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Abstract

Implement procedural programming using control structures (e.g., conditional statements and logical operators) and parameter passing in the solution.

Logbook Year 2

Option Area 2 Task 5

# Introduction

This document will detail the instance in which I employed the use of procedural programming to aid me in completing a project I was assigned in my role as an ICT Specialist. It will discuss the different types of programming I use in the workplace and how using procedural programming was essential to me ensuring the project functioned correctly. The document will then conclude with how my experiences in the workplace have shaped my understanding of procedural programming and its importance as a tool in my role as an ICT specialist.

Procedural programming is a programming paradigm in which code is structured into a series of procedural calls and routines, breaking down tasks in reusable, self-contained blocks. It has a clear, linear flow of control, making it ideal for smaller, less complex projects. There are various programming languages that are entirely based on procedural programming. These include C and BASIC. However, it is also possible to implement procedural programming practices into other programming languages as well. This is what will be discussed in this document as an example of employing the programming paradigm as part of my role as an ICT Specialist.

## Background

In my role as an ICT Software Development Specialist, I have been assigned various projects to develop by my manager. All of these projects have almost entirely been web based. Therefore, they have all been developed using object-oriented programming languages and practices. These have included JavaScript and Visual Basic. However, even though this has meant that I haven’t been able to implement many procedural programming solutions, there have been various instances in which I have needed to employ a procedural solution in order to add particular functionality to a project. One such scenario is detailed below.

## Project Background

At the moment, my organisation is migrating all its programs onto one single dedicated application. Currently, some of the programs that run on this application require an external application to complete some tasks essential to their functionality. One such program is a program that revolved around converting map coordinates from an Irish standard to an international standard so that they can be viewed on Google or Bing Maps. I was tasked by my manager to re write the code so that instead of sending the coordinates to an external application to be converted, that the conversion would be completed entirely using a JavaScript add on. Whilst the majority of this would require the use of objects, a small part could be completed using procedural methods and functions. Therefore, this is what I decided to do.

## Implementation of Procedural Programming

Part of the project I was working on required a conversion into Degrees Minutes and Seconds. This involved using the coordinates that had been converted into an international standard and performing a series of mathematical calculations on it to get three distinct values. These were: taking the number before the decimal place in the conversion as the ‘Degree’ value, multiplying the remaining numbers after the decimal place by 60 and taking the number before the decimal point in the result as the ‘Min’ value, and then repeating the above calculation, using the numbers after the decimal place in the ‘Min’ value instead, and taking the result as the ‘Sec’ value. For this, I created a dedicated JavaScript function that passed the conversion result as a parameter, on which the mathematical equations are performed. Three separate values are created for each of the three separate values required. These are then combined into one value and returned by the function. This result then can be displayed in the user interface for the user to see. The function in question is below:



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Description automatically generated

It passes a parameter in the form of the conversion result, uses various logical operators to define variables, as well as has a clear linear flow to the code, which are all characteristics of procedural programming.

Another procedural programming implementation within the project is one I employed myself to aid in decimal calculations. The user interface that displays the results of the conversions is of a limited size and capacity, and many of the decimals were too long to be fully displayed. Instead of just simply using the dedicated toFixed() method, I created a dedicated function that checks if the decimal value has a decimal place greater than 5, and if it does, to shorten it to just three decimal places. The resulting value is then returned by the function. I created this function as I wanted to ensure the conversions displayed were as accurate as possible, so instead of just shortening all decimals, I shortened only the longest ones. The function in question is below:

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It passes a parameter in the form of a decimal to be shortened, uses conditional statements written in shortened form, various logical operators to check the decimal places, as well as has a clear, linear flow to the code. These are all characteristics of procedural programming.

# Conclusion

Procedural Programming, as one of the programming paradigms, is an essential aspect of working in a Software Development environment. It entails creating a series of procedural calls and routines which break down tasks into reusable, self-contained blocks. These blocks are usually functions into which some parameters are passed, and then various operations may be performed on it, and the result is then returned to be used elsewhere in the project. Whilst this type of programming is best suited for smaller, simpler projects, of which there will probably not be many in a professional ICT environment, it is always important that as an ICT Specialist, I am aware of and can adequately implement it. As evidenced in this document, I was able to employ it within a larger object-oriented project to aid me in doing calculations. Therefore, even if I will not be using it often, as an ICT Specialist it is important that I understand it as not only is it a fundamental aspect of Software Development in that it is the foundations of many programming languages, but that it can also be useful when doing other, larger, object-oriented projects. In my role as an ICT Specialist, I was able to deepen my understanding of Procedural Programming.