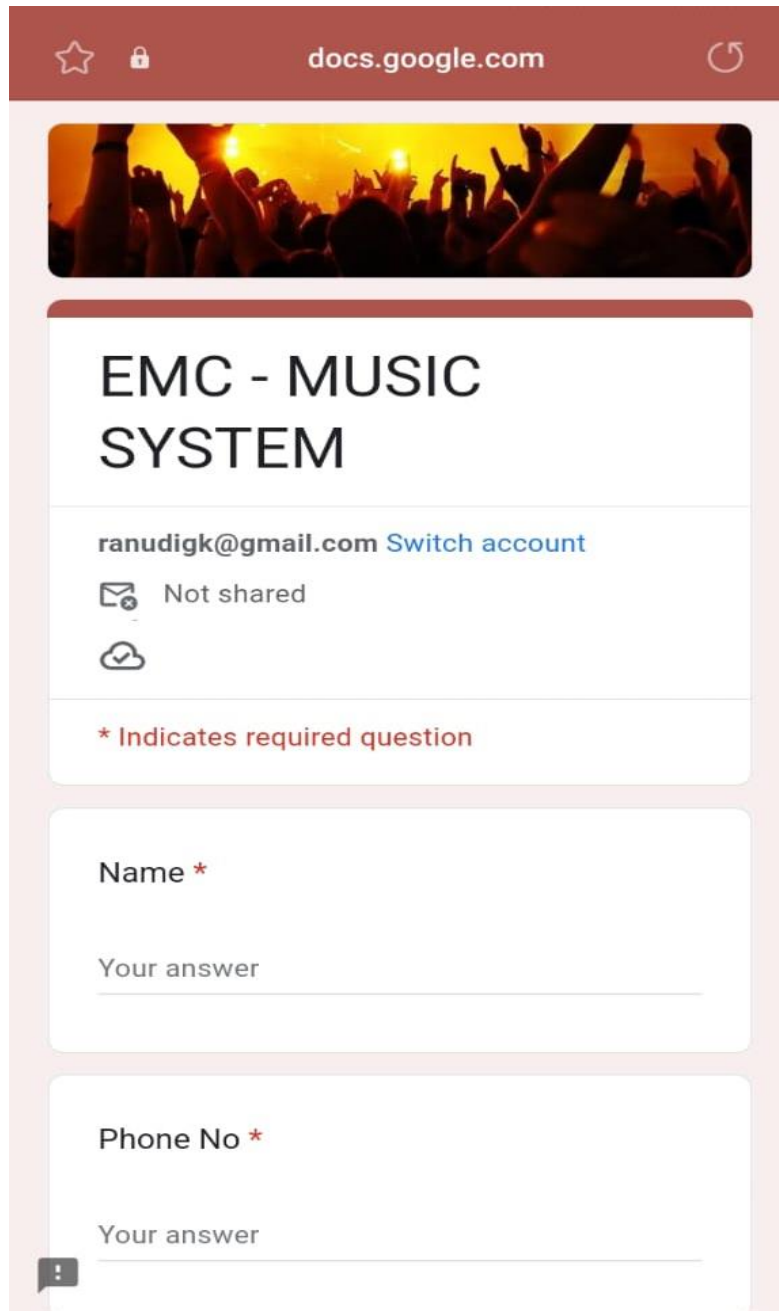
In this interface user can play any song that user like. Also there is a replay bitton ,play button and resume button.



## Prototype of the interfaces

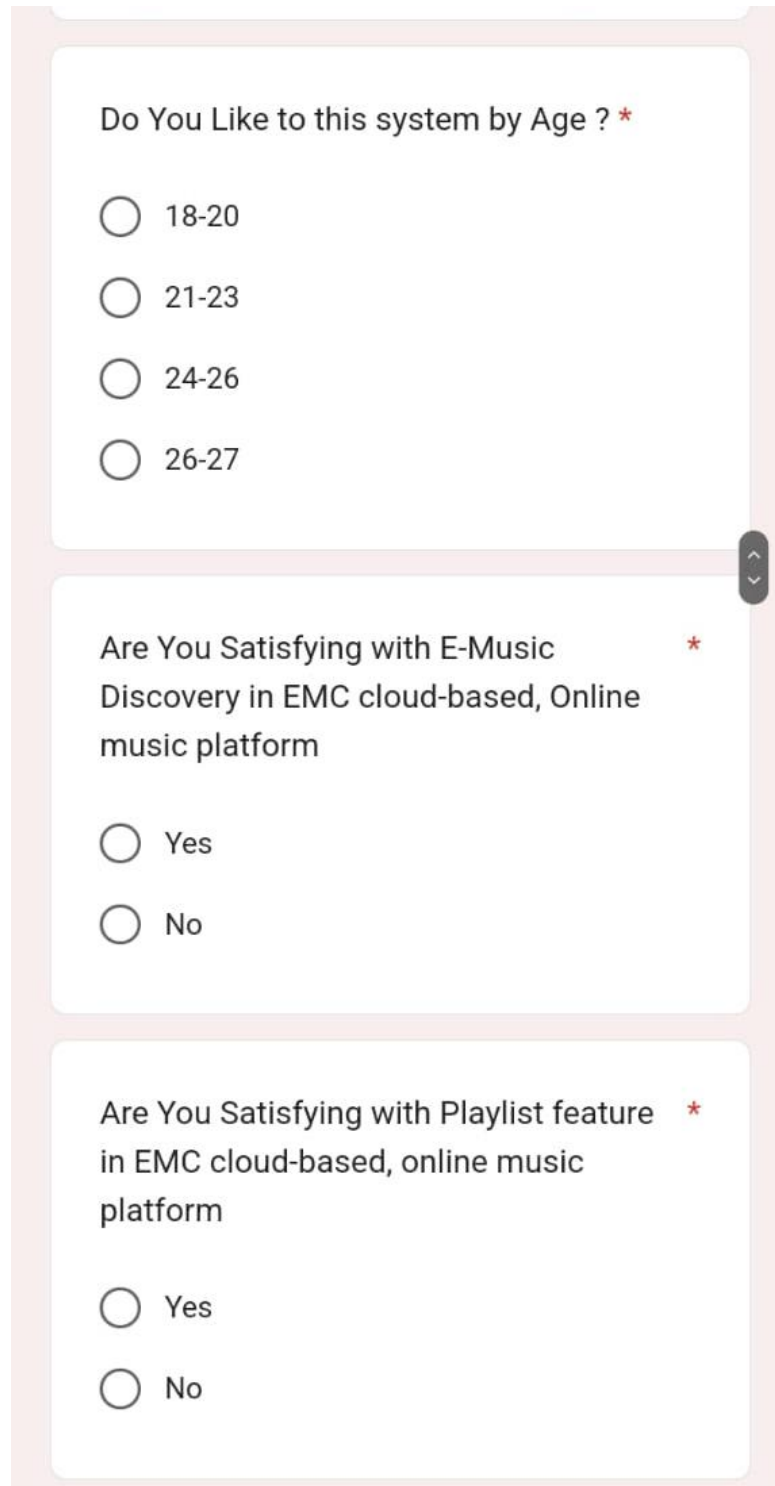


## End user experiments and examine feedback



The screenshot shows a mobile view of a Google Docs form. At the top is a red header bar with a star icon, a lock icon, the URL 'docs.google.com', and a refresh icon. Below the header is a banner image of a crowd at a concert. The form title is 'EMC - MUSIC SYSTEM'. The user is logged in as 'ranudigk@gmail.com' with a 'Switch account' link. The form status is 'Not shared'. A legend indicates that an asterisk (\*) denotes a required question. The first question is 'Name \*' with a text input field containing 'Your answer'. The second question is 'Phone No \*' with a text input field containing 'Your answer'. A small speech bubble icon is visible at the bottom left of the form.

Figure 24 : feedback form 1



Do You Like to this system by Age ? \*

☐ 18-20

☐ 21-23

☐ 24-26

☐ 26-27

Are You Satisfying with E-Music Discovery in EMC cloud-based, Online music platform \*

☐ Yes

☐ No

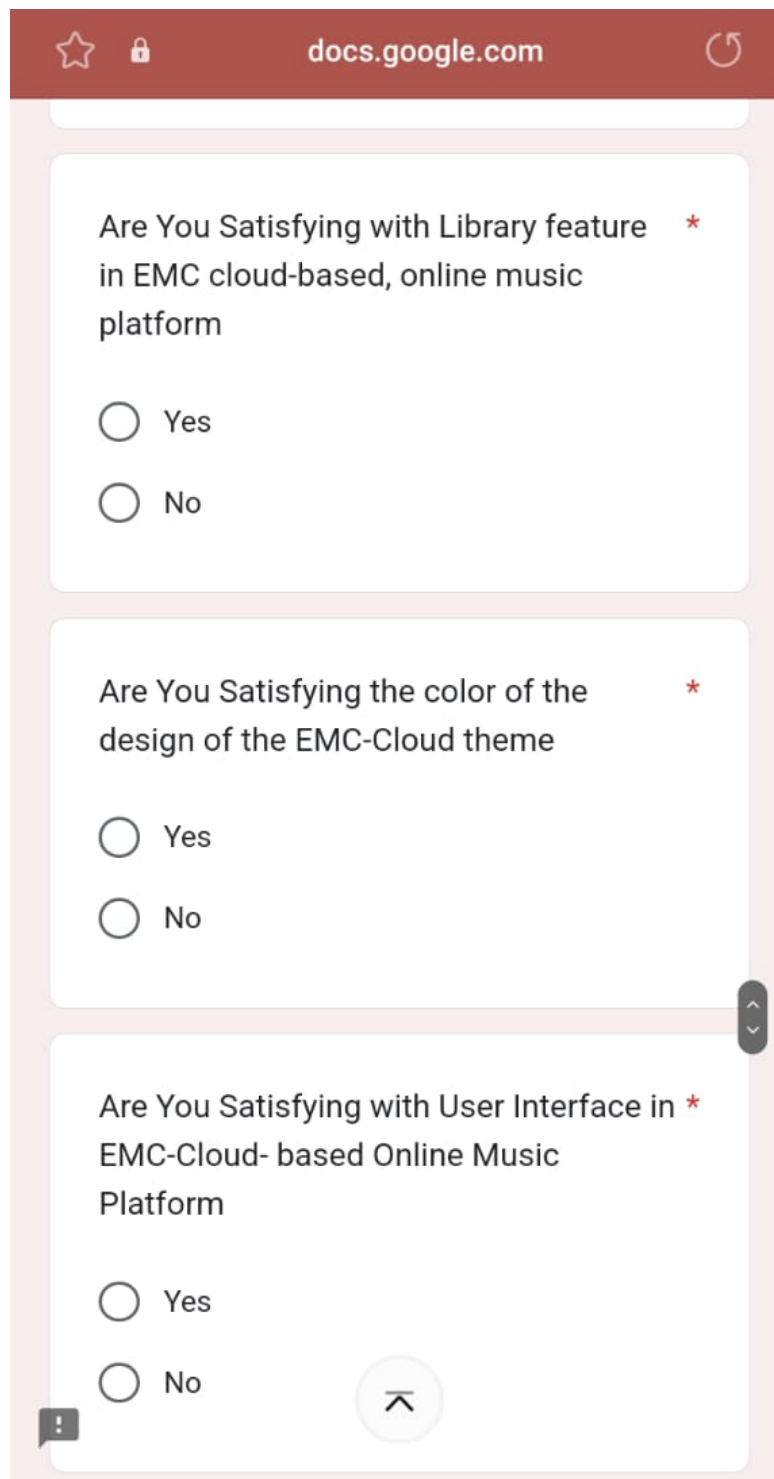
Are You Satisfying with Playlist feature in EMC cloud-based, online music platform \*

☐ Yes

☐ No

The image shows a feedback form with three sections. The first section asks 'Do You Like to this system by Age ?' with four radio button options: 18-20, 21-23, 24-26, and 26-27. The second section asks 'Are You Satisfying with E-Music Discovery in EMC cloud-based, Online music platform' with two radio button options: Yes and No. The third section asks 'Are You Satisfying with Playlist feature in EMC cloud-based, online music platform' with two radio button options: Yes and No. Each question is marked with a red asterisk. A vertical scrollbar is visible on the right side of the form.

Figure 25 : Feedback Form 2



The image shows a mobile view of a Google Docs document titled "Feedback Form 3". The browser address bar shows "docs.google.com". The form contains three questions, each with "Yes" and "No" radio button options. The questions are:

- Are You Satisfying with Library feature in EMC cloud-based, online music platform \*
- Are You Satisfying the color of the design of the EMC-Cloud theme \*
- Are You Satisfying with User Interface in EMC-Cloud- based Online Music Platform \*

At the bottom of the form, there is a small speech bubble icon with an exclamation mark and a circular button with an upward arrow.

Figure 26 : Feedback Form 3



Are You Satisfying with User Interface in \*  
EMC-Cloud- based Online Music  
Platform

☐ Yes

☐ No

Does the Interface Look user Friendly \*

☐ Yes

☐ No

How Do You Feel about the icons and \*  
images used in this application

☐ Yes

☐ No

**Submit** Clear form

Never submit passwords through Google Forms.

This content is neither created nor endorsed by Google.  
[Report Abuse](#) - [Terms of Service](#) - [Privacy Policy](#)

Google Forms

Figure 27 : Feedback Form 4

Do You Like to this system by Age ?

4 responses

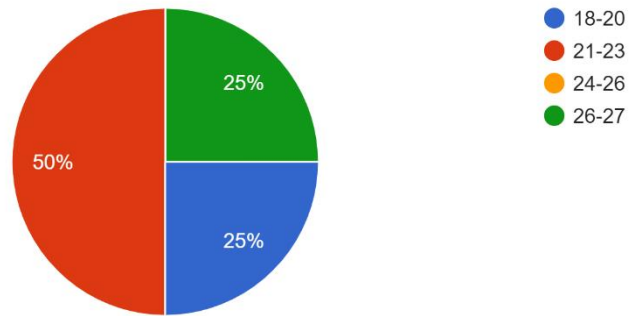


Figure 28 : Pie chart 1

Are You Satisfying with E-Music Discovery in EMC cloud-based, Online music platform

4 responses

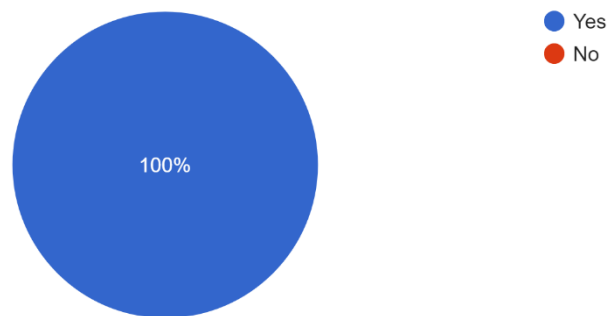


Figure 29 : pie chart 2

Are You Satisfying with Playlist feature in EMC cloud-based, online music platform  
4 responses

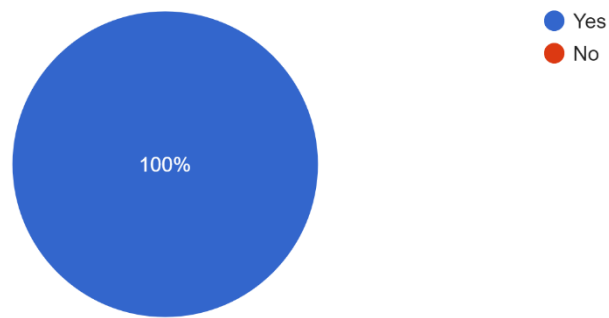


Figure 30 : pie chart 3

Are You Satisfying with Library feature in EMC cloud-based, online music platform  
4 responses

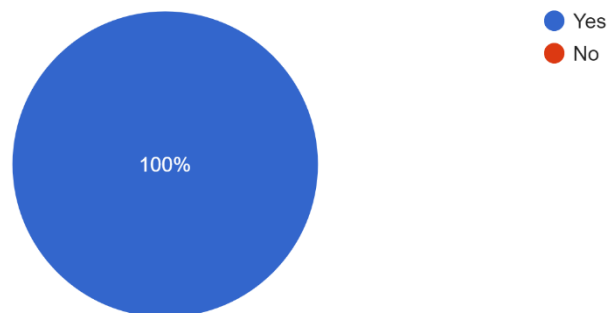


Figure 31 : pie chart 4

Are You Satisfying the color of the design of the EMC-Cloud theme

4 responses

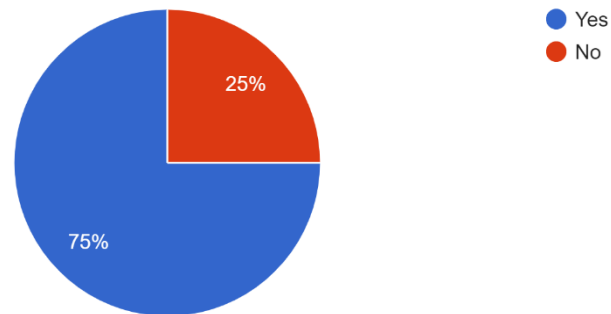


Figure 32 : pie chart 5

Are You Satisfying with User Interface in EMC-Cloud- based Online Music Platform

4 responses

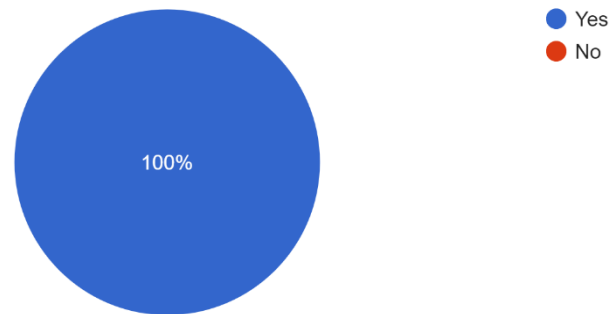


Figure 33 : pie chart 6

## **Future improvement of EMC application**

The EPN's current state could alter or be expanded upon in the future. EPN users requested these new features. In order to keep users engaged for an extended period of time, it is critical to incorporate new features that they have chosen and requested. In this manner, the new features that the developer has mandated or that the user has requested are listed below.

The EPN login page's color and positioning are modifiable. Furthermore, expanding the time allotted for renting a song on e-Music Cloud and refining and optimizing the duration of giving a song.

The presently utilized interface's typeface and style can be changed by developers to give their system a fresh appearance. Furthermore, expanding the available memory in the station where the user saves and downloads music. This enables listeners to save a lot of their favorite tracks for later playback. Making a new EPN that can be used offline as well as online is another addition.

## **The Software Development Life Cycle (SDLC)**

The Software Development Life Cycle (SDLC) encompasses a structured approach to software development, and the integration of User Experience (UX) and Interface Design methodologies plays a critical role in its various stages.

SDLC involves a series of distinct phases, starting from planning and requirements gathering, moving through design, development, testing, deployment, and maintenance. Each phase represents a specific set of activities and deliverables aimed at ensuring the successful creation and implementation of software.

The integration of UX and Interface Design within SDLC ensures that the end product meets user needs, expectations, and preferences. In the initial planning and requirements gathering phase, UX methodologies like user research, personas, and user journeys help understand user behaviors, pain points, and goals. This data guides the creation of user-centered requirements that form the basis of the software design.

During the design phase, Interface Design methodologies come into play. Wireframing, prototyping, and creating mockups allow designers to visually represent the software's structure, layout, and interaction elements. These design artifacts serve as blueprints, aligning the development team's understanding of the intended user experience.

As development progresses, the UX and Interface Design methodologies continue to inform decision-making. Designers and developers collaborate closely to ensure that the user interface (UI) elements align with the user experience goals established earlier. Iterative cycles of testing and refinement based on user feedback are integral, ensuring that the software remains user-centric and intuitive.

In the testing phase, usability testing, heuristic evaluations, and user acceptance testing validate the user experience and interface elements. These tests identify usability issues, interaction

problems, or inconsistencies in the design. The findings are incorporated back into the development process for refinements before the software reaches deployment.

Post-deployment, ongoing user feedback, analytics, and monitoring guide maintenance and future enhancements. These insights gleaned from the actual user interactions continue to shape the user experience and interface design, fostering a continuous improvement loop throughout the software's lifecycle.

Ultimately, integrating UX and Interface Design methodologies into the SDLC ensures that the software not only functions correctly but also provides an engaging, user-friendly experience. It aligns the development efforts with user needs and preferences, reducing the likelihood of costly redesigns or usability issues post-deployment, and contributes to the creation of successful and impactful software solutions

## Grading Rubric

Grading Criteria	Achieved	Feedback
<b>LO1 Research what aspects of User Experience and Interface Design are necessary and appropriate to satisfy end-user emotions, desires and attitudes when using a user interface concept.</b>		
<b>P1</b> Recognize specific forms of User Experience and Interface Design and end-user testing requirements.		
<b>P2</b> Assess standard tools available for use in User Experience and Interface Design.		
<b>M1</b> Analyze the impact of common User Experience and Interface Design methodology in the software development lifecycle.		
<b>M2</b> Review specific forms of User Experience and Interface Design and advantages and disadvantages of end-user testing requirements for appropriateness to different testing outcomes.		
<b>D1</b> Evaluate specific forms of User Experience and Interface Design and justify their use in a User Interface concept.		



LO2 Plan an appropriate User Experience map and Interface Design for a User Interface concept with a specific target end user in mind and outline the tests you mean to conduct.		
P3 Review different end-user categorisations, classifications and behaviour modelling techniques.		
P4 Appraise a specific end user and an appropriate User Experience and Interface Design methodology to test with this user type.		
M3 Apply end user classification and behaviour modelling to select an appropriate Interface Design methodology.		
M4 Devise a plan to use appropriate User Interface Design methodology and tools to conduct end-user testing.		
D2 Make multiple iterations of your User Interface concept and modify each iteration with enhancements gathered from user feedback and experimentation.		

LO3 Build a User Interface concept and test it with users to see if it satisfies their emotions, desires and attitudes as planned.		
P5 Examine appropriate tools to develop a user interface.		
P6 Run end user experiments and examine feedback.		
M5 Employ an appropriate set of tools to develop your plan into a user interface.		
M6 Reconcile and evaluate end-user feedback and build a new iteration of your user interface modified with the most important feedback and enhancements.		

<b>LO4 Evaluate user feedback, test results and insights gained from end users interacting with your User Interface concept to determine success or failure and steps to improve in future versions.</b>		
<b>P7</b> Evaluate end-user feedback from multiple iterations of your user interface.		
<b>P8</b> Suggest steps to improve in future versions of your UI.		
<b>M7</b> Undertake a critical review and compare your final user interface and your test results with the original plan.		
<b>D3</b> Critically evaluate the overall success of your User Interface concept and discusses your insight using prototyping.		