**Abstract**

The importance of mobile phones in our everyday life and activities is undeniably unending. This is so because there is ongoing tremendous transformation in that mobile phones are no longer the ordinary communication device it used to be. It has become the colossal point of attention for individuals and businesses alike, courtesy of the various incredible features and opportunities that mobile phones offer. The cumulative progress of mobile technology, the availability and access to high speed internet and the remarkable communicative interface in these devices results into a whole level of new and innovative experience mobile computing. This is made possible through the development of mobile applications (mobile apps).

Thus, the result of these project is the final product of the Folkecenter’s need of a mobile application, which helps at promoting Folkecenter, its different events and renewable energy as a whole. This project report has the purpose of describing all the methods, stages and iterations that went into the development and implementation of this project. The app was developed by a single person, and one of the main requirements was that is it build in such a way that, in the future, if another person has to work on the application, it will be an easy task to do, such that this report has the purpose of simplifying this task.

The application has been fully designed with the end-user experience in mind, the app being developed to give the visitors of the Nordic Folkecenter a more enjoyable experience, including even a guided tour (in multiple languages). The user interface has been programmed using XML, and the back-end was implemented using Java. The app was envisioned to only run on Android mobile devices, but development for different platforms is possible in the future.

1. **Introduction**

The importance of mobile phones in our everyday life and activities is undeniably unending. This is so because there is ongoing tremendous transformation in that mobile phones are no longer the ordinary communication device it used to be. It has become the colossal point of attention for individuals and businesses alike, courtesy of the various incredible features and opportunities that mobile phones offer. The cumulative progress of mobile technology, the availability and access to high speed internet and the remarkable communicative interface in these devices results into a whole level of new and innovative experience mobile computing. This is made possible through the development of mobile applications (mobile apps).

Today, the availability of mobile apps is on the increase such that it is produce a noticeable change in the way humans feel and experience computing. Few years ago, in other to access the internet, check and read mails, one had to use the computer but today this has changed because computing is now carried everywhere in mobile phones. Imagine buying a train ticket on the go, this is something our ancestors never imagined or did. Imagine not going to the bank but still transfer money to family and friends. All thanks to app developers and **top app development companies.** No matter which, they have come to the rescue enabling easy life.

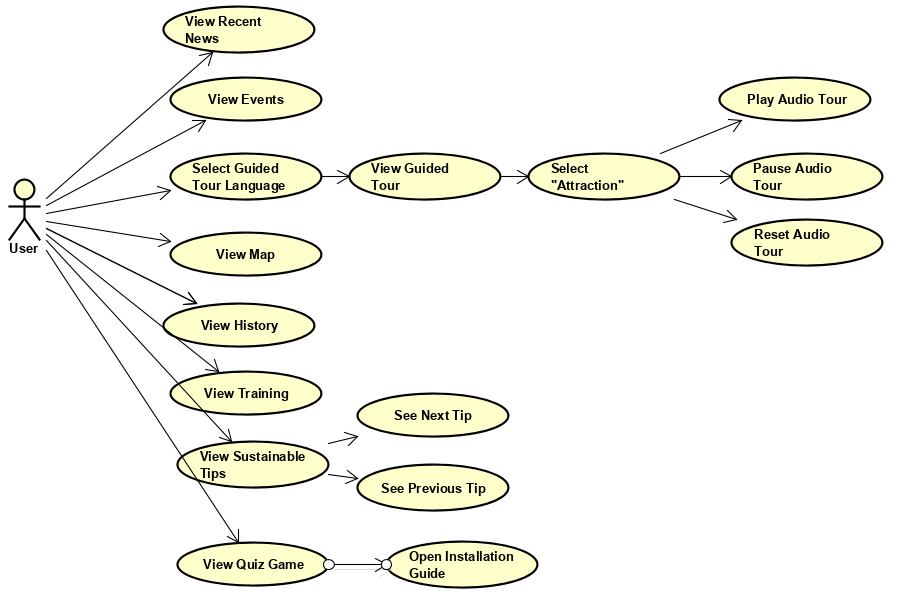
The developed product has the main purpose of giving the visitors of Nordic Folkecenter a more enjoyable experience, giving them an overall idea on what Folkecenter is all about, helping them keep up with the most recent news and events and even offering them the option to have a guided tour, in multiple languages, through the application.

1. **Requirements**

**2.1 Functional Requirements**

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| --- | --- | --- |
| ID | User Story Description | Priority |
| 1 | As a user, I want to be able to run the application on my Android Device | High |
| 2 | As a user, I want the application to be light-weight and well optimized | High |
| 3 | As a user, I want to be able to use most of the app’s features without a constant internet connection | High |
| 4 | As a user, I want the application to present me with relevant and well-organized information | Medium |
| 5 | As a user, I want it to be easy for me to access the Folkecenter website within the application | Medium |
| 6 | As a user, I want it to be easy for me to keep up with the latest news and events releated to Folkecenter | Medium |
| 7 | As a user, I want to be able to have access to a guided tour, in my own language, within the application | Medium |
| 8 | As a user, I wish that, when using the application, as little data as possible is asked for me, and, if it is, this data is well-protected | Low |
| 9 | As a user, I wish for a crash-free experience | Low |
| 10 | As a user, I wish that the installation and deletion process is as easy as possible | Low |

1. **Analysis**

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* 1. **Use Case Diagram**

The above Use Case diagram represents the various operations that the user can

perform in the application. Most of these operations are simple and straight-forward, since, to simplify the application, mose of its functionality is viewing pre-defined data, rather than the user interacting with the app itself.

* 1. **Use Case Descriptions**

The following Use Case descriptions explain how the functionality of the system was envisioned to function described thoroughly.

|  |  |
| --- | --- |
| Use Case | View Recent News |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout  The device has an active internet connection |
| Post-Condition | The recent news are displayed |
| Base sequence | 1.User taps on the “Recent News” icon  2.The application loads in the recent news and displays them on-screen |
| Exception Sequence | 2A: The application cannot load in the news because the device is not connected to the internet |

|  |  |
| --- | --- |
| Use Case | View Events |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout  The device has an active internet connection |
| Post-Condition | The events are displayed |
| Base sequence | 1.User taps on the “Events” icon  2.The application loads in the events page and displays them on-screen |
| Exception Sequence | 2A: The application cannot load in the events page because the device is not connected to the internet |

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| --- | --- |
| Use Case | Select guided tour language |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout |
| Post-Condition | The application displays the “guided tour” main page in the selected language |
| Base sequence | 1.User taps on the “Guided tour” icon from the front page  2.User taps on one of the 3 icons with the language: Danish, German or English |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | Select Attraction |
| Actor | User |
| Pre-Condition | The application needs to be on the “guided tour” main page |
| Post-Condition | Application displays the selected attraction |
| Base sequence | 1.The user taps one of the icons, depending on the Folkecenter attraction he wants to learn about  2.Application displays the page for the selected attraction |
| Exception Sequence |  |

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| --- | --- |
| Use Case | Play/Resume Audio Tour |
| Actor | User |
| Pre-Condition | The application needs to be set on one of the attraction pages |
| Post-Condition | The application plays the audio for the user |
| Base sequence | 1.User taps on the “play audio” button  2.The system receives the requests and starts playing the audio file |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | Pause Audio Tour |
| Actor | User |
| Pre-Condition | The application needs to be set on one of the attraction pages  The audio needs to be in the “playing” state |
| Post-Condition | The sound is paused |
| Base sequence | 1.User taps on the “stop audio” button  2.The system pauses the audio file, which can be resumed using the play/resume audio function |
| Exception Sequence |  |

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| --- | --- |
| Use Case | Reset Audio Tour |
| Actor | User |
| Pre-Condition | The application needs to be set on one of the attraction pages  Audio needs to be in either the “paused” or “play/resume” state |
| Post-Condition | The audio file is reset, thus, if played again, it will start from the 00 time mark |
| Base sequence | 1.User taps on the “Reset Audio” button  2.The audio file is reset to the 00 time mark |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | View Map |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout  The device needs to be connected to the internet |
| Post-Condition | The map is displayed on the screen |
| Base sequence | 1.User taps the “Map” icon  2.System loads in the Map page |
| Exception Sequence | 2A:The application cannot load in the map page because the device is not connected to the internet |

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| --- | --- |
| Use Case | View History |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout  The device needs to be connected to the internet |
| Post-Condition | The history page is displayed on the screen |
| Base sequence | 1.User taps the “History” icon  2.System loads in the History page |
| Exception Sequence | 2A:The application cannot load in the history page because the device is not connected to the internet |

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| --- | --- |
| Use Case | View History |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout |
| Post-Condition | The training page is displayed on the screen |
| Base sequence | 1.User taps the “Training” icon  2.System loads in the Training page |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | View Sustainable Tips |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout |
| Post-Condition | The Sustainable Tips page is displayed on the screen by the application |
| Base sequence | 1.User taps the “Tips” icon  2.System loads in the Sustainable tips page |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | See Next Tip |
| Actor | User |
| Pre-Condition | The application needs to be set on one of the tips layouts |
| Post-Condition | The application displays the next tip |
| Base sequence | 1.User taps on the “Next tip” arrow  2.The application displays a new tip layout |
| Exception Sequence | 2A: An exception appears when the applications reaches the last tip, and here, when the “next tip” arrow is tapped by the user, he will be sent back to the main page |

|  |  |
| --- | --- |
| Use Case | See previous tip |
| Actor | User |
| Pre-Condition | The application needs to be set on one of the tips layouts |
| Post-Condition | The application displays the previous tip |
| Base sequence | 1.User taps on the “Previous tip” arrow  2.The application displays the previous tip layout |
| Exception Sequence | 2A. An exception appears when the application is set on the first tip, the back arrow sending the user back to the main tips page |

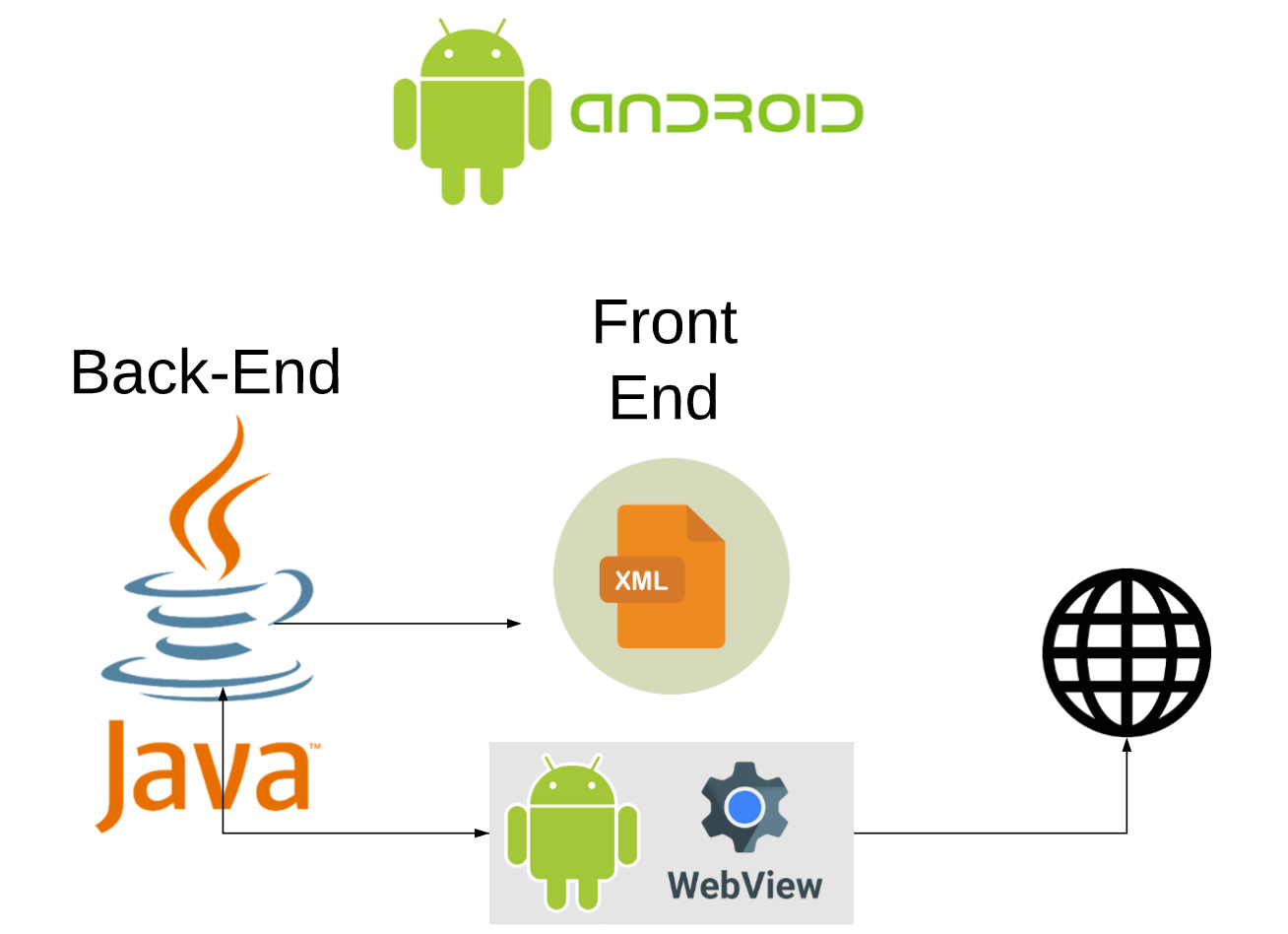
|  |  |
| --- | --- |
| Use Case | View Quiz Game |
| Actor | User |
| Pre-Condition | The application needs to be on the front page layout |
| Post-Condition | Application displays the quiz game page |
| Base sequence | 1.User taps on the “Quiz Game” layout  2.The application displays the Quiz Game page |
| Exception Sequence |  |

|  |  |
| --- | --- |
| Use Case | View Quiz Game Installation Guide |
| Actor | User |
| Pre-Condition | The application needs to be on the quiz game layout  There is an active internet connection on the device |
| Post-Condition | The installation guide page is displayed |
| Base sequence | 1.User taps on the “installation guide” button  2.Installation guide page is displayed |
| Exception Sequence | 2A. The page cannot be displayed due to the lack of an internet connection |

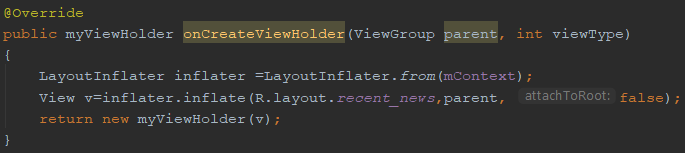
1. **Design**

The purpose of this part is to define the architecture, technologies, design patterns and UI choosing of the system.

**4.1 Architecture**

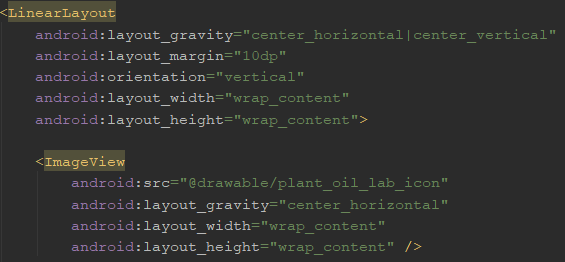
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The architecture diagram has the purpose of showing the logic behind the Android application. The application was designed for Android devices, thus, as the big majority of Android applications, the whole back-end of the application was coded using the object-oriented programming language Java.

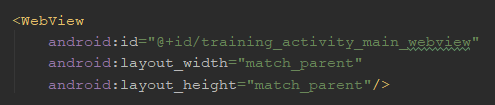
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Java was needed to initalize all the layouts, but also to add different back-end logic for the application, such as adding functionality to different buttons and hyperlinks in the application.

As far as the front-end of the application goes, it has been coded using the XML language, which is a markup language ( same as HTML).



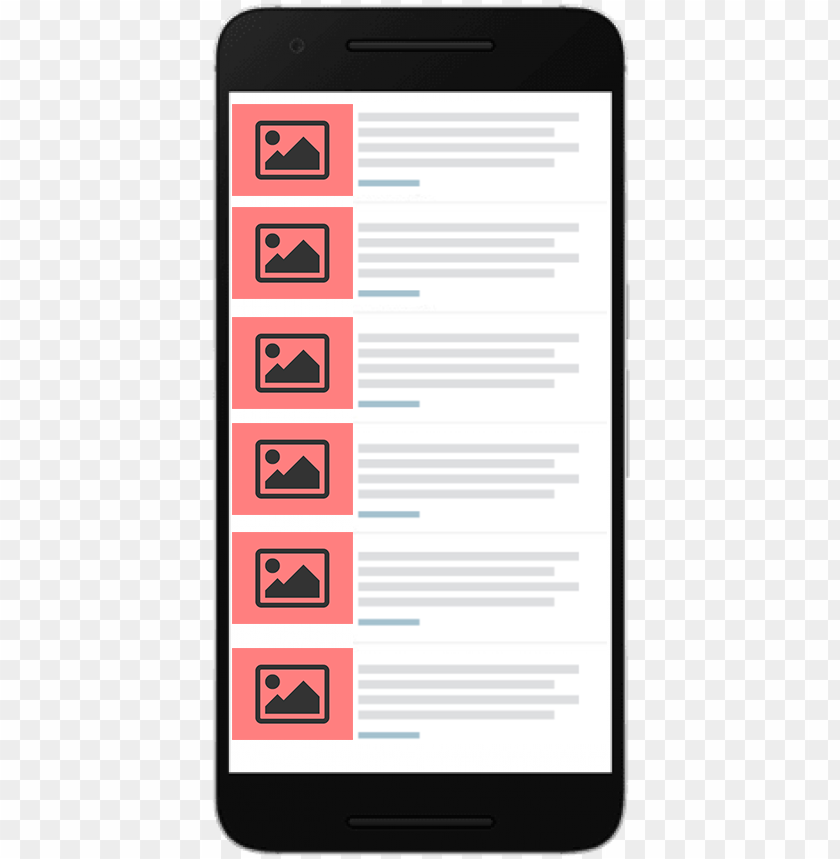
Apart from standard Android layouts, inside the app, WebViews are also used, which allow the Android Application to display a webpage inside the layout itself, which gives the developer some freedom, given that the linked web-page is responsive, but, as a downside, to access such a layout, a constant internet connection is requiered ( the application itself won’t request for constant internet connection of the application contains a WebView).

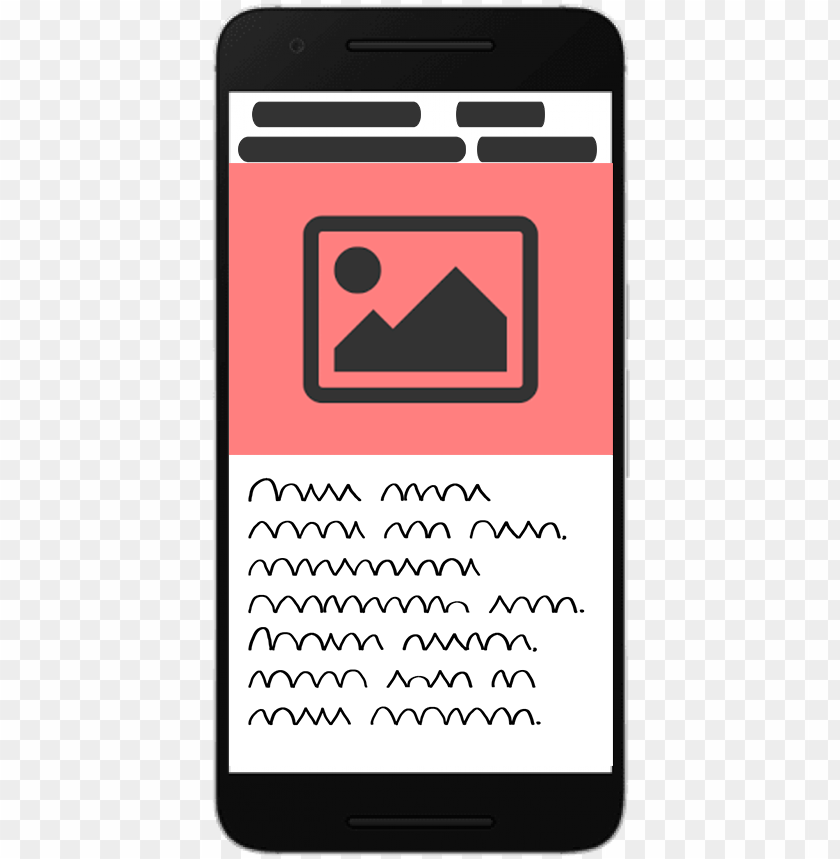


**4.2 User Interface Design and Navigation**

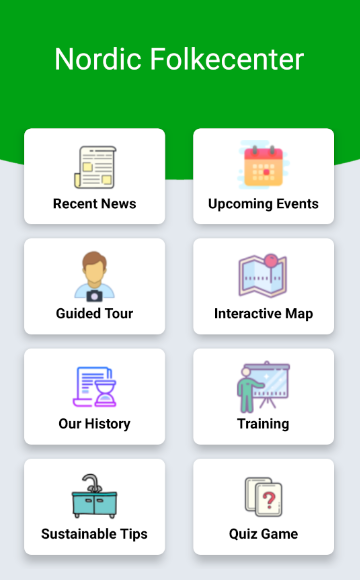
From the early stages of the project, the main focuses regarding the User Interface were to make every layout of every single activity in the Android Application simple, intuitive and eye-catching. Before starting the actual implementation of the application, a few small sketches of the layouts have been created.



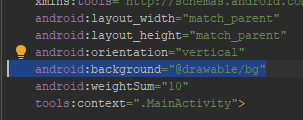




To stick with simplicity and ease of use, a clean and eye-catching front-page has been created – all the features of the application can be accessed from



The main design of the front-page has been recycled for other layouts in the application. The green arch on the top side of the layout is not generated by any XML code – a background image is set, which is a grey wallpaper containing the green arch on the top side.



**Sources of Information**

<https://www.hyperlinkinfosystem.com/blog/the-importance-of-mobile-applications-in-everyday-life>