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Database Design Report

Computing For Free

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# Goal

Create a database for recording session attendance of students and booking sessions.

# Rule of business

* Students should be attending a minimum of two sessions per week, but they can attend as often as they can.
* Students cannot attend more than the allocated number of classes – unless by arrangement with the Team Leader. Provision needs to be made for Team Leaders to over-ride the maximum number of allocated sessions.
* Students need to complete their course within the allocated number of weeks – unless by arrangement with the Team Leader. Provision needs to be made for Team Leaders to over-ride the maximum number of allocated sessions.
* Students can attend more than one branch. E.g. student X may attend Bishopdale on a Tuesday and Hornby on a Friday.
* Each class is two hours long and starts on the hour e.g. 10am to 12pm. If a student turns up late or leaves early this is still counted as one class.
* Students can attend more than one session on one day.
* Students do turn up early to classes. Anyone attending 10 minutes before a class needs to be counted in the next class.
* CFF students currently do not have Ara ID cards. In the ideal case they would be able to use their ID card. In the short term, they may need to be provided with an RFID tag/card that does not have their student ID number as the code number for the card.

# Normalisation

## Column header

Following items are column headers from “Basic fields for engagment spreadsheet.xlsx” provided:

* ID Number
* First Name
* Last Name
* Course
* PROG
* Start Date
* End Date
* Number of days attended
* Number of days
* Withdrawal point
* Last Withdrawal Date
* Attended past last withdrawal date?
* Date Last Attended
* Last Active Moodle
* Future Bookings
* Weeks Left
* Completed
* Notes
* Monday, 8 January 2018 (attendance date and time)

## Pre-normalisation

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ID Number | First Name | Last Name | Course | PROG | Start Date | End Date | Completed |

Following column headers are removed because they are derived attributes or data from external data:

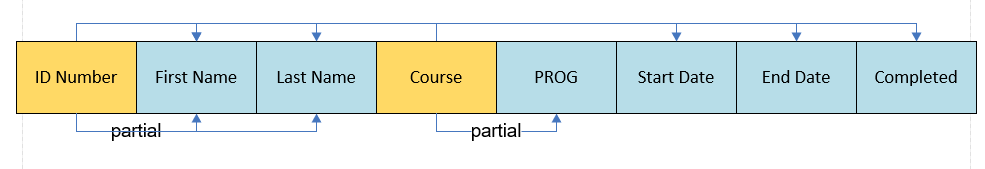
* Number of days
* Number of days attended
* Withdrawal point
* Last Withdrawal Date
* Attended past last withdrawal date?
* Date Last Attended
* Last Active Moodle
* Future Bookings
* Weeks Left

“Completed” is kept, although it can be calculated by other attributes. However, there may have special cases of student enrolment which need to be manual examined and modified by the staffs.

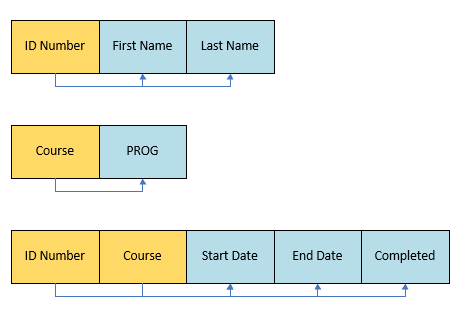
“Notes” is removed because it is not directly related to the booking and attendance system.

“Attendance date and time” is removed and put into a new table Attendance because it has multiple values.

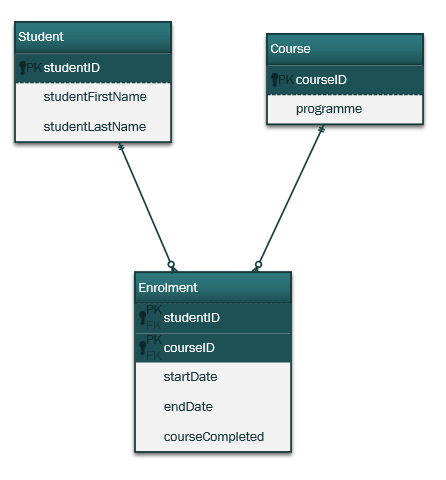
## First normal form



## Second normal form



## ERD



# Decision issues

## Separateness of Attendance and Booking

In the first design, Booking entity records the time a student attending the booking session. If there is no attendance time record, then we can know the student is absent from the booking session, so no Attendance entity existed. However, because student can attend a session without booking, Attendance entity becomes necessary to record the attendance date and time without referring to a Booking entity.

## Using enrolment ID in Enrolment instead of using student ID and course ID

In the final stage of normalisation in previous session, it uses student ID and course ID as composite primary key. However, a student may fail a course and enrol the same course again. The new enrolment will have the same student ID and course ID which creates duplicate data. Therefore, I use enrolment ID to prevent duplicate primary key for enrolment.

## Using enrolment ID and session ID as composite primary key in Attendance instead of in Booking

Both Booking entity and Attendance can use enrolment ID and session ID as composite primary. However, two entities use the same composite primary key may generate confusion for the users. On the other hand, the importance of attendance is higher than booking, using enrolment ID and session ID as composite primary key for attendance is more convenient for users to input data than using random ID. Therefore, I use random number as primary key for Booking and composite primary key for attendance.