EGM 722 Assignment part 1

1 Introduction

When geographical information systems were first introduced in the 1960s it revolutionised how we monitor the environments and was quickly implemented into a wide range of fields both in the government sector and the private sector. This new form of information also created a highly sought after new skillset in the form of people who were able to operate software that could perform this analysis such as ArcGIS Pro and QGIS (Chen*et al.* 2022). One of the fields that makes use of this technology is under water remote sensing, where monitoring changes on land involve the implementation of planes, drones and satellite imagery, under water remote sensing uses technologies such as light detection and ranging (LiDAR) and multibeam bathymetry (Walbridge *et al.* 2022). Learning the techniques of GIS and Remote Sensing and having access to the software that can perform GIS analysis can be a time consuming and expensive venture, especially for companies that do not implement these techniques on a regular basis. To aid in this a programme can be written using python which can be run by a third party to quickly gain the required results from a particular analysis. Python is the most popular programming language that is able to use a wide range of computation methods often referred to a glue language (Liegeois*et al.* 2023). This manual will demonstrate a code that present an interactive map of Belfast lough, highlighting areas of keen interest such as shipwrecks that occupy the area whilst also producing layers that will show the bathymetry and slope of the underwater environment.

2 Setup/Installation

2.1 Installing GIT

Git is a revision control system which grants the ability to store and traverse versions of software, allowing the user to switch between revisions of data (Salis and Spinellis 2019). To install git use the following link  <https://git-scm.com/downloads>. From here select your operating system i.e. Windows, Apple or Linux and for windows users select which processer your system uses, if the user is not sure which processor their system runs, it is a safe option to install 64 bit as most modern systems use this. the recommended setup options are as follows, install to default location, leave components that are already selected, change default editor from vim to Notepad preferably Notepad ++, change branch name from got to main, select the recommended option for adjusting your path environment, select the recommended setting for configuring the line ending conversions, select Use MinTTY for configuring the terminal, for git pull leave the recommended settings, finally leave choosing a credential helper as it is and click install.

References

Walbridge, Shaun & Slocum, Noah & Pobuda, Marjean & Wright, Dawn. (2018). Unified Geomorphological Analysis Workflows with Benthic Terrain Modeler. Geosciences (Switzerland). 8. 10.3390/geosciences8030094.