**Coursera Bootstrap Course: Ideation Report**

**INTRODUCTION**

In this report I propose to develop a website called **ColourTone** that presents a new way to play musical notes based on colour associations with specific notes. Currently, playing various musical instruments requires users to learn the different methods of holding and fingering the instrument in order to produce the desired sound.

ColourTone instead provides a way to play multiple instruments by pressing/clicking the same set of buttons on the screen. Each button corresponds to a note. The buttons are colour-coded according to their note, and this colour mapping can be changed as per the user’s desire. There is also an option to transpose the chord (i.e., play in a different base chord). Of course, this requires that the user know the names of the various notes (C, C-sharp, D, etc.), for which guides below each button are shown according to the *solfège* (do-re-mi) system to aid those who are not familiar with chord names.

This system has the benefits of not having to learn the various ways of holding a specfic instrument, but instead being flexible enough to accommodate a number of instruments using the same on-screen buttons. Also, the colours associated with the keys can help visual learners. These are made possible by means of a beginner-friendly interface.

The ColourTone website will be built using Bootstrap and optimised for mobile devices.

**PROPOSED FEATURES**

* **Colour mappings:** Each note (such as C, D and E) is given a specific colour. The mappings from colours to notes can be changed by the user as per their preferences, or selected from a set of themes.
* **Instruments:** A range of instruments will be supported. Users can choose from among multiple instruments to play, and the same buttons for the chords can be used for each. However, mixing multiple instruments at once is currently not planned.
* **Higher and lower octaves:** It is important to be able to play notes from higher and lower octaves. Therefore, the number of notes displayed on the screen can be adjusted from the default 12 to accommodate more or fewer keys. On mobile devices this will need a redesigned interface.
* **Keys:** Keys on a computer keyboard are mapped to buttons representing notes. This can be configured by the user. On mobile screens, this does not apply as they are operated by touch.
* **Transposing:** ColourTone will support transposing, i.e., shifting the base note (*do* in the movable-do *solfège* system, which is most popularly used). In other words, a scale does not always have to begin at the C note, but rather the base note (*do*) can be changed to another note.
* **Recording:** Users will be able to record the music they create and export it as a file or share it.
* **Solmisation:** The default *solfège* (do-re-mi) system of solmisation (i.e., assigning names to notes) can be changed to other systems, such as the *sa-re-ga-ma-pa* system used in Indian music.

**EXISTING SERVICES**

After detailed explorations, I have concluded that the proposed ColourTone website is the first app or website of its kind that allows users to play on-screen notes according to colour-based cues. Therefore, a competing website does not exist currently. There are websites that allow users to play the piano based on chord names, but these do not have a colour aspect to them, and the keys are shaped like ordinary piano keys. ColourTone’s button arrangement, while similar, is not the same. Existing websites like Virtual Piano Online1 have the ability to play the piano using keyboard keys, as well as record and save played music. But they are optimised only for usage with a computer keyboard, and not on mobile screens. Also, their design is dated, which is what I seek to improve.

However, there are approaches that correlate the frequency of a musical note with the corresponding frequency of a colour in the spectrum of visible light.2 For instance, Musical Colors3 is a company that sells colour-coded stickers for pianos and guitars that can be pasted on individual keys or strings. In any case, these have not been extended to websites or apps that allow users to play instruments based on colour cues.

**REFERENCES**

1. Virtual Piano Online (<https://www.apronus.com/music/flashpiano.htm>).
2. Endolith (<http://www.endolith.com/wordpress/2010/09/15/a-mapping-between-musical-notes-and-colors/>).
3. Musical Colors (<https://www.musicalcolors.com/>).

**UI Designing and Prototyping: Report**

**INTRODUCTION**

In this section I would like to introduce the basic visual layout of my website, ColourTone, which provides a new way to play musical notes through colour associations. Users can play a range of instruments by clicking or tapping the same set of buttons on the screen. In the long term I also plan to support key and colour configurations and the ability to record and save music.

**USER INTERFACE LAYOUT**

The main screen of the app is presented below. The coloured notes occupy the main area of the screen, with various settings on the top. In the top left are icons for settings and help, while the top right has an icon to record. Below the site header are the current chord (along with major/minor) and the instrument selected. The C4 refers to the current octave (pitch) of the music.

At the bottom are left and right arrow buttons which can be used to go to the previous or next octave. The number of visible keys on the screen is shown at the bottom and can be changed.

Graphical user interface, application, Teams

Description automatically generated

**NAVIGATION**

The website functions mostly from a single page, with a settings page and a help pop-up being the only additional pages required. The settings icon in the top left corner takes the user to the below screen. In the top left corner are icons to cancel and bring up the help menu. In the top right corner is an option to save settings.

The first option, ‘Solmisation’, refers to the names of the notes displayed above the corresponding buttons, used to aid those who are not familiar with the names C, D, etc. This can be changed from the default *solfège* system (*do-re-mi­*) to *sa-re-ga-ma-pa* that is used in Indian classical music, among others.

There are also options to change the keys used to play certain notes (applicable only for computers, not mobile screens) and the colours for the keys. Key colours can be changed individually or all the keys can be chosen from a predefined theme. In the below example, all the key colours have been chosen individually.

Graphical user interface, application

Description automatically generated

**REFERENCES**

The above prototype can be found at the followng link for reference.

<https://www.figma.com/file/bJHGxRmIRG8Mpuwbk1T91l/ColourTone-Wireframe>

**UI Design and Prototyping: Objectives and Outcomes**

Now that you are more clear about your project idea, it's time to conceive how your project is going to look like for the end-users. This is the time to design the user interface and the flow of your application. User interface design and prototyping helps you to conceptualize the look and feel of your application. This can be achieved in two ways: using wireframe diagrams, or using prototyping tools. We provide links to wireframing and prototyping tools in the additional resources. The focus in this lesson is to be able to visually represent various UI elements to enable designing your application. The aim is to deliver a reasonable representation of the end-user experience with your application. At the end of this lesson, you should be able to:

* Construct a wireframe diagram to visually represent the structure of your user interface
* Construct a prototype to enable understanding the flow of your application

**UI Design and Prototyping Report Template**

Project Title

1. Introduction

Give a brief introduction to your project and the list of features. Summarize in a few sentences what you proposed in the ideation report.

2. User Interface Design and Prototype

Give some sample user interface layouts for your application. You can use either wireframe diagrams or prototyping tools to construct the mock representations of your UI design

Briefly explain the rationale behind designing your UI and how it is geared towards supporting the list of features for your application.

3. Navigation Structure

Give a brief overview of the navigation structure for your application.

Briefly indicate a typical flow of your application in terms of user experience. You can use any way of representing the flow. You can also construct a prototype using one of the prototyping tools to illustrate this.

4. References

Provide any references relevant to the report.