### The Tools and Technology

When it comes to creating a fully functional software suite, there are several different tools and technologies that come into play.

Both applications and systems development are key areas to be implemented. Application development to build out the user side of the program, systems development to build out the back-end databasing, network operations and securities aspects of the StockIT software suite.

Our exact programming language will come down to our developers, early builds will likely be built using an element of Python with a transition being made into Java or C++. C++ is useful for any web-browser based functionalities of the software with Java being useful for a large range of application-based programming – especially in this instance with the standalone program aspect.

“SQL is a standardised programming language that’s used to manage relational databases and perform various operations on the data in them”. [[1]](#footnote-1) (What is SQL (Structured Query Language)? - Definition from WhatIs.com, 2021). SQL will be heavily involved to build out the database of the software and is possibly one of the more important aspects of the inventory software itself. Using SQL we can create large data structures and databases and have full access in modifying, updating and changing the data. Data Manipulation Language (DML) and Data Definition Language (DDL) are then used in unison as part of SQL. DML vocabulary will be used to retrieve and manipulate the data whilst the DDL statements are used for defining and modifying database structures[[2]](#footnote-2) (What is SQL (Structured Query Language)? - Definition from WhatIs.com, 2021).

StockIT will be first be built to operate on Windows and Android System, therefore a knowledge of the Android Software Development Kit (Android SDK) [[3]](#footnote-3)Is required. The Android SDK can utilise Java and C++ (which will be our preferred programming languages) and will allow us to build out our android app for StockIT in a relatively quick and straight forward manner. Android SDK also allows us to run profiling and bench marking, to test the performance and viability of the Android App version of our software. Further down the development lifecycle and roadmap of StockIT we will look to build out the Apple version of our application. To do this we will need to become familiar with the Swift programming language. Swift was developed by Apple Inc. as a replacement for Objective-C[[4]](#footnote-4) (Swift (programming language) - Wikipedia, 2021), and is an excellent language to use when building applications specifically designed to run on an Apple operating system.

Cloud computing and cloud infrastructure will also play an important role in some of the key functionalities of StockIT (SILo’s) and so a firm understanding of how Cloud computing works will be required. Whilst the data and information used by StockIT can also be accessed on a local storage only basis, cloud computing plays an integral role in sharing the inventory information among different wireless devices connected to the same StockIT account. The cloud infrastructure component allows us to offset the storage costs of the data, utilising pre-built cloud data storage centres. It will also utilise the user’s own machine as the host and central storage location for the data, with periodic back-ups of the data available both on the cloud and locally. It also allows the user to interact with the data in a virtualised way given the user interface provided by the StockIT software.

The aforementioned tools and technology are the lynchpins behind the StockIT system. Many more separate tools and technologies are required to really build out the software suite, but we believe these components are integral to the success of the platform itself. A list is provided below of tools and technologies that are more than likely required for the full implementation of the StockIT software with some notes attached and assigned to a position with the roadmap.

Tools and Technology list:

* fluency and expertise in either Java, C++, Swift and Python
  + for program development and implementation
* using the Android Software Development Kit (Android SDK)
  + for android application creation
* experience and knowledge working with SQL
  + databasing, DML and DDL
* knowledge of cloud Infrastructure and Data storage
  + required for cloud data sharing aspect of the program
    - key for SILo development
* MariaDB
  + databasing language
* Artificial Intelligence integration and development [end-game features]
  + machine learning models
  + in this instance, we will have to outsource development of the artificial intelligence
    - Artificial Intelligence will unfortunately likely not be part of the proposal we can put forward initially and will have to be delayed to further in the timeline
    - in its place we will need work-around solutions to notification and alert systems.
      * possibly have the StockIT system allow a user to set a “safety-stock” level for each item. With alerts generate and sent to the user when an item reaches a certain level.
  + Chatterboxes
  + natural language tools
  + Artificial Intelligence used to read and understand data
    - Predict trends
    - Alerts for inventory issues
* Extensible Markup Language (XML)
  + useful for creating data structures
  + tied directly to API’s used to display the data created with the XML’s
* material design language guidelines
  + guidelines for publishing applications and software
* Apple Human Interface guidelines
* exporting data to CSV and associated databasing
  + creating spreadsheets and data from the inventory data that can be used in different formats by the user.
* back-end PoS design, architecture and data storage
  + an in-depth understanding of how Data from StockIT can be fed to and from the PoS system used by the user.
  + how this data is presented by the PoS
  + how the data is collected
  + integration and communication between StockIT and the PoS
  + how a PoS system works – eftpos, storage, data management
* wireframming
  + used to map and create UI and UX concepts and articulate how StockIT will look.
  + low fidelity for basic and first drafts.

high fidelity for close to finished product and versions.

* GitHub for project data sharing in creation and development phases.

The tools and technology section is a difficult segmement to surmise. Over the journey of StockIT, the development group and myself will learn a lot and grow our skills in the technology sector. The feasibility of StockIT as a whole software product is at the forefront of the development group’s mind, we are realistic about our approach and our roadmap.

1. SearchDataManagement. 2021. *What is SQL (Structured Query Language)? - Definition from WhatIs.com*. [online] Available at: <https://searchdatamanagement.techtarget.com/definition/SQL> [Accessed 11 October 2021]. [↑](#footnote-ref-1)
2. SearchDataManagement. 2021. *What is SQL (Structured Query Language)? - Definition from WhatIs.com*. [online] Available at: <https://searchdatamanagement.techtarget.com/definition/SQL> [Accessed 11 October 2021]. [↑](#footnote-ref-2)
3. Android Developers. 2021. *Download Android Studio and SDK tools  |  Android Developers*. [online] Available at: <https://developer.android.com/studio?gclid=Cj0KCQjwnoqLBhD4ARIsAL5JedK12bkMRcfXZ3DZiglCAeRw\_l2-BE4uZOO1IcT\_wrM8OUCO09JL2TYaAh59EALw\_wcB&gclsrc=aw.ds> [Accessed 11 October 2021]. [↑](#footnote-ref-3)
4. En.wikipedia.org. 2021. *Swift (programming language) - Wikipedia*. [online] Available at: <https://en.wikipedia.org/wiki/Swift\_(programming\_language)> [Accessed 11 October 2021]. [↑](#footnote-ref-4)