**CBI-5 Programming**

1. Design and code a small program in Java or an alternative object-oriented programming language for bioinformatic application\*, and proceed to test and debug the program in accordance with good programming practice.

2. Develop documentation and testing protocols for the program according to local practice.

3. Evaluate the program against non-functional requirements, such as maintainability, efficiency and readability, finalise the software and update and complete the documentation.

**C1 - Perform requirements capture within a genetic analysis team to capture functional and non-functional requirements.**

Unified Modelling Language (UML).

Program development paradigms.

Capturing requirements in plain English.

Object-oriented modelling.

Identifying actors and use cases.

Functional and non-functional requirements.

Documentation requirements.

**C2 - Establish a development environment and undertake program development.**

Development toolkits.

Establishing a virtual machine (VM) in different operating system

(OS) environments.

Development environments, e.g. Eclipse, etc.

Libraries.

Object-oriented programming.

Use and extension of libraries.

Sources and use of specialist libraries.

**C3 - Test, debug and evaluate the program, and perform user acceptance procedures.**

Unit testing.

User evaluation.

Iterative development.

User documentation.

Software deployment.

**C4 - Maintain and upgrade software solutions, ensuring compliance with quality assurance procedures, including version control.**

Version control.

Software version management (SVM).

**C5 - Evaluate the program against non-functional requirements.**

• Maintainability.

• Efficiency.

• Readability.

**C6 - Finalise the programme documentation and file in accordance with local quality assurance processes.**

Documentation requirements.

**Background**

What is md5sum?

md5sum is a 128 bit checksum which will be unique for the same data provided. Use md5sum command to calculate and cross check the md5sum.

Two non identical files will never have the same md5sum. Typically, md5sum is used to cross verify the integrity of a file after downloading it from a website.