Java language essentials

Exercise book

Exercise

Body Mass Index calculator component

Body Mass Index (BMI) estimates the fitness level of the human body compared to the person's optimal weight. It is very easy to calculate from the height and weight of the person, thus it is a popular metric to assess health conditions.

In this exercise your task is to **design**, **implement** and **test** a BMI calculator component. The component's interface must take metric data of the person, and must return the calculated index and its interpretation (like "Overweight").

However we will **not** stop here.

As we know, data handling problems in software have serious impacts, therefore we have to do our best to make our component as robust as possible.

In this sense, we are not just focusing on perfect **error handling**, but also make the best effort to **mitigate user errors** (user == other components using our interface). For example, if a simple function takes height as a number, it is very easy to misuse the interface: is it interpreted as meters...? centimeters...? or inches...? It would be awesome, if the API could cope with a variety of such measurement units in an **elegant way**.

So work out a robust solution for your Java interface to overcome this ambiguity. Use the rich features of the Java language to create your component. Also **use the technology** you have learnt:

- Git for managing your source code files
- Eclipse/STS for code development
- Maven for build
- JUnit to unit test your code
- a local Jenkins for automated build

Focus on clear design, clean, maintainable code, proper naming, error-handling, and javadoc.

Enjoy your journey in programming!