**Data Redundancy & Update Anomalies Exercise**

**Learning Goal: understanding the practical implications of data redundancy and insertion, deletion and modification anomalies in a relation.**

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| --- | --- | --- | --- | --- | --- |
| **staffID** | **doctorsName** | **patientNo** | **patientName** | **appointment**  **date time** | **surgeryNo** |
| 15432 | Dr. A Ahern | P1000 | Ann Adams | 14.6.22 8.30 | S1 |
| 34576 | Dr. B Bell | P1020 | Ben Baker | 22.6.22 9.15 | S2 |
| 86756 | Dr. C Cope | P2087 | Claire Clap | 26.6.22 8.45 | S3 |
| 15432 | Dr. A Ahern | P9756 | Dan Drew | 22.6.22 14.30 | S1 |
| 34576 | Dr. B Bell | P1000 | Ann Adams | 24.6.22 16.45 | S1 |

This table is not well structured, un-normalized, containing redundant data. It is susceptible to update anomalies

1. Identify one insertion anomalies with this table.

A: patientNo and patiantName are duplicate values, they should be stored on a separate table “patient”.

1. Identify one deletion anomalies with this table.

A: When attempting to remove any record from the table, we will lose data belonging to different entities, for example Doctor and Patient, that are stored in the same table/row incorrectly.

1. Identify one modification anomaly with this table.

A: If the “doctorName” for staffID 15432 has to be updated, we would need to update multiple rows to keep consistency.