**Databases - Session 3 Activity and Tutorial Exercise Answers.**

**Activity 1**

There will only be one row for each band so couldn’t put multiple band members in.

Activity 2

BAND(Band\_No, Band-name, Date\_formed, Genre, ….)

MUSICIAN(Musician\_Id, Name, Address, DateOfBirth, Mobile, *Band\_No*.. )

EVENT(Event\_No, Title, Date, Location ,…..)

TIMESLOT(Timeslot#, Start\_time, End\_time, *Band\_No* , *Event\_No*,….)

**Activity 2**

a)

Primary key for STUDENT is **Student\_id**

Primary key for MODULE is **Module\_id** or Module\_code

Primary key for MARK is ***Student\_id, Module\_id***

b) The key for MARK is made up from the two Foreign Keys ***student\_id*** and ***Module\_id and so is a Compound Key).***

## Tutorial Exercises

## 1) Students and Modules

Note STUDY is shown to represent the m:n relationship between STUDENT and MODULE. It is not strictly necessary to redraw the ERD but it usually helps.



COURSE ( Course\_Code, Name, ..)

STUDENT ( StudentID, Name, Address, *Course\_Code, ..* )

MODULE ( Module\_Code, Title, CATS Points, ..)

STUDY ( *Module\_Code*, *StudentID*, Year, Semester, Grade, ..)

Note the FK in STUDENT and the compound PK made up of the two FK’s in STUDY

## 2. Books and borrowers



Assume that

1. we are only interested in current loans (i.e. who has a book out on loan now)
2. there is no extra information about the loan/borrow relationship which we want to store (very unlikely to be true in practice, as date of return would be needed!)

BOOK ( ISBN#, Author, Title, Publisher, Subject,

COPY ( Accession#, Location, *ISBN#,…*)

LOAN *(Accession#, Borrower#, ..)*

BORROWER ( Borrower#, Name, Address, Phone#, Date\_Of\_Birth,

RESERVATION ( *Borrower#*, *ISBN#*)

LOAN created to handle the relationship between COPY and BORROWER

RESERVATION created to handle the relationship between BOOK and BORROWER.

3. Primary Keys are underlined and in bold, foreign keys are in italics

THEATREGOER(**Theatregoer\_id**,

BOOKING(**Booking\_id**, *Theatregoer\_id, Performance\_date,*

PERFORMANCE(**Performance\_date**, *Production\_name*

PRODUCTION(**Production\_name**, *Theatre\_name*

THEATRE(**Theatre\_name**,

ACTOR(**Actor\_id**,

PRODUCTIONACTOR(***Production\_id, Actor\_id***

4. Sub Type Task

For BORROWER we may want to define the sub types ACADEMIC BORROWER and STUDENT BORROWER.



BORROWER(**Borrower\_id**, name, address,…)

ACADEMIC(***Borrower\_id***, subject\_area, Dept,….)

STUDENT(***Borrower\_id***, course,….)

Note all relations must have the same PK.

Additionally we may want to define sub types JOURNAL, MAGAZINE for BOOK



BOOK(**ISBN#**, name, author,…)

JOURNAL(***ISBN#***,….)

MAGAZINE(***ISBN#***,….)

5. A Student studies either an undergraduate course or a postgraduate course.



This assumes the student can’t do both courses at same time.

STUDENT(**Student\_id**, …..)

UG\_COURSE(**course\_id**,*Student\_id***)**

PG\_COURSE(**course\_id**,*Student\_id***)**

**Note you can’t put course\_id’s in STUDENT as this would lead to NULL FK’s.**

**Note also the UG COURSE and PG COURSE could be shown as subtypes of COURSE**