# CHAPTER FIVE

# IMPLEMENTATION

## 5.1: Implementation in Software Engineering

In software implementation phase, we build the components of the system, or we can say that implementation is the phase of start writing the system or start doing programming, based on the given architecture documentation from the design phase and the requirement document from the analysis phase. Hence, the team should build exactly what has been requested, though there is still room for innovation and flexibility. For instance, a component may be narrowly designed for this particular system, or the component may be made more general to satisfy a reusability guideline. Therefore, the architecture document should give guidance. Sometimes, this guidance is found in the requirement document. This phase deals with issues of quality, performance, baselines, libraries, and debugging. The end deliverable is the product itself and the source code of the system. [1]

## 5.2: Before writing the Web Based Payroll System

An implementation is a realization of a technical specification or algorithm as a program, software component, or other computer system through programming and deployment. Many implementations may exist for a given specification or standard. For example, web browsers contain implementations of World Wide Web Consortium-recommended specifications, and software development tools contain implementations of programming languages. [2]

The implementation phase is a phase where you have to be very clear about each and every requirement of the customer because software implementation is a collaborative effort between the software vendor and the customer. Secondly, clear and open communication is essential. Of course, customer needs to communicate their objectives to the software vendor. But even more important, they must listen to what the software vendor tells you. The biggest sources of failure are the misunderstandings that develop between what the customer expects and what the software vendor can deliver. Be on your guard and learn the software’s capabilities and limitations. The software vendor may not volunteer the product’s failings unless customer does enough inquiring and it is possible that vendor’s power of influence may convince customer to purchase a product that may not fully address the needs.

In the Web Based Payroll System’s case, we listed down quite a few functionalities of the system, and the prototype can be demonstrated online at <https://payroll-wfsiewapp.rhcloud.com>. Since it is a prototype, more functions can be added to the system at a later time.

## 5.3: Selecting the right tools, programming language, frameworks, technologies, and IDEs

The next and important step is to select the right tools, programming language, frameworks, technologies, and Integrated Development Environment. Below I will explain briefly that **what** and **why** I have used to implement the system and I will also be telling **what** I have **not** used and **why not** used. [3]

### 5.3.1: APIs and Libraries

There are there libraries used in the system, which are jQuery, jQuery UI, and Highcharts JS. jQuery was used as the core JavaScript library to simplify the client-side scripting of HTML and the development of Ajax web application. The reason I choose jQuery is because it is easy to use, fast, small, and feature-rich JavaScript library. Besides, it is the most popular JavaScript library in use today. The library is free and open source software.

jQuery includes the following features:

* DOM element selections using the multi-browser open source selector engine
* DOM traversal and modification (including support for CSS 1-3)
* DOM manipulation based on CSS selectors that uses node elements name and node elements attributes (id and class) as criteria to build selectors
* Events
* Effects and animations
* AJAX
* Extensibility through plug-ins
* Utilities - such as user agent information, feature detection
* Compatibility methods that are natively available in modern browsers but need fall backs for older ones - For example the inArray() and each() functions
* Multi-browser (not to be confused with cross-browser) support [4]

The second library that I used is jQuery UI.

### 5.3.2: Frameworks

Todo

### 5.3.3: Technologies

Todo

### 5.3.4: Integrated Development Environment

Todo