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Assignment 2

Question 3

Part one

A university has students taking ICT, Law and Business courses. In the Faculty of ICT, there are Certificate, Diploma and a Degree courses (BSC-IT). BSC-IT has three stages: Stage 1, Stage 2 and Stage 3.

(i) Briefly explain how inheritance can assist in the capture and processing of student details in the above scenario.

Inheritance is a concept in object-oriented programming that allows new classes to be based on existing classes, inheriting their properties and behaviors. In the context of the scenario given, inheritance can be used to model the relationships between the different courses and their stages, and to capture and process student details more efficiently.

For example, you could create a base class called "Student" that contains common attributes such as name, email, and ID number, and then create subclasses for each of the different courses, such as "ICTStudent", "LawStudent", and "BusinessStudent". These subclasses would inherit the properties of the base "Student" class and also have their own unique attributes and methods specific to each course.

Likewise, you could create a base class called "Course" with common attributes such as course code, title, and duration, and then create subclasses for the different levels of the BSC-IT degree, such as "BSCITStage1", "BSCITStage2", and "BSCITStage3". These subclasses would inherit the properties of the base "Course" class and also have their own unique attributes and methods specific to each stage.

By using inheritance in this way, you can create a more modular and scalable system for capturing and processing student details, allowing you to easily add new courses and stages in the future without having to completely redesign your code. Additionally, you can more easily implement shared functionality across different classes, such as data validation or reporting, by defining it in the base classes and having it inherited by all subclasses.