|  |  |  |  |
| --- | --- | --- | --- |
| **CS102** | **Spring 2016/2017** | Project Group | 5G |
| Instructor: | **Aynur Dayanık** |  |  |
| Assistant: | Necmi Acarsoy |  |  |

|  |  |  |
| --- | --- | --- |
| **Criteria** | **TA/Grader** | **Instructor** |
| Presentation |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
| Overall |  |  |

~ Periodic Table Simulated~

The Descriptive Lobsters

21601849 Yasin Alptekin AY

21601927 Görkem YILMAZ

21600907 Ayça Begüm TAŞÇIOĞLU

21602061 Mert Alp TAYTAK

21502111 Merve Nur AKSAKBAĞI

|  |
| --- |
| Project Requirements Report  ( version 1.0 )  20 March 2017 |

# Introduction

Teaching of building blocks of universe such as atoms and molecules by formal education institutions are based on memorizing all the information without understanding the concepts thoroughly. In order to propose a solution to this issue, utilizing prevalence of smart phones and tablets, we are going to design and implement an Android application that can be accessed by anyone, from anywhere…

This application will offer its users information about bonds, particles, elements and common compounds; visuals for electrons, atoms, bonds between atoms; simulations for compound formation, atom interactions; quick quizzes to test user knowledge with its unique and easy to use wonderful, amazing interface.

# Details

## Information

Perhaps the most important aspect of learning is information. This application is going to display a periodic table in which all elements can be viewed by user and with a simple tap on an element application will show information about that element and compounds made of that element. Information shown will include atom number, atom mass, valence electrons, electron arrangements, picture of the element, uses of the element, where the element can be found, natural state of the element.

Note: All the relevant information that is not following a pattern will be input by hand with possibly the exception of pictures which may be downloaded from the internet with a script. However, end result should be the same and since there are only a limited number of elements (118) this should not prove to be hard. Considering maximum file size for a 32-bit 640x480 uncompressed image is 1.17 megabytes, pictures included in the application will be less than 600 megabytes. Since we are most likely use pictures with less resolution than 640x480 and compress those pictures storage capacity should not be a primary concern.

## Visuals

Our ultimate aim is to prevent memorizing all information and teach the user about periodic table and its contents in an intuitive way using visuals. Offered visuals in this app are:

* Pictures of elements in both atom scale and human scale (ex: picture of an iron atom and picture of an iron ingot)
* Bond types and bonds between atoms drawn in real time\*
* Electrons around an atom in different complexities drawn in real time\*

\*: Using some basic components prepared beforehand

## Simulations

Another important aspect of learning is practicing the concept yourself. In this app we are planning to give the user a tool to play with elements and show them resulting physical and chemical interactions. Users will be able to select two or possibly more elements from the periodic table and simulate their reaction in different conditions. Simulation will be calculated first and then will be turned into an animation.

## Quizzes

Quick quizzes in anytime user prefer to test their knowledge about a subject of their preference. Subjects include:

* Elements
* Bonds
* Atomic and molecular models

# Summary & Conclusions

Hopefully, this application will help chemistry enthusiasts, teachers, students and people who want to learn about building blocks of our universe to learn and understand periodic table better than any existing applications today. Difference between our application and others is that these applications are not as specialized for education as our application is going to be. Also, we hope to entertain our users while they are learning about chemistry. Our expectations for this application are that these features we have mentioned will help us achieve our ambitions of making our users learn and have fun at the same time.