National College of Ireland

Configuration Manual

MSc Research Project
Master of Science in FinTech

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MSc Project Submission Sheet

School of Computing

Student Name:	Nigel Anthony		
Student ID:	22192379		
Programme:	Master of Science in Fintech	**Year:**	2023-2024
Module:	MSc Research Project		
Lecturer:	Victor Del Rosal		
Submission Due Date:	12-08-2024		
Project Title:	Influence of Cryptocurrencies on Portfolio Optimization: An Analysis of Diversification Opportunities		

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I hereby certify that the information contained in this (my submission) is information pertaining to research I conducted for this project. All information other than my own contribution will be fully referenced and listed in the relevant bibliography section at the rear of the project.
ALL internet material must be referenced in the bibliography section. Students are required to use the Referencing Standard specified in the report template. To use other author's written or electronic work is illegal (plagiarism) and may result in disciplinary action.

Signature: Nigel Anthony

Date: 11-08-2024

PLEASE READ THE FOLLOWING INSTRUCTIONS AND CHECKLIST

Attach a completed copy of this sheet to each project (including multiple copies)	□
Attach a Moodle submission receipt of the online project submission, to each project (including multiple copies).	□
You must ensure that you retain a HARD COPY of the project, both for your own reference and in case a project is lost or mislaid. It is not sufficient to keep a copy on computer.	□

Assignments that are submitted to the Programme Coordinator Office must be placed into the assignment box located outside the office.

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Configuration Manual

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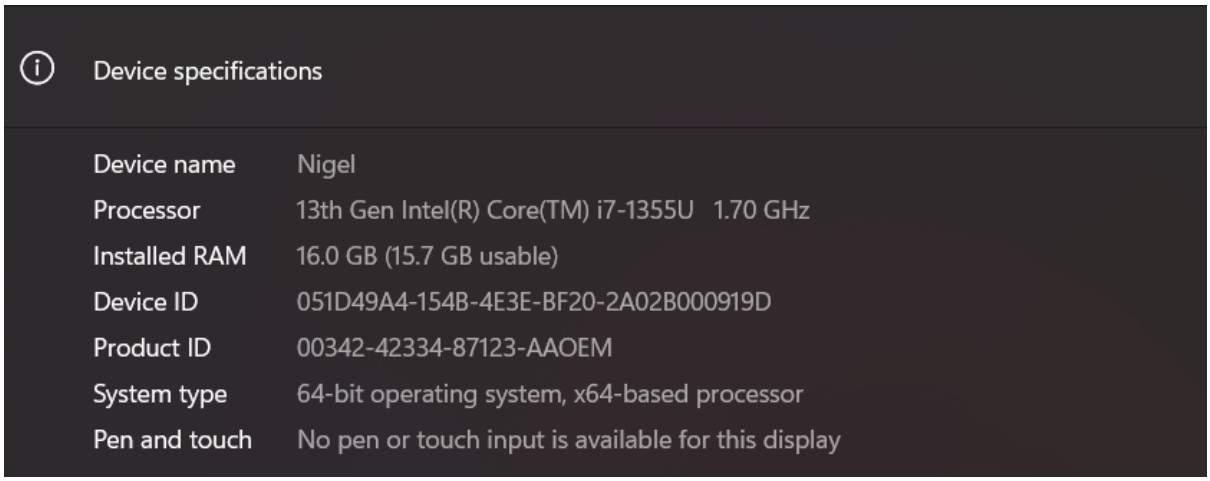
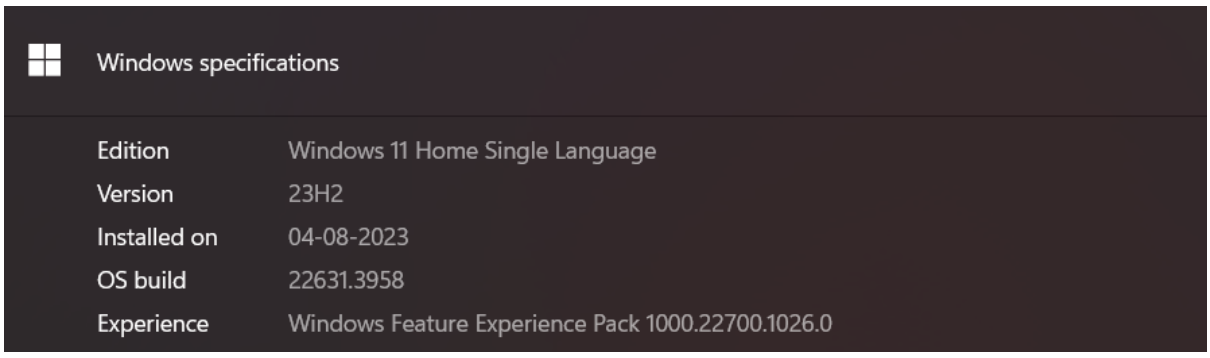
Student ID: 22192379

The following configuration manual aims to describe all the steps required to produce the same results of the thesis titled “Influence of Cryptocurrencies on Portfolio Optimization: An Analysis of Diversification Opportunities”. The manual contains the hardware and software information used to complete the thesis. Additionally, all the libraries, packages, classes and functions used will be provided in this manual. The code used to acquire the results that match the thesis will also be provided.

1 Hardware and Software Information





2 Google Colaboratory

Google Colaboratory which is a hosted Jupyter Notebook service that requires no setup to use and provides free access to computing resources, including GPUs and TPUs was used for the coding part of this research. Therefore, no additional software was needed to be downloaded to carry out this research.

3 Python

3.1 Libraries:

The “pip install (library name)” can be used to install the following:

- pandas,
- yfinance,
- numpy,
- seaborn,
- matplotlib,
- scipy,
- plotly,
- PyPortfolioOpt.

3.2 Classes:

- CLA,
- EfficientFrontier,
- DiscreteAllocation,
- go.Figure,
- timedelta.

3.3 Functions:

- minimize,
- get_latest_prices,
- make_subplots.

3.4 Modules:

- datetime (also the module containing the timedelta class).

4 Code

Influence of Cryptocurrencies on Portfolio Optimization: An Analysis of Diversification Opportunities:
https://colab.research.google.com/drive/1LtF6HuIxRtBtJOd3pnUGBehBKM9fGede?usp=sharing

5 Replicating Results

Step 1: Open a new Google Colab Notebook using the following link:
https://colab.google/

Step 2: Either open the Project Notebook given above or copy the code into the new Google Colab Notebook