**Chapter 3**

**Tasks Performed**

Software Development Associate designs new approaches to computing technology and finds innovative uses for existing technology. They study and solve complex problems in computing for business, science, medicine, and other fields.

Software Development Associate creates and improves computer algorithms, which are sets of instructions that tell a computer what to do. Some computer tasks are very difficult and require complex algorithms. Computer and information Technical Associates try to simplify these algorithms to make computer systems as efficient as possible. For example, they may create an algorithm to analyze a very large set of medical data to find new ways to treat diseases. They may also look for patterns in traffic data to help clear accidents faster. These algorithms allow advancements in many types of technology, such as machine learning

systems and cloud computing.

The work of a Software Development Associate often leads to technological advancements and efficiencies, such as better networking technology, faster computing speeds, and improved information security. In general, computer and information Technical Associates work on a more theoretical level than do other computer professionals.

# 3.1 skills required

Computer and information Technical Associate should also possess the following specific qualities:

**Analytical skills:**Computer and information Technical Associates must be organized in their thinking and analyze the results of their research to formulate conclusions.

**Communication skills:**Computer and information Technical Associate must

communicate well with programmers and manager and be able to clearly explain their conclusions to people with no technical background. They often write for academic journals and similar publications.

**Critical-thinking skills:**Computer and information Technical Associate work on many complex problems.

**Detail-oriented:**Computer and information Technical Associates must pay close attention to their work because a small error can cause an entire project to fail.

**Ingenuity:**Computer and information Technical Associates must continually come up with innovative ways to solve problems, particularly when their ideas do not initially work as intended.

**Logical thinking:**Computer algorithms rely on logic. Computer and information Technical Associate must have a talent for reasoning.

**Math skills:**Computer and information Technical Associate must know advanced math and other technical topics that are critical in computing.

# 3.2 Technologies Used

* python
* Application Program Interface
* Google Online Tools

# 3.2.1 Python Programming

**Python** is an interpreted high-level general-purpose programming language. Python's design philosophy emphasizes code readability with its notable use of significant indentation. Its language constructs as well as its object-oriented approach aim to help programmers write clear, logical code for small and large-scale projects.

Python is dynamically typed and garbage-collected. It supports multiple programming paradigms, including structured (particularly, procedural), object-oriented and functional programming. Python is often described as a "batteries included" language due to its comprehensive standard library.

Python 2.0 was released on 16 October 2000, with many major new features, including a cycle-detecting garbage collector and support for Unicode

Python 3.0 was released on 3 December 2008. It was a major revision of the language that is not completely backward-compatible. Many of its major features were backported to the Python 2.6.x and 2.7.x version series. Releases of Python 3 include the utility, which automates (at least partially) the translation of Python 2 code to Python 3.

Python 2.7's end-of-life date was initially set in 2015 then postponed to 2020 out of concern that a large body of existing code could not easily be forward-ported to Python 3 No more security patches or other improvements will be released for it. With Python 2's end-of-life, only Python 3.6.x and later are supported.

Python 3.9.2 and 3.8.8 were expedited as all versions of Python (including 2.7) had security issues, leading to possible remote code execution and web cache poisoning.

# 

# 3.2.2 Advantages of python Programming

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· Easy to Read, Learn and Write. Python is a high-level programming language that has English-like syntax. ...

· Improved **Productivity**. Python is a very productive language. ...

· Interpreted Language. ...

· Dynamically Typed. ...

· Free and Open-Source. ...

· Vast Libraries Support. ...

·  **Portability**.

# 3.3 Tools Used:

## List of tools used during the internship

* Anaconda
* Spyder
* text local
* Fast2SMS
* Firebase
* XAMPP
* EXCEL

# 3.3.1 Anaconda

**Anaconda** is a distribution of the **Python** and R programming languages for scientific computing (data science, machine learning applications, large-scale data processing, predictive analytics, etc.), that aims to simplify package management and deployment.

Anaconda is a free and open-source, easy to install distribution of Python and R programming languages. Anaconda provides a working environment that is used for scientific computing, data science, statistical analysis, and machine learning.

The latest distribution of Anaconda is Anaconda 5.3 and is released in October 2018. It has the conda package, environment manager, and a collection of 1000+ open-source packages long with free community support.

Anaconda Navigator is a desktop graphical user interface (GUI) included in the Anaconda distribution. It allows us to launch applications provided in the Anaconda distribution and easily manage conda packages, environments, and channels without the use of command-line commands. It is available for Windows, macOS, and Linux.

# Applications Provided In Anaconda Distribution

The Anaconda distribution comes with the following applications along with Anaconda Navigator.

· JupyterLab

· Jupyter Notebook

· Qt Console

· Spyder

· Glueviz

· Orange3

· RStudio

· Visual Studio Code

FEATURE

• **Compiled with Latest Python release:** Anaconda 5.3 is compiled with Python 3.7, taking advantage of Python’s speed and feature improvements.

• **Better Reliability:** The reliability of Anaconda has been improved in the latest release by capturing and storing the package metadata for installed packages.

• **Enhanced CPU Performance:**The Intel Math Kernel Library 2019 for Deep Neural Networks(MKL 2019) has been introduced in Anaconda 5.3 distribution. Users deploying Tensorflow can make use of MKL 2019 for Deep Neural Networks. These Python binary packages are provided to achieve high CPU performance.

• **New packages are added:**There are over 230 packages that have been updated and added in the new release.

• **Work in Progress:**There is a casting bug in Numpy with Python 3.7 but the team is currently working on patching it until Numpy is updated

# 3.3.2 Spyder

# Spyder is a free and open-source scientific environment written in Python, for Python, and designed by and for scientists, engineers, and data analysts

# Spyder is useful and reliable Python software that features advanced editing, tools for data inspection, interactive testing, and debugging. The Scientific Python Development Environment ... we are on track for a Spyder 4 release in early 2019 with all of your most-requested features (a ... and embed its components, such as the interactive console, in your software.

# Features

Spyder has several features in addition to these including:

· An editor with **syntax** highlighting, introspection, code completion.

· Support for multiple Python consoles.

· The ability to explore and edit variables from a GUI.

· A Help pane able to retrieve and render rich text documentation on functions, **classes**, and methods automatically or on-demand.

# 3.3.4 TextLocal/ FASt2SMS

# 

# Great Software for Bulk Sms, I used this software for my company's transitional SMS or Business SMS. you sent SMS also from Excel Mail through Marge.

# The UK's #1 SMS marketing solution for businesses. Build smarter customer journeys with multichannel messaging solutions.

# Feature

· labelContact Management.

· label coupons.

· labelPolls / Voting.

· labelShortcodes.

· labelImport Address Book.

· labelInstant Message Delivery.

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# 3.3.6 Xampp

# XAMPP is an abbreviation for cross-platform, Apache, MySQL, PHP, and Perl, and it allows you to build a WordPress site offline, on a local web server on your computer. This simple and lightweight solution works on Windows, Linux, and Mac – hence the “cross-platform” part

# 

# XAMPP is a software distribution that provides the Apache web server, MySQL database (actually MariaDB), Php, and Perl (as command-line executables and Apache modules) all in one package. It is available for Windows, MAC, and Linux systems. No configuration is necessary to integrate Php with MySQL.

# 3.3.7 Excell

# software program by Microsoft that uses spreadsheets to organize numbers and data with formulas and functions. Microsoft Excel has the basic features of all spreadsheets, using a grid of cells arranged in numbered rows and letter-named columns to organize data

# FEATURE

·  Utility

· PivotTables.

· Paste Special.

· Absolute References. ...

· Print Optimisation. ...

· Extend formula across/down. ...

·        **Flash Fill**. ...

· INDEX-MATCH.

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# 3.3.8 Firebase

Firebase evolved from Envolve, a prior startup founded by James Tamplin and Andrew Lee

in2011. Envolve provided developers an API that enables the integration of online chat

functionality into their websites. After releasing the chat service, Tamplin and Lee found that it was being used to pass application data that were not chatting messages. Developers were

usingEnvolve to sync application data such as the game state in real-time across their user

Tamplinand Lee decided to separate the chat system and the real-time architecture that

powered it. They founded Firebase as a separate company in September 2011 and it

launched to the public in April 2012.

**Features:**

#### Firebase Cloud Messaging

#### Firebase Authentication

#### Firebase Real-time Database

#### Cloud Fire store

#### Firebase Storage

#### Firebase Hosting

Firebase Authentication is a service that can authenticate users using only client-side code. It

supports social login providers Facebook, GitHub, Twitter, and Google as well as other

service providers like Google Play Games, Apple, Yahoo, and Microsoft. Additionally, it

Includes a user management system whereby developers can enable user authentication with

email and password login stored with Firebase.

Firebase provides a realtime database and backend as a service. The service provides

application developers an API that allows application data to be synchronized across clients

and stored on Firebase's cloud.

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# 3.4 Projects

**Project Name**

**Objective**: Write down your problem statement

# 3.4.1 REQUIREMENTS SPECIFICATION

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## 3.4.1.1 FunctionalRequirements

## 

A description of the facility or feature required. Functional requirements deal with what the system should do or provide for users. They include a description of the required functions, outlines of associated reports or online queries.

## 3.1.1.1 Non FunctionalRequirements:

## 

Non-functional requirements define the overall qualities or attributes of the resulting system.

* + - * + Usability

The system should have a user-friendly and easy-to-use interface.

* + - * + Security

The system should not allow unauthorized access to the system and its data.

* + - * + Reliability

The system should be reliable enough to provide the service to the users when requested.

* + - * + Efficiency

The system should provide quick results.

## 3.1.1.2 SoftwareRequirements

## 

The software requirements of the project are:

* + - * + Operating system**:**Windows, Linux
        + Applications Required**:**spyder, Anaconda
        + Technologies Used**:**Python, SMS API, MAIL API

## 3.1.1.3 HardwareRequirements

The hardware requirements of the project are:

* + - * + C.P.U : Pentium IV 2.4 GHz orabove
        + Memory(Primary) : 1 GB orabove
        + HardDisk : 40 GB orabove
        + Monitor: 15 VGAcolor