

## 5.2 Multiple Forms Normalisation -- Part 1

**you should perform the normalisation one form at a time until all relations are in 3NF.**

### Unit report

UNITS CURRENTLY APPROVED			REPORT DATE: 22/07/2022
Unit Number	Unit Name	Unit Description	Unit Value
FIT9131	Programming Foundations	Introduction to programming	6
FIT9132	Introduction to Databases	Database Fundamentals	6
FIT9134	Computer Architecture and Operating Systems	Fundamentals of computer systems and the computing environment	6
FIT9135	Data Communications	Fundamentals of data and computer communications	6

\* Unit value may be either 3, 6 or 12 points

### UNF

**UNITS** (unit\_no, unit\_name, unit\_description, unit\_value)

### 1NF

**UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)

### CK

unit\_no

### Partial Dependencies

Nonkey attribute can be determined by part of the primary key – hence no partial dependence

### 2NF

**UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)

### Transitive Dependencies

No Transitive Dependency

### 3NF

**UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)

### Full Dependency

unit\_no -> unit\_name, unit\_description, unit\_value

## **Lecturer report**

LECTURER DETAILS		REPORT DATE: 22/07/2022
LECTURER'S NUMBER: 10234 LECTURER'S NAME: GUISEPPE BLOGGS LECTURER'S OFFICE No.: 169 LECTURER'S PHONE No.: 99037111		
UNIT ADVISER FOR:		
UNIT NUMBER	UNIT NAME	
FIT9131	Programming Foundations	
FIT9134	Computer Architecture and Operating Systems	

\* A given unit may have several advisers

\* Some lecturers share offices, although each has their own phone

### **UNF**

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone, (unit\_no, unit\_name))

### **1NF**

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)

**UNIT\_ADVISE** (lect\_no, unit\_no, unit\_name)

### **LECTURER - CK**

lect\_no

~~lect\_phone~~ (not to be selected as PK as it compromises privacy) (Candidate Key)

### **UNIT\_ADVISE - CK**

lect\_no, unit\_no

### **Partial Dependencies**

unit\_no -> unit\_name

### **2NF**

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)

**UNIT\_ADVISE** (lect\_no, unit\_no)

**UNIT** (unit\_no, unit\_name)

### **Transitive Dependencies**

No Transitive Dependency

### **3NF**

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)

**UNIT\_ADVISE** (lect\_no, unit\_no)

**UNIT** (unit\_no, unit\_name)

**Full Dependency**

lect\_no -> lect\_name, lect\_office, lect\_phone

unit\_no -> unit\_name

## **Student report**

STUDENT DETAILS		REPORT DATE:	
		22/07/2022	
STUDENT No.: 12345678			
STUDENT NAME: Poindexter Jones			
STUDENT ADDRESS: 23 Wide Road, Caulfield, 3162			
COURSE ENROLLED: MIT			
MODE OF STUDY: On-Campus			
MENTOR NUMBER: 10234			
MENTOR NAME: Guiseppe Bloggs			
ACADEMIC RECORD:			
UNIT NUMBER	UNIT NAME	YEAR / SEMESTER	GRADE
FIT9131	Programming Foundations	2021/2	N
FIT9131	Programming Foundations	2022/1	D
FIT9132	Introduction to Databases	2022/1	D

\* Grade may have the value N, P, C, D or HD

\* Mode of Study must be On-campus (O) or Distance Education (D)

**choose a single name for synonyms. For example, mentor is the same as lecturer.**

### **UNF**

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no, lect\_name (unit\_no, unit\_name, stu\_year, stu\_sem, unit\_grade))

### **1NF**

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no, lect\_name)

**AC\_RECORD** (stu\_no, unit\_no, unit\_name, stu\_year, stu\_sem, unit\_grade)

### **STUDENT CK**

stu\_no

### **AC\_RECORD CK**

stu\_no, unit\_no, stu\_year, stu\_sem

### **Partial Dependencies**

unit\_no -> unit name

### **2NF**

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no, lect\_name)

**AC\_RECORD** (stu\_no, unit\_no, stu\_year, stu\_sem, unit\_grade)

**UNIT** (unit\_no, unit\_name)

## Transitive Dependencies

lect\_no -> lect\_name

## 3NF

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no)

**AC\_RECORD** (stu\_no, unit\_no, stu\_year, stu\_sem, unit\_grade)

**UNIT** (unit\_no, unit\_name)

**LECTURER** (lect\_no, lect\_name)

## Full Dependency

stu\_no -> stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode

unit\_no -> unit\_name

lect\_no, lect\_name

### Collection of 3NFs:

1. **UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)
2. **LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)
3. **UNIT\_ADVISE** (lect\_no, unit\_no)
4. **UNIT** (unit\_no, unit\_name)
5. **STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no)
6. **AC\_RECORD** (stu\_no, unit\_no, stu\_year, stu\_sem, unit\_grade)
7. **UNIT** (unit\_no, unit\_name)
8. **LECTURER** (lect\_no, lect\_name)

### Attribute synthesis

1 & 4 & 7

**UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)

2 & 8

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)

**UNIT\_ADVISE** (lect\_no, unit\_no)

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no)

**AC\_RECORD** (stu\_no, unit\_no, stu\_year, stu\_sem, unit\_grade)

### Final 3NFs:

**UNIT** (unit\_no, unit\_name, unit\_description, unit\_value)

**LECTURER** (lect\_no, lect\_name, lect\_office, lect\_phone)

**UNIT\_ADVISE** (lect\_no, unit\_no)

**STUDENT** (stu\_no, stu\_name, stu\_address, stu\_course\_enrolled, stu\_mode, lect\_no)

**AC\_RECORD** (stu\_no, unit\_no, stu\_year, stu\_sem, unit\_grade)

## 5.3 Multiple Forms Normalisation -- Part 2

PROPERTY MAINTENANCE REPORT		
<b>Property No:</b> 1965		
<b>Property Address:</b> Unit 1 100-102 Platypus St, Oakleigh, VIC, 3166		
<b>Owner No:</b> 9321		
<b>Owner:</b>		
<b>Given Name:</b> Lilian		
<b>Family Name:</b> Potter		
<b>Owner Address:</b> 14 Puffin Rd, Wantirna, VIC, 3152		
<b>MAINTENANCE RECORD:</b>		
DateTime	Description	Cost
2022-06-01 9:00	Roof leak	\$854
2022-06-10 10:00	Lawn repair	\$230
2022-06-10 14:00	Minor crack repair	\$428

PROPERTY TENANT LEDGER (Sample 1)				
<b>Property No:</b> 1965				
<b>Property Address:</b> Unit 1 100-102 Platypus St, Oakleigh, VIC, 3166				
<b>Lease Start Date:</b> 2021-01-14				
<b>Weekly Rental Rate:</b> \$425				
<b>Bond:</b> \$1,842				
<b>Tenant No:</b> 512736				
<b>Tenant Name:</b> Johanston Karkov				
<b>PAYMENT RECORD:</b>				
Number	Date	Type	Amount	Paid By
80010	2021-01-10	Bond	\$1,842	bank cheque
80024	2021-01-10	Rental	\$1,842	direct deposit
80501	2021-02-10	Rental	\$1,842	bpay
80612	2021-02-28	Damage	\$523	credit card
80615	2021-02-28	Damage	\$312	credit card
80892	2021-03-12	Rental	\$1,842	bpay
81073	2021-04-13	Rental	\$1,842	credit card



PROPERTY TENANT LEDGER (Sample 2)				
<b>Property No:</b> 1965 <b>Property Address:</b> Unit 1 100-102 Platypus St, Oakleigh, VIC, 3166 <b>Lease Start Date:</b> 2022-05-05 <b>Weekly Rental Rate:</b> \$475 <b>Bond:</b> \$2,059  <b>Tenant No:</b> 623124 <b>Tenant Name:</b> Kiky Longbottom				
<b>PAYMENT RECORD:</b>				
Number	Date	Type	Amount	Paid By
101829	2022-05-01	Bond	\$2,059	bank cheque
101934	2022-05-03	Rental	\$2,059	credit card
102104	2022-06-04	Rental	\$2,059	credit card