**Q 4.2.1**

In my opinion, I do not believe that this table is well designed. This table displays a high level of data redundancy. Although, data redundancy can be sometimes intended, in the case of this table I think it is unnecessary. A well structured database will save disk space by eliminating redundant data, maintain data accuracy and provides access to data in useful ways [2].

**Database Design**

When considering designing a database it is important to consider some of the following factors:

* Consider how the data will be used: What format and how will the data be received?
* Structure data for Analysis: Data should be structured in such a way that makes use, interpretation and analysis easy [1].
* Break the data into logical tables: Identify the primary keys for each table. The primary key is used to uniquely identify every record of the table [3].
* Create relationships between tables: One-to-one, one-to-many or many-to-many. Our example is one-to-many as students may take more than 1 module.

Two tables should have been created to store this information:

**Student Tables (Master Table) Student\_Module (Associtate Table)**

|  |  |  |
| --- | --- | --- |
| **StudentID\*** | **studentName** | **Dob** |
| 1 | Sean | 2000-01-03 |
| 2 | Bill | 1990-04-23 |
| 3 | Tom | 1973-12-10 |
| 4 | Mary | 1991-04-12 |
| 5 | Joe | 1982-06-29 |

|  |  |
| --- | --- |
| **studentID** | **moduleID** |
| 1 | 100 |
| 2 | 100 |
| 3 | 101 |
| 3 | 104 |
| 4 | 101 |
| 4 | 102 |
| 5 | 100 |
| 5 | 104 |

**Module Table**

|  |  |
| --- | --- |
| **moduleID\*** | **moduleName** |
| 100 | Applied Databases |
| 101 | Java Programming |
| 102 | Computer Architecture |
| 104 | Mobile Apps |

I believe that this design would be better suited to the needs of college. I believe that the date the student commences the college year and the dates that modules run to and from are critical, as not all modules are offered, potentially a student can select a module that is not being offered that year, and without this information, students will be enrolling for courses that are not going to run.

Another issue with the table as it stands is the condition that the moduleID is a primary key, in the question, it is stated that students can enrol in the college, but that they do not have to select a module, this will result in an error if a student attempts to enrol without selecting a module.