



**UTM**  
UNIVERSITI TEKNOLOGI MALAYSIA

**SECD 2523 - Database**

**PROJECT PHASE 4**

**PROJECT NAME: INTERN DOCTOR**

**LECTURER: DR. NOOR HIDAYAH ZAKARIA**

**SECTION: 01**

**GROUP 5**

**GROUP MEMBERS:**

<b>NO</b>	<b>NAME</b>	<b>MATRIC NO</b>
<b>1.</b>	<b>GUI YU XUAN</b>	<b>A20EC0039</b>
<b>2.</b>	<b>PHANG CHENG YI</b>	<b>A20EC0131</b>
<b>3.</b>	<b>FELICIA CHIN HUI FEN</b>	<b>A20EC0037</b>
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## **1. INTRODUCTION**

The internship website is a platform for college students to find the workplace to gain experience. The internship is important for college students to apply the knowledge from the class to a real working environment. This is a chance for college students to develop their professional skills and strengthen their personalities. There are a few internship websites on the Internet for college students to look for a position such as LinkedIn and Intersheep.com. The reason why internship websites are becoming more and more popular is because of the development of networks around the world. Companies can easily promote the positions they are looking for through the website while college students can easily find the positions they want through the promotion of the company. The main reason is that the company can view the resume of college students from the internship website to determine whether the interviewee is the person they want. This results in saving time for the company and interviewee.

Universiti Teknologi Malaysia has developed an Industrial Training System for college students to apply for internships. With this system, the administrators are able to ensure all the college students have applied for an internship program. College students are also able to search for the company through the list of companies in the system.

## **2. OVERVIEW OF THE PROJECT**

Nowadays, students have more convenient ways to apply for their internship through an online platform provided by the university. The functionality of an industrial training system is critical in helping students, administrators and companies to manage the process of internship of students holistically.

Our proposed system is to improve the current industrial training system by adding several features. Firstly, both company and administrator may observe the status of students mutually to make sure their internships are progressing well in respective companies. This mutual interaction enables companies to obtain the resume of students conveniently during the application period and filtration of students' applications can be

done easily to make sure there is no overlapping employment at the same time. Moreover, administrators are able to filter out the unreputable and untrustworthy companies from the application list by verifying the background of the company before approving the registration of the company into the system in order to ensure students apply for legitimate companies. This system also makes the communication between administrators and students become easier.

Besides, progress bars of approval and reminder functions are also added to ease student preparation. The students can easily visualize the approval of their application and always check for their readiness in preparing the important documents such as approval letter. The reminder will remind students about the important dates such as the due date of application for companies.

In addition, one of the new features which is the company advertisement interface in this proposed system enables the companies to promote themselves and let the students have further understanding about the company before applying. Meanwhile, the chances for students to get offered will increase. Students are also able to check the employment history of companies.

In conclusion, the Intern Doctor system provides an excellent platform for users such as administrators, supervisors, students and companies to communicate between each other effectively. The new and advanced functionality in the system will enhance the user experience and increase their satisfaction when using this system. The profits gained from the advertisement fee will also help in reducing the maintenance cost. Undeniably, our system will definitely bring a lot of benefits to every user.

### **3. DATABASE CONCEPTUAL DESIGN**

#### **3.1. UPDATE BUSINESS RULE**

Third year UTM students must undergo industrial training. After completing their final year project 1 and owning at least 90 credits, students will be enrolled in the Intern Doctor. After students have access to the Intern Doctor, students need to update their personal information such as name, matric ID, IC number, email, address, phone number and the list goes on. Students also need to upload their own passport size photo for others to recognize. After filling the personal details, students need to download the resume file template given in the system and fill in the details.

After updating all the personal details and completing the resume file, students have to identify the internship company. First, students have to search for the company they wish to apply to in the system. Students can choose a maximum of three internship companies. After students have searched for their internship companies, students can upload their resume to the company. The system will automatically change the student status to “applied” after students upload their resume file.

Companies can check how many students have applied to the internship program. After the company views the resume file uploaded by students, the company can determine whether to reject or have an interview session with students. If the company wishes to interview students, the company can change the progress of the student as an “interview”. Then, the system will send a notification to students to notify them of the details of the interview. After having an interview session with students, if the company wishes to hire students, the company can change the student progress as “hired”. Then, the system will automatically change the student status in the supervisor view also. Furthermore, the system will notify students they have been hired by the company. However, if the company wishes to reject students, the company can change the student

progress as “reject”. The system will notify students that they have been rejected and change the student status automatically in the supervisor view.

For students who have been hired by the company, they need to download the verification letter given in the system and send it to the company. Then, the company also needs to upload the BLI-2A form into the system. This form will be stored in the data store in the system so that supervisors can view the form. However, if a student wishes to reject the offer, the student must inform the supervisor. After getting permission from the supervisor, students can send the rejection letter to the company. If a company accepts the rejection, the company will change the student's progress as “reject”. Then, the system will notify students they have been rejected and change the student status in the supervisor view also.

Students who have been rejected can search for a new internship company while students who have been accepted can prepare themselves for the internship in the applied company. Besides, the system will notify the students who haven't made any application before two weeks of the application due date.

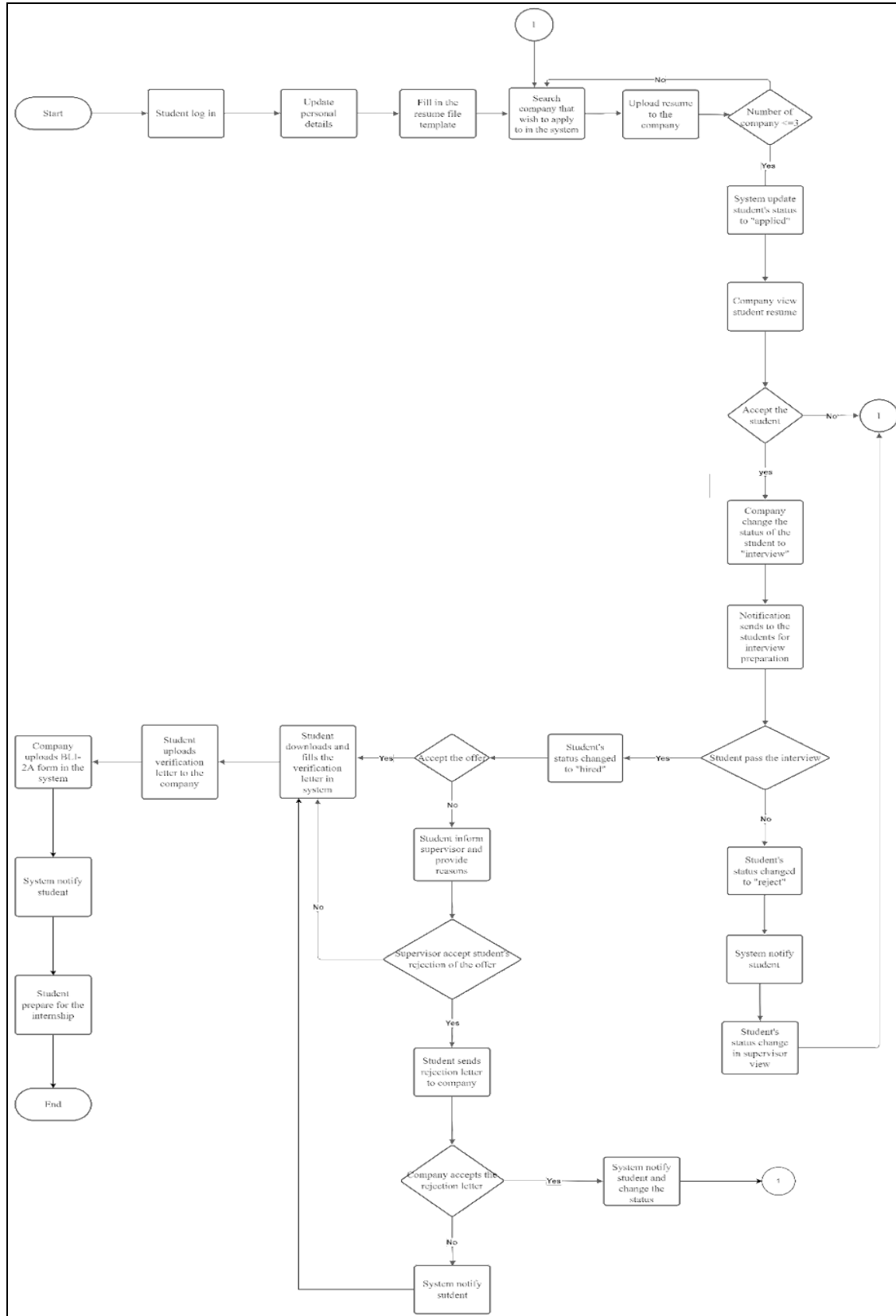


Figure 1: Updated Workflow

## 3.2. CONCEPTUAL ERD

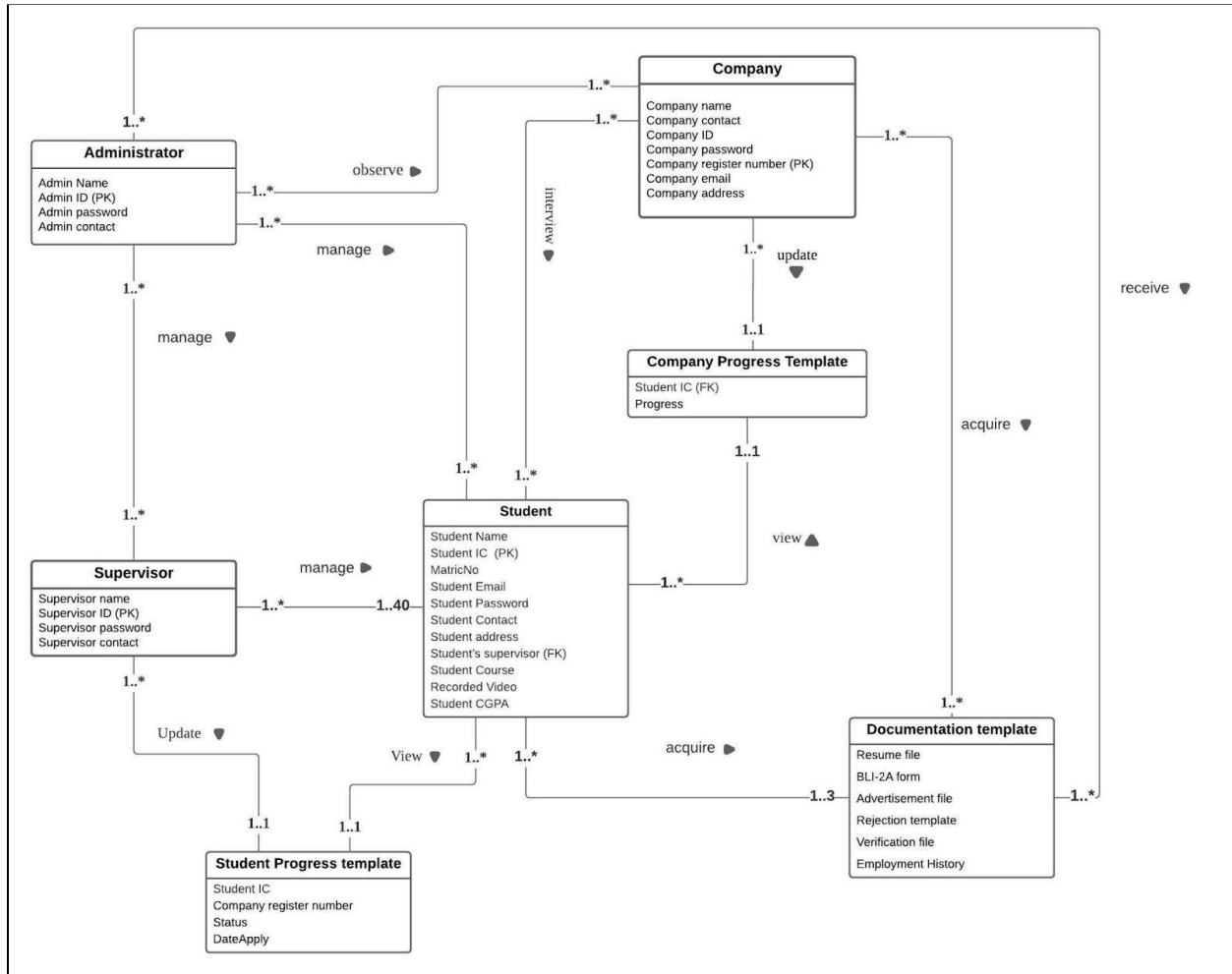


Figure 2: conceptual ERD

## 4. DB LOGICAL DESIGN

### 4.1. ENHANCED ERD

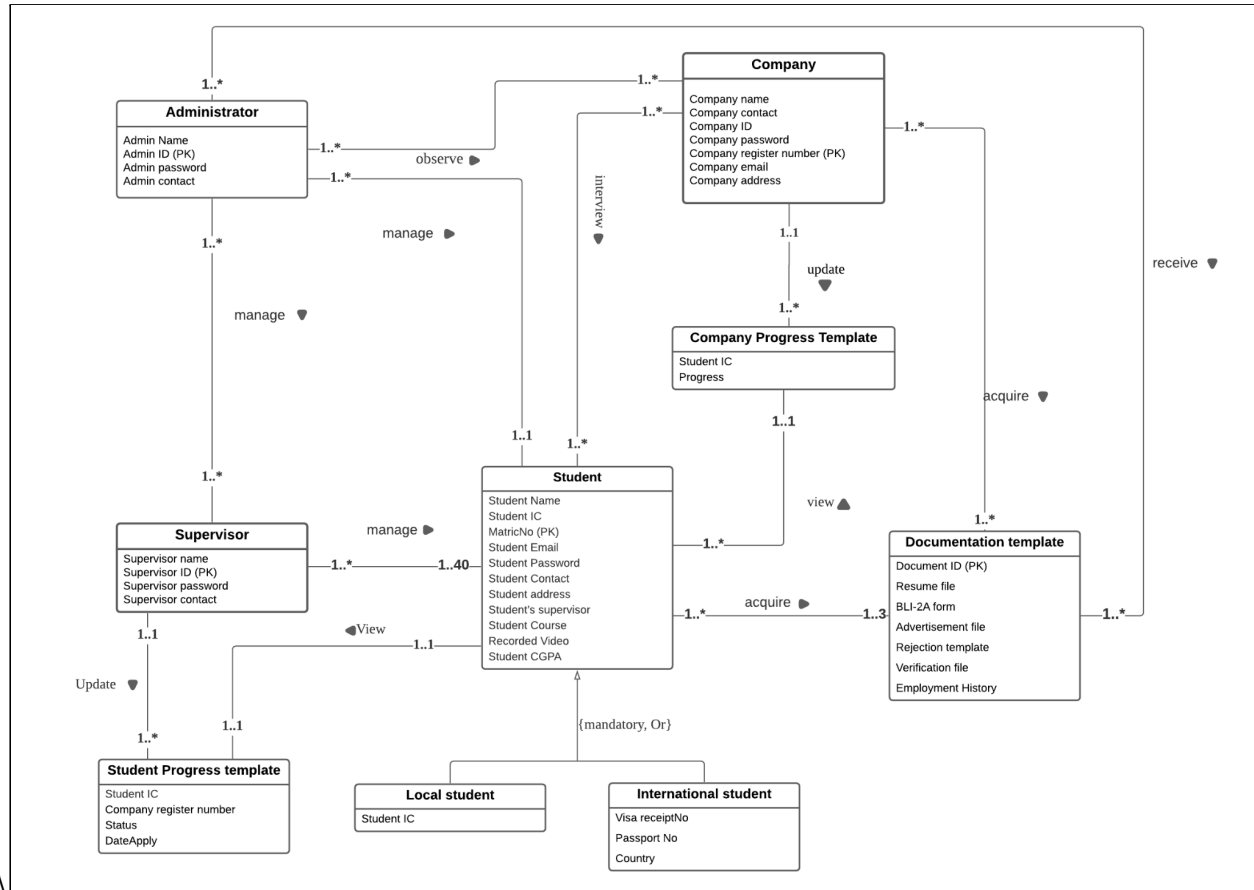


Figure 3: Enhanced ERD



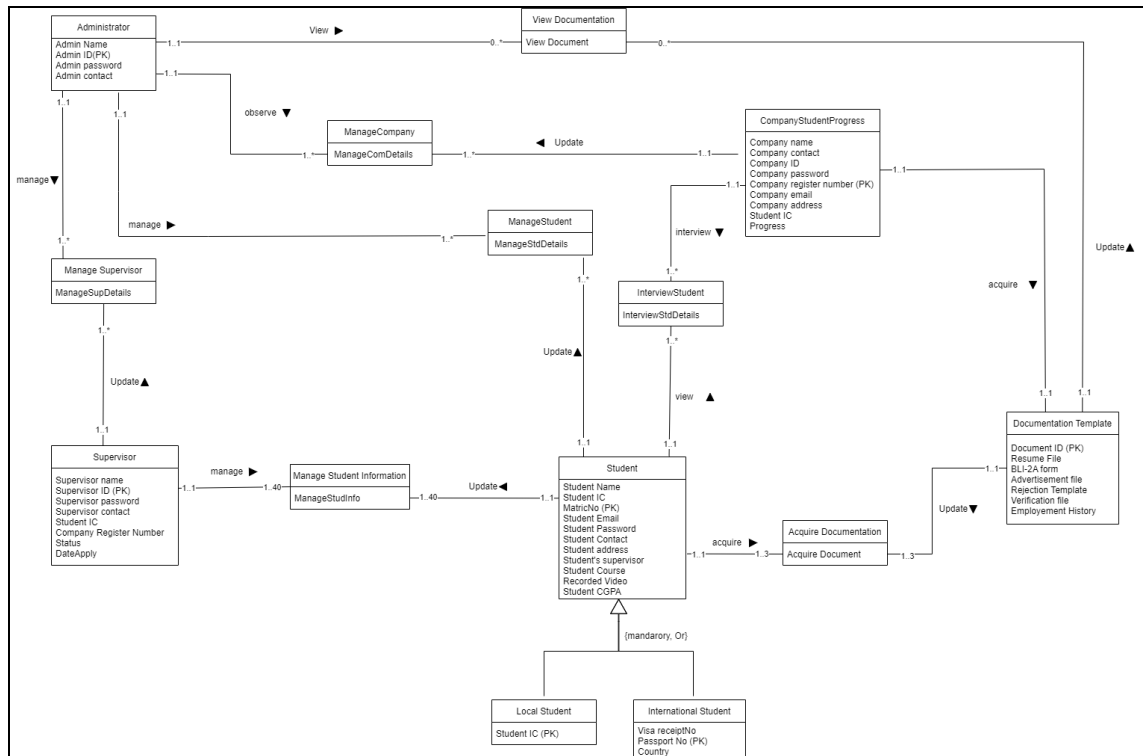


Figure 4: Logical ERD

## 4.2. NORMALIZATION

Let:

A = MatricNo

B = studName

C = studIC

D = studEmail

E = studPass

F = studContact

G = studAddress

H = studCourse

I = recordedVideo

J = CGPA

K = supID

L = supName

M = supPassword

N = supContact

O = companyRegistrationNumber

P = Status

Q = DateApply

R = CoID

S = CoName

T = CoContact

U = CoPassword

V = CoEmail

W = CoAddress

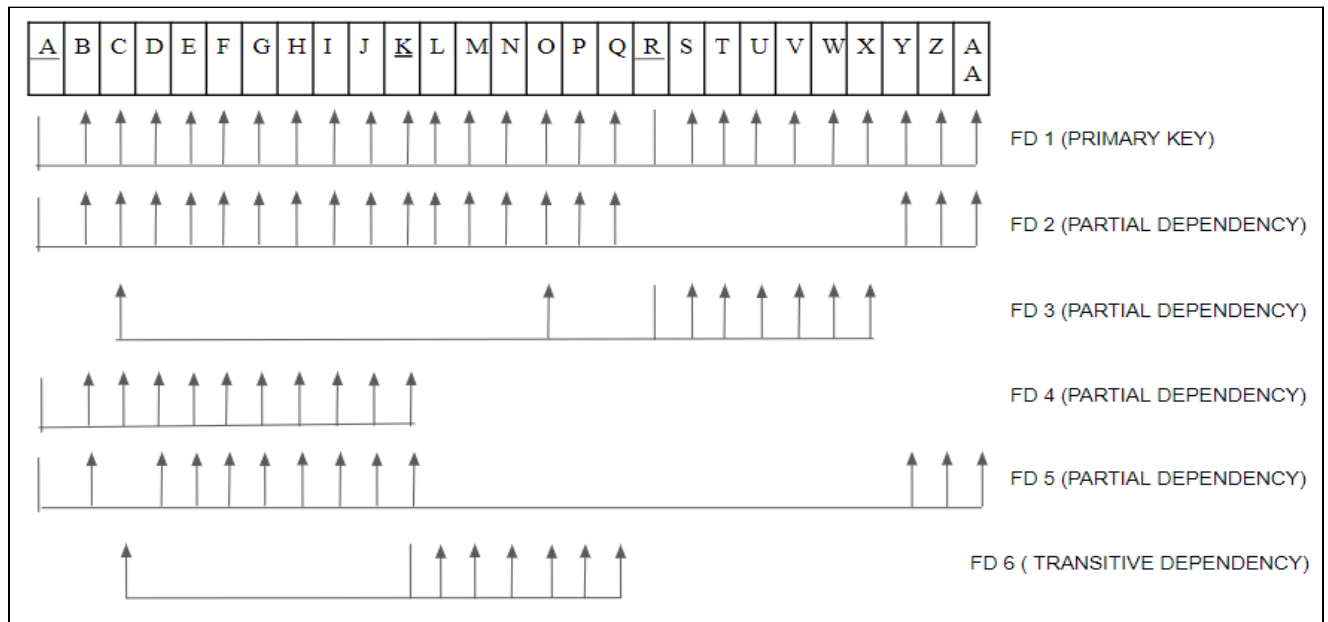
X = progress

Y = VisaReceiptNo

Z = PassportNo

AA = Country

## User Details



### FD1:

**MatricNo, CoID** -> studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, supName, supPassword, supContact, companyRegistrationNumber, Status, DateApply, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress, VisaReceiptNo, PassportNo, Country (**Primary Key**)

### FD2:

**MatricNo**-> studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, supName, supPassword, supContact, companyRegistrationNumber, Status, DateApply, VisaReceiptNo, PassportNo, Country (**Partial Dependency**)

### FD3:

**CoID** -> studIC, companyRegistrationNumber, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress (**Partial Dependency**)

**FD4:**

**MatricNo** -> studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID (**Partial Dependency**)

**FD5:**

**MatricNo** -> studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, VisaReceiptNo, PassportNo, Country (**Partial Dependency**)

**FD6:**

**supID** -> supName, supPassword, supContact, studIC, companyRegistrationNumber, Status, DateApply (**Partial Dependency**)

**1NF:**

**UserDetails** (MatricNo, studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, supName, supPassword, supContact, companyRegistrationNumber, Status, DateApply, CoID, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress, VisaReceiptNo, PassportNo, Country)

**2NF:**

FD 2, FD 3, FD 4 and FD 5 violate 2 NF

**Local\_Student** (MatricNo, studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID)

**International\_Student** ( MatricNo, studName, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, VisaReceiptNo, PassportNo, Country)

**Student\_Supervisor** (MatricNo, studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, supName, supPassword, supContact, companyRegistrationNumber, Status, DateApply, VisaReceiptNo, PassportNo, Country)

**Company** (CoID, studIC, companyRegistrationNumber, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress)

**3NF:**

FD 4 violates 3 NF

**Local\_Student** (MatricNo, studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID)

FK: supID references Supervisor (supID)

**International\_Student** ( MatricNo, studName, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, VisaReceiptNo, PassportNo, Country)

FK: supID references Supervisor (supID)

**Supervisor** (supID, supName, supPassword, supContact, studIC, companyRegistrationNumber, Status, DateApply)

**Company** (CoID, studIC, companyRegistrationNumber, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress)

**Administrator**

<u>adminID</u>	adminName	adminPassword	adminContact
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**FD1:**

adminID -> adminName, adminPassword, adminContact (**Full Functional Dependency**)

Relation is in **3NF**.

**Administrator** (adminID, adminName, adminPassword, adminContact)

## Documentation

<u>Documentation ID</u>	ResumeFile	BLI-2A Form	Advertisement File	Rejection Template	Verification File	Employment History
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### FD1:

DocumentationID -> ResumeFile, BLI-2AForm, AdvertisementFile, RejectionTemplate, VerificationFile, EmploymentHistory (**Full Functional Dependency**)

Relation is in **3NF**.

**Documentation** (DocumentationID, ResumeFile, BLI-2AForm, AdvertisementFile, RejectionTemplate, VerificationFile, EmploymentHistory)

## 5. UPDATED DATA DICTIONARY

Entity	Attribute	Description	Data Type & Length	NULL	Example
Local_Student	studName	Name of student	VARCHAR2 (100)	No	Ainin
	studIC	Unique IC number of the student	VARCHAR2 (15)	No	000113042222
	MatricNo	Unique number code of the student (Primary Key)	VARCHAR2 (20)	No	A20EC0001
	studEmail	Email of the student	VARCHAR (320)	No	aaa@gmail.com
	studPass	Unique password of the student	VARCHAR2 (30)	No	asio78-1
	studContact	Phone number of the student	VARCHAR2 (12)	No	0111111111
	studAddress	Home address of the student	VARCHAR2 (200)	No	1, Jalan UTM, 87090 Johor

	supID	ID of supervisor of the student (Foreign Key refers from Supervisor)	VARCHAR2 (5)	No	A001
	studCourse	Course of the student	VARCHAR2 (50)	No	Bachelor degree of bioinformatics
	recordedVideo	Video CV URL link	VARCHAR2 (200)	Yes	https://example video/1111.mp4
	CGPA	CGPA of the student	NUMBER (3, 2)	No	3.45
International_Student	studName	Name of student	VARCHAR2 (100)	No	Ainin
	MatricNo	Unique number code of the student (Primary Key)	VARCHAR2 (20)	No	A20EC0001
	studEmail	Email of the student	VARCHAR (320)	No	aaa@gmail.com
	studPass	Unique password of the student	VARCHAR2 (30)	No	asio78-1
	studContact	Phone number of the student	VARCHAR2 (12)	No	0111111111
	studAddress	Home address of the student	VARCHAR2 (200)	No	1, Jalan UTM, 87090 Johor
	supID	ID of supervisor of the student (Foreign Key refers from Supervisor)	VARCHAR2 (5)	No	A001
	studCourse	Course of the student	VARCHAR2 (50)	No	Bachelor degree of bioinformatics

	recordedVideo	Video CV URL link	VARCHAR2 (200)	Yes	https://example video/1111.mp 4
	CGPA	CGPA of the student	NUMBER (3, 2)	No	3.45
	VisaReceiptNo	Visa number of students	VARCHAR2 (15)	No	AY11111111
	PassportNo	Passport number of students	VARCHAR2 (15)	No	S1111111H
	Country	Country of students	VARCHAR2 (100)	No	Singapore
Supervisor	SupName	Name of supervisor	VARCHAR2 (100)	No	Dr.Aiman
	SupID	Unique number code of the supervisor (Primary Key)	VARCHAR2 (5)	No	A001
	supPassword	Unique password of the supervisor	VARCHAR2 (30)	No	89&*qw
	supContact	Contact number of the supervisor	VARCHAR2 (30)	No	01122222222
	studIC	Unique IC number of the student	VARCHAR2 (15)	No	000113042222
	companyRegistra tionNumber	Unique code number of the company	VARCHAR2 (30)	No	202201224R
	Status	Status of student's application	VARCHAR2 (12)	Yes	Applied
	DateApply	Date of student apply internship company	DATE	Yes	11-08-20



Administrator	adminName	Name of administrator	VARCHAR2 (100)	No	Shamsudin
	adminID	Unique number code of the administrator (Primary Key)	VARCHAR2 (5)	No	Z001
	adminPassword	Unique password of the administrator	VARCHAR2 (30)	No	99ooooop
	adminContact	Contact number of the administrator	VARCHAR2 (12)	No	01133333333
CompanyStudentProgress	CoName	Name of the company	VARCHAR2 (100)	No	Apple Inc.
	CoContact	Contact number of the company	VARCHAR2 (30)	No	032223333
	CoID	Unique ID for company to log in system (Primary Key)	VARCHAR2 (5)	No	C001
	CoPassword	Unique password of the company	VARCHAR2 (30)	No	88&**rr@3
	companyRegistrationNumber	Unique code number of the company	VARCHAR2 (20)	No	202201224R
	CoEmail	Email of the company	VARCHAR2 (50)	No	abc@gmail.com
	CoAddress	Address of the company	VARCHAR (200)	No	19, Jln Mutiara, Mount Austin, Johor
	studIC	Unique IC number/Visa receipt number of	VARCHAR2 (15)	No	000113042222

		the student			
	progress	Student progress	VARCHAR2 (15)	No	Interviewed
Documentation template	DocumentationID	Unique code for the document used by users (Primary Key)	VARCHAR2 (5)	No	DC109
	ResumeFile	Resume file for student to download	VARCHAR2 (200)	Yes	<a href="https://internductor/file/resume/dc005/a20ee0101">https://internductor/file/resume/dc005/a20ee0101</a>
	BLI-2AForm	BLI-2A form for student or company to download	VARCHAR (255)	Yes	<a href="https://internductor/file/bli-2aform/dc002/c001">https://internductor/file/bli-2aform/dc002/c001</a>
	AdvertisementFile	A file for the company to apply for a promotion position.	VARCHAR (255)	Yes	<a href="https://internductor/file/advertisementfile/dc002/c001">https://internductor/file/advertisementfile/dc002/c001</a>
	RejectionTemplate	A file for students to download if they want to reject a company	VARCHAR (255)	Yes	<a href="https://internductor/file/rejectiontemplate/dc005/a20ee0101">https://internductor/file/rejectiontemplate/dc005/a20ee0101</a>
	VerificationFile	Uploaded by supervisor to student so that student allow to be hired by company	VARCHAR (255)	Yes	<a href="https://internductor/file/verificationfile/dc003">https://internductor/file/verificationfile/dc003</a>
	EmploymentHistory	Student can comment their experience when they intern in the company	VARCHAR (255)	Yes	<a href="https://internductor/comment/coID/dc003/b20ec0030">https://internductor/comment/coID/dc003/b20ec0030</a>

## 6. RELATIONAL DATABASE SCHEMA

**Local\_Student** (MatricNo, studName, studIC, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID)

FK: supID references Supervisor (supID)

**International\_Student** ( MatricNo, studName, studEmail, studPass, studContact, studAddress, studCourse, recordedVideo, CGPA, supID, VisaReceiptNo, PassportNo, Country)

FK: supID references Supervisor (supID)

**Supervisor** (supID, supName, supPassword, supContact, studIC, companyRegistrationNumber, Status, DateApply)

**Company** (CoID, studIC, companyRegistrationNumber, CoName, CoContact, CoPassword, CoEmail, CoAddress, progress)

**Administrator** (adminID, adminName, adminPassword, adminContact)

**Documentation** (Documentation ID, Resume File, BLI-2A Form, Advertisement File, Rejection template, Verification file, Employment history)

## 7. SQL STATEMENT

```
CREATE TABLE ComStudProgress (  
  
    CoID VARCHAR2 (5) NOT NULL,  
  
    companyRegistrationNumber_com VARCHAR2 (20) NOT NULL,  
  
    CoName VARCHAR2 (100) NOT NULL,  
  
    CoContact VARCHAR2 (30) NOT NULL,  
  
    CoPassword VARCHAR2 (30) NOT NULL,  
  
    CoEmail VARCHAR2 (50) NOT NULL,  
  
    CoAddress VARCHAR2 (200) NOT NULL,  
  
    Progress VARCHAR2 (15) NOT NULL,  
  
    studIC_com VARCHAR2 (15) NOT NULL,  
  
  
    CONSTRAINT ComStuProgress_pk PRIMARY KEY (CoID),  
  
    CONSTRAINT coPass_uk UNIQUE (CoPassword),  
  
    CONSTRAINT co_register_num_com_uk UNIQUE  
(companyRegistrationNumber_com),  
  
    CONSTRAINT stud_IC_com_uk UNIQUE (studIC_com)  
  
);
```

```
CREATE TABLE Supervisor (  
  
    supID VARCHAR2 (5) NOT NULL,  
  
    supName VARCHAR2 (100) NOT NULL,  
  
    supPassword VARCHAR2 (30) NOT NULL,  
  
    supContact VARCHAR2 (30) NOT NULL,  
  
    studIC_sup VARCHAR2 (15) NOT NULL,  
  
    companyRegistrationNumber_sup VARCHAR2 (30),  
  
    Status VARCHAR2 (12) NOT NULL,  
  
    DateApply DATE,  
  
  
    CONSTRAINT Supervisor_pk PRIMARY KEY (supID),  
  
    CONSTRAINT supPass_uk UNIQUE (supPassword),  
  
    CONSTRAINT stdIC_sup_uk UNIQUE (studIC_sup)  
  
);
```

```
CREATE TABLE Local_Student(  
  
    MatricNo VARCHAR2 (20) NOT NULL,  
  
    studName VARCHAR2 (100) NOT NULL,  
  
    studIC VARCHAR2 (15) NOT NULL,  
  
    studEmail VARCHAR (320) NOT NULL,
```

```
studPass VARCHAR2 (30) NOT NULL,  
  
studContact VARCHAR2 (12) NOT NULL,  
  
studAddress VARCHAR2 (200) NOT NULL,  
  
stdCourse VARCHAR2 (50) NOT NULL,  
  
recordedVideo VARCHAR2 (200),  
  
CGPA NUMBER (3,2) NOT NULL,  
  
supID VARCHAR2 (5) NOT NULL,  
  
  
CONSTRAINT Local_Student_pk PRIMARY KEY (MatricNo),  
  
CONSTRAINT StdIC_uk UNIQUE (studIC),  
  
CONSTRAINT Local_Std_Pass_uk UNIQUE (studPass),  
  
CONSTRAINT super_id_fk FOREIGN KEY(supID) REFERENCES Supervisor  
(supID)  
  
);
```

```
CREATE TABLE International_Student (  
  
MatricNo VARCHAR2 (20) NOT NULL,  
  
studName VARCHAR2 (100) NOT NULL,  
  
studEmail VARCHAR (320) NOT NULL,  
  
studPass VARCHAR2 (30) NOT NULL,
```

```
studContact VARCHAR2 (12) NOT NULL,  
  
studAddress VARCHAR2 (200) NOT NULL,  
  
stdCourse VARCHAR2(50) NOT NULL,  
  
recordedVideo VARCHAR2 (200),  
  
CGPA NUMBER (3,2) NOT NULL,  
  
supID VARCHAR2 (5) NOT NULL,  
  
VisaReceiptNo VARCHAR2(15) NOT NULL,  
  
PassportNo VARCHAR2 (15) NOT NULL,  
  
Country VARCHAR2 (100) NOT NULL,  
  
  
CONSTRAINT International_Student_pk PRIMARY KEY (MatricNo),  
  
CONSTRAINT Inter_Std_Pass_uk UNIQUE (studPass),  
  
CONSTRAINT supv_id_fk FOREIGN KEY(supID) REFERENCES Supervisor  
(supID)  
  
);
```

```
CREATE TABLE Administrator (  
  
adminID VARCHAR2 (5) NOT NULL,  
  
adminName VARCHAR2 (100) NOT NULL,  
  
adminPassword VARCHAR2 (30) NOT NULL,
```

```
adminContact VARCHAR2 (12) NOT NULL,  
  
CONSTRAINT Administrator_pk PRIMARY KEY (adminID),  
  
CONSTRAINT adPass_uk UNIQUE (adminPassword)  
  
);  
  
CREATE TABLE Documentation_Template (  
  
DocumentationID VARCHAR2 (5) NOT NULL,  
  
ResumeFile VARCHAR (255),  
  
BLI_2AForm VARCHAR (255),  
  
AdvertisementFile VARCHAR (255),  
  
RejectionTemplate VARCHAR (255),  
  
VerificationTemplate VARCHAR (255),  
  
EmploymentHistory VARCHAR (255),  
  
CONSTRAINT Documentation_pk PRIMARY KEY (DocumentationID)  
  
);
```



```
INSERT INTO ComStudProgress (CoID, studIC_com,  
companyRegistrationNumber_com, CoName, CoContact, CoPassword, CoEmail,  
CoAddress, progress)  
  
VALUES ( 'C001', '980101040222', '200601224R', 'ABC Company', '032223333',  
'ABC**o1', 'abc@gmail.com', '10, Taman Mutiara, Johor Bahru, Johor', 'Interviewed' );
```

```
INSERT INTO ComStudProgress (CoID, studIC_com,  
companyRegistrationNumber_com, CoName, CoContact, CoPassword, CoEmail,  
CoAddress, progress)  
  
VALUES ( 'C002', '990505046555', '202201224R', 'Top Glop Company', '038888888',  
'top*gloP', 'topglop@hotmail.com', '15, Jalan Austin Height, Mount Austin, Johor Bahru,  
Johor', 'Interviewed' );
```

```
INSERT INTO ComStudProgress (CoID, studIC_com,  
companyRegistrationNumber_com, CoName, CoContact, CoPassword, CoEmail,  
CoAddress, progress)  
  
VALUES ( 'C003', '001010011011', '202201254R', 'DataTop Company', '034447777',  
'top*Data', 'datatop@hotmail.com', 'No. 2, Jalan Permas 11, Bandar Baru Permas Jaya,  
Johor Bahru 81750 Malaysia', 'Interviewed' );
```

```
INSERT INTO ComStudProgress (CoID, studIC_com,  
companyRegistrationNumber_com, CoName, CoContact, CoPassword, CoEmail,  
CoAddress, progress)
```

```
VALUES ( 'C004', '000210011021', '202102214R', 'Bioinformatics Company',  
'035551129', 'bio_info88', 'bioinfo@gmail.com', 'No. 2 Jalan Waja 5, Taman Pandan,  
81100 JB', 'Interviewed' );
```

```
INSERT INTO ComStudProgress (CoID, studIC_com,  
companyRegistrationNumber_com, CoName, CoContact, CoPassword, CoEmail,  
CoAddress, progress)
```

```
VALUES ( 'C005', '001028011222', '201903254R', 'biobio Company', '036660565',  
'biobio**88', 'biobio@gmail.com', 'No 106 & 108, Jalan Wong Ah Fook Lot J1-06, Level  
1, Johor Bahru', 'Interviewed' );
```

```
INSERT INTO Supervisor (supID, supName, supPassword, supContact, studIC_sup,  
companyRegistrationNumber_sup, Status, DateApply)
```

```
VALUES ( 'A001', 'Aris', 'Aris1010', '012-11111111', '001010011011', '202201224R',  
'Applied', TO_DATE('11-08-20', 'DD-MM-YY') );
```

```
INSERT INTO Supervisor (supID, supName, supPassword, supContact, studIC_sup,  
companyRegistrationNumber_sup, Status, DateApply)
```

```
VALUES ( 'A002', 'Adam', 'Adam1230', '012-2222222', '000210011021', '202102214R',  
'Applied', TO_DATE ('12-08-20', 'DD-MM-YY') );
```

```
INSERT INTO Supervisor (supID, supName, supPassword, supContact, studIC_sup,  
Status)
```

```
VALUES ( 'A003', 'Shafoo', 'Shao0_99', '012-3333333', '011225011221', 'Not Applied' );
```

```
INSERT INTO Supervisor (supID, supName, supPassword, supContact, studIC_sup,  
companyRegistrationNumber_sup, Status, DateApply)
```

```
VALUES ( 'A004', 'Dayang', 'Dayang_lo', '012-4444444', '990505046555', '202201224R',  
'Applied', TO_DATE ('11-08-20', 'DD-MM-YY') );
```

```
INSERT INTO Supervisor (supID, supName, supPassword, supContact, studIC_sup,  
companyRegistrationNumber_sup, Status, DateApply)
```

```
VALUES ( 'A005', 'Chin Li Li', 'Lili1015', '012-5555555', '980101040222', '200601224R',  
'Applied', TO_DATE ('15-08-20', 'DD-MM-YY'));
```

```
INSERT INTO Local_Student (MatricNo, studName, studIC, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID)
```

```
VALUES ( 'A20EC0003', 'Muthu A/L Gopal', '990105015546',  
'muthu99@graduate.utm.my', 'muthu9955#', '0167788557', '13, Jalan Pisang 2, Taman  
Indah, 80594, Johor Bahru, Johor', 'Bachelor Degree of Software Engineering', 3.75,  
'A001');
```

```
INSERT INTO Local_Student (MatricNo, studName, studIC, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID)
```

```
VALUES ( 'A20EA0018', 'Nurul Salihah Binti Mazlan', '991209058899',  
'salihahMazlan@graduate.utm.my', 'salih@0202', '0195566777', '105, Jalan Tun Razak  
5/8, Taman Razak, 71500, Negeri Sembilan', 'Bachelor Degree of Civil Engineering',  
3.80, 'A002');
```

```
INSERT INTO Local_Student (MatricNo, studName, studIC, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID)
```

```
VALUES ( 'A20EC0231', 'Lee Zi Wei', '990615082210', 'leewei@graduate.utm.my',  
'leewei3278', '01110995555', '66, Jalan Ipoh 5/8, Taman Ipoh, 30200, Ipoh, Perak',  
'Bachelor Degree of Data Engineering', 3.95, 'A003');
```

```
INSERT INTO Local_Student (MatricNo, studName, studIC, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID)
```

```
VALUES ( 'A20EE0101', 'Stephen Mauritius', '990729120026',  
'stephen99@graduate.utm.my', 'step#hen99', '0172233445', '88, Jalan Kota Kinabalu 5/8,  
Taman Kota Kinabalu, 88000, Kota Kinabalu, Sabah', 'Bachelor Degree of Electronic  
Engineering', 3.85, 'A004');
```

```
INSERT INTO Local_Student (MatricNo, studName, studIC, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID)
```

```
VALUES ( 'A20EM0056', 'Muhammad Shahril Bin Saiful', '990412140876',  
'muhammadshahril@graduate.utm.my', 'helloshahril', '01630332988', '2206, Blok B,  
Jalan Sungai 5/8, Taman Credential, 46000, Kuala Lumpur', 'Bachelor Degree of  
Mechanical Engineering', 3.69, 'A005');
```

```
INSERT INTO International_Student (MatricNo, studName, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID, VisaReceiptNo, PassportNo,  
Country)
```

```
VALUES ( 'A20EC0010', 'Ainin Sophia', 'ainin@graduate.utm.my', 'as@123',  
'0183456781', '1, Jalan Utama, 87090, Johor', 'Bachelor degree of Bioinformatics', 3.67,  
'A002', 'AY11111010101', 'S1111111111H', 'Singapore');
```

```
INSERT INTO International_Student (MatricNo, studName, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID, VisaReceiptNo, PassportNo,  
Country)
```

```
VALUES ( 'A20EC0011', 'Lily Chen', 'lily@graduate.utm.my', 'll@123', '0173453481', '1,  
Jalan Sentosa, 87090, Johor', 'Bachelor degree Chemical Engineering', 3.50, 'A001',  
'AS11111010101', 'C1111111111H', 'China');
```

```
INSERT INTO International_Student (MatricNo, studName, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID, VisaReceiptNo, PassportNo,  
Country)
```

```
VALUES ( 'A20EC0012', 'Saudina', 'saudi@graduate.utm.my', 'sd@456', '01053456681',  
'55, Jalan Ukara, 87090, Johor', 'Bachelor degree of Electrical Engineering', 3.80, 'A003',  
'AY12115010101', 'F1111113331B', 'Saudi Arabia');
```

```
INSERT INTO International_Student (MatricNo, studName, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID, VisaReceiptNo, PassportNo,  
Country)
```

```
VALUES ( 'B20EC0030', 'Kamarul A/L Kissan', 'kk@graduate.utm.my', 'kk@bq1',  
'0172458771', '40, Jalan Kuran, 87090, Johor', 'Master of Science (Biotechnology)', 3.67,  
'A002', 'AY11221010101', 'S1111311122H', 'Singapore');
```

```
INSERT INTO International_Student (MatricNo, studName, studEmail, studPass,  
studContact, studAddress, stdCourse, CGPA, supID, VisaReceiptNo, PassportNo,  
Country)
```

```
VALUES ( 'A20EC0034', 'Ali Ahmad', 'aali@graduate.utm.my', 'ali@888', '0198856351',  
'99, Jalan Untung, 87090, Johor', 'Bachelor degree of Networks and Security', 3.88,  
'A004', 'AY12445010101', 'F1111441131B', 'Saudi Arabia' );
```

```
INSERT INTO Administrator (adminID, adminName, adminPassword, adminContact)
```

```
VALUES ( 'Z001', 'Shamsudin', 'shamsudinZ001', '011-11111111');
```

```
INSERT INTO Administrator (adminID, adminName, adminPassword, adminContact)
```

```
VALUES ( 'Z002', 'Arifa', 'arifaZ002', '011-22222222');
```

```
INSERT INTO Administrator (adminID, adminName, adminPassword, adminContact)
```

```
VALUES ( 'Z003', 'Leong', 'leongZ003', '011-33333333');
```

```
INSERT INTO Administrator (adminID, adminName, adminPassword, adminContact)
```

```
VALUES ( 'Z004', 'Anita', 'anitaZ004', '011-44444444');
```

```
INSERT INTO Administrator (adminID, adminName, adminPassword, adminContact)
```

```
VALUES ( 'Z005', 'Shartey', 'SharteyZ005', '011-55555555');
```

```
INSERT INTO Documentation_Template (DocumentationID, ResumeFile,  
RejectionTemplate)
```

```
VALUES ( 'DC001', 'https://interndocctor/file/resumefile/dc001/a20ec0011',  
'https://interndocctor/file/rejectiontemplate/dc001/a20ec0011');
```

```
INSERT INTO Documentation_Template (DocumentationID, BLI_2AForm,  
AdvertisementFile)
```

```
VALUES ('DC002', 'https://interndocctor/file/bli-2aform/dc002/c001',  
'https://interndocctor/file/advertisementfile/dc002/c001');
```

```
INSERT INTO Documentation_Template (DocumentationID, ResumeFile,  
VerificationTemplate, EmploymentHistory)
```

```
VALUES ('DC003', 'https://interndocctor/file/resumefile/dc003/b20ec0030',  
'https://interndocctor/file/verificationfile/dc003',  
'https://interndocctor/comment/coID/dc003/b20ec0030');
```

```
INSERT INTO Documentation_Template (DocumentationID, ResumeFile,  
VerificationTemplate)
```

```
VALUES ('DC004', 'https://interndocctor/file/resumefile/dc004/studID/a20ea0018',  
'https://interndocctor/file/verificationfile/dc004');
```

```
INSERT INTO Documentation_Template (DocumentationID, ResumeFile,  
RejectionTemplate, VerificationTemplate, EmploymentHistory)
```

VALUES ('DC005', 'https://interndocor/file/resumefile/dc005/a20ee0101',  
'https://interndocor/file/rejectiontemplate/dc005/a20ee0101',  
'https://interndocor/file/verificationfile/dc005',  
'https://interndocor/comment/coID/dc005/a20ee0101');

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SQL Commands

SchemaMY\_A264\_SQL\_S08

Rows10Clear CommandFind TablesSaveRun

SELECT\*FROM Administrator;

Results

ExplainDescribeSaved SQLHistory

ADMINID	ADMINNAME	ADMINPASSWORD	ADMINCONTACT
Z001	Shamsudin	shamsudinZ001	011-11111111
Z002	Arifa	arifaZ002	011-22222222
Z003	Leong	leongZ003	011-33333333
Z004	Anita	anitaZ004	011-44444444
Z005	Sharley	SharleyZ005	011-55555555

5 rows returned in 0.00 secondsDownload

my\_a264\_sql\_s08my\_a264\_sql\_s08en

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SQL Commands

SchemaMY\_A264\_SQL\_S08

Rows10Clear CommandFind TablesSaveRun

SELECT\*FROM ConStudProgress;

Results

ExplainDescribeSaved SQLHistory

COID	COMPANYREGISTRATIONNUMBER_COM	CONAME	COCONTACT	COPASSWORD	COEMAIL	COADDRESS	PROGRESS	STUDIC_COM
C001	200601224R	ABC Company	032223333	ABC**o1	abc@gmail.com	10, Taman Mutiara, Johor Bahru, Johor	Interviewed	980101040222
C002	202201224R	Top Glop Company	038888888	top*gloP	topglop@hotmail.com	15, Jalan Austin Height, Mount Austin, Johor Bahru, Johor	Interviewed	990505046555
C003	202201254R	DataTop Company	034447777	top*Data	datatop@hotmail.com	No. 2, Jalan Permas 11, Bandar Baru Permas Jaya, Johor Bahru 81750 Malaysia	Interviewed	001010011011
C004	202102214R	Bioinformatics Company	035551129	bio_info88	bioinfo@gmail.com	No. 2 Jalan Waja 5, Taman Pandan, 81100 JB	Interviewed	000210011021
C005	201903254R	biobio Company	036660565	biobio**88	biobio@gmail.com	No 106 & 108, Jalan Wong Ah Fook Lot J1-06, Level 1, Johor Bahru	Interviewed	001028011222

5 rows returned in 0.00 secondsDownload

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MY\_A264\_SQL\_S08

SQL Commands

Repeat 10Clear CommandFind Tables

SELECT\*  
FROM Documentation\_Template;

Results

ExplainDescribeSaved SQLHistory

DOCUMENTATIONID	RESUMEFILE	BLLAIFORM	ADVERTISEMENTFILE	REJECTIONTEMPLATE	VERIFICATIONTEMPLATE	EMPLOYMENTHISTORY
DC001	https://interdoctor/file/resume/file/001/a20e0011	-	-	https://interdoctor/file/rejectiontemplate/001/a20e0011	-	-
DC002	-	https://interdoctor/file/bill-form/002/001	https://interdoctor/file/advertisementfile/002/001	-	-	-
DC003	https://interdoctor/file/resume/file/003/a20e0030	-	-	https://interdoctor/file/verificationfile/003	https://interdoctor/comment/col/003/a20e0030	-
DC004	https://interdoctor/file/resume/file/004/col/0/a20e0018	-	-	-	https://interdoctor/file/verificationfile/004	-
DC005	https://interdoctor/file/resume/file/005/a20e0101	-	-	https://interdoctor/file/rejectiontemplate/005/a20e0101	https://interdoctor/file/verificationfile/005	https://interdoctor/comment/col/005/a20e0101

5 rows returned in 0.01 secondsDownload

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MY\_A264\_SQL\_S08

SQL Commands

Rows 10Clear CommandFind Tables

SELECT\*  
FROM International\_Student;

Results

ExplainDescribeSaved SQLHistory

MATRICNO	STUDNAME	STUDEMAIL	STUDPASS	STUDCONTACT	STUDADDRESS	STDCOURSE	RECORDEDVIDEO	CGPA	SUPID	VISARECEIPTNO	PASSPORTNO	COUNTRY
A20EC0010	Ainin Sophia	ainin@graduate.utm.my	as@123	0183456781	1, Jalan Utama, 87090, Johor	Bachelor degree of Bioinformatics	-	3.67	A002	AV11111010101	S1111111111H	Singapore
A20EC0011	Lily Chen	lily@graduate.utm.my	ll@123	0173453481	1, Jalan Sentosa, 87090, Johor	Bachelor degree Chemical Engineering	-	3.5	A001	AS11111010101	C1111111111H	China
A20EC0012	Saudina	saudi@graduate.utm.my	sd@456	01053456681	55, Jalan Ukara, 87090, Johor	Bachelor degree of Electrical Engineering	-	3.8	A003	AV12115010101	F1111113331B	Saudi Arabia
B20EC0030	Kamarul A/L Kissan	kk@graduate.utm.my	kk@bq1	0172458771	40, Jalan Kuran, 87090, Johor	Master of Science (Biotechnology)	-	3.67	A002	AV11221010101	S1111311122H	Singapore
A20EC0034	Ali Ahmad	aali@graduate.utm.my	ali@888	0198856351	99, Jalan Untung, 87090, Johor	Bachelor degree of Networks and Security	-	3.88	A004	AV12445010101	F1111441131B	Saudi Arabia

5 rows returned in 0.00 secondsDownload

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MY\_A264\_SQL\_S08

SQL Commands

Schema: MY\_A264\_SQL\_S08

Rows: 10

Clear Command

Find Tables

Save

Run

SELECT\*  
FROM Local\_Student;

Results

Explain

Describe

Saved SQL

History

MATRICNO	STUDNAME	STUDIC	STUDEMAIL	STUDPASS	STUDCONTACT	STUDADDRESS	STDCOURSE	RECORDEDVIDEO	CGPA	SUPID
A20EC0003	Muthu A/L Gopal	990105015546	muthu99@graduate.utm.my	muthu9955#	0167788557	13, Jalan Pisang 2, Taman Indah, 80594, Johor Bahru, Johor	Bachelor Degree of Software Engineering	-	3.75	A001
A20EA0018	Nurul Salihah Binti Mazlan	991209058899	salihahMazlan@graduate.utm.my	salih@0202	0195566777	105, Jalan Tun Razak 5/8, Taman Razak, 71500, Negeri Sembilan	Bachelor Degree of Civil Engineering	-	3.8	A002
A20EC0231	Lee Zi Wei	990615082210	leewei@graduate.utm.my	leewei3278	01110995555	66, Jalan Ipoh 5/8, Taman Ipoh, 30200, Ipoh, Perak	Bachelor Degree of Data Engineering	-	3.95	A003
A20EE0101	Stephen Mauritius	990729120026	stephen99@graduate.utm.my	step#hen99	0172233445	88, Jalan Kota Kinabalu 5/8, Taman Kota Kinabalu, 88000, Kota Kinabalu, Sabah	Bachelor Degree of Electronic Engineering	-	3.85	A004
A20EM0056	Muhammad Shahril Bin Saiful	990412140876	muhammadshahril@graduate.utm.my	helloshahril	01630332988	2206, Blok B, Jalan Sungai 5/8, Taman Credential, 46000, Kuala Lumpur	Bachelor Degree of Mechanical Engineering	-	3.69	A005

5 rows returned in 0.01 seconds

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MY\_A264\_SQL\_S08

SQL Commands

Schema: MY\_A264\_SQL\_S08

Rows: 10

Clear Command

Find Tables

Save

Run

SELECT\*  
FROM supervLsor;

Results

Explain

Describe

Saved SQL

History

SUPID	SUPNAME	SUPPASSWORD	SUPCONTACT	STUDIC_SUP	COMPANYREGISTRATIONNUMBER_SUP	STATUS	DATEAPPLY
A001	Aris	Aris1010	012-11111111	001010011011	202201224R	Applied	11-Aug-2020
A002	Adam	Adam1230	012-22222222	000210011021	202102214R	Applied	12-Aug-2020
A003	Shafoo	Shaoo_99	012-33333333	011225011221	-	Not Applied	-
A004	Dayang	Dayang_lo	012-44444444	990505046555	202201224R	Applied	11-Aug-2020
A005	Chin Li Li	Lil1015	012-55555555	980101040222	200601224R	Applied	15-Aug-2020

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SQL Commands

Schema: MY\_A264\_SQL\_S08

Rows: 10

Clear Command

Find Tables

Save

Run

```
SELECT*
FROM ConStudProgress
WHERE Colname LIKE 'biol*'
OR Colname LIKE 'Biol*';
```

Results

Explain

Describe

Saved SQL

History

COID	COMPANYREGISTRATIONNUMBER_COM	CONAME	COCONTACT	COPASSWORD	COEMAIL	COADDRESS	PROGRESS	STUDIC_COM
C004	202102214R	Bioinformatics Company	035551129	bio_info88	bioinfo@gmail.com	No. 2 Jalan Waja 5, Taman Pandan, 81100 JB	Interviewed	000210011021
C005	201903254R	biobio Company	036660565	biobio**88	biobio@gmail.com	No 106 & 108, Jalan Wong Ah Fook Lot J1-06, Level 1, Johor Bahru	Interviewed	001028011222

2 rows returned in 0.00 seconds

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MY\_A264\_SQL\_S08

SQL Commands

Schema: MY\_A264\_SQL\_S08

Rows: 10

Clear Command

Find Tables

Save

Run

```
SELECT MatricNo, studname
FROM Local_Student
WHERE CGPA BETWEEN 3.75 AND 3.85;
```

Results

Explain

Describe

Saved SQL

History

MATRICNO	STUDNAME
A20EC0003	Muthu A/L Gopal
A20EA0018	Nurul Salihah Binti Mazlan
A20EE0101	Stephen Mauritius

3 rows returned in 0.00 seconds

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UPDATE International\_Student

SET supID = 'A001'

WHERE supID = 'A004';

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Object Browser Schema MY\_A264\_SQL\_S08

Tables

ADMINISTRATOR  
COMSTUDPROGRESS  
DOCUMENTATION\_TEMPLATE  
**INTERNATIONAL\_STUDENT**  
LOCAL\_STUDENT  
SUPERVISOR

**INTERNATIONAL\_STUDENT**

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST

Query Count Rows Insert Row

Data

EDIT	MATRICNO	STUDNAME	STUDEMAIL	STUDPASS	STUDCONTACT	STUDADDRESS	STDCOURSE	RECORDEDVIDEO	CGPA	SUPID	VISARECEIPTNO	PASSPORTNO	COUNTRY
	A20EC0010	Ainin Sophia	ainin@graduate.utm.my	az@123	0183456781	1, Jalan Utama, 87090, Johor	Bachelor degree of Bioinformatics	-	3.67	A002	AY11111010101	S1111111111H	Singapore
	A20EC0011	Lily Chen	lily@graduate.utm.my	ll@123	0173453481	1, Jalan Sentosa, 87090, Johor	Bachelor degree Chemical Engineering	-	3.5	A001	AS11111010101	C1111111111H	China
	A20EC0012	Saudina	saud@graduate.utm.my	sd@456	01053456681	55, Jalan Ukara, 87090, Johor	Bachelor degree of Electrical Engineering	-	3.8	A003	AY12115010101	F1111113331B	Saudi Arabia
	B20EC0030	Kamarul A/L Kissan	kk@graduate.utm.my	kk@bq1	0172458771	40, Jalan Kuran, 87090, Johor	Master of Science (Biotechnology)	-	3.67	A002	AY11221010101	S1113111122H	Singapore
	A20EC0034	Ali Ahmad	aali@graduate.utm.my	ali@888	0198856351	99, Jalan Untung, 87090, Johor	Bachelor degree of Networks and Security	-	3.88	A001	AY12445010101	F1111441131B	Saudi Arabia

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row(s) 1 - 5 of 5

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DELETE FROM Documentation\_Template

WHERE BLI\_2AForm LIKE '%bli-2aform%';

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Object Browser Schema MY\_A264\_SQL\_S08

Tables

ADMINISTRATOR  
COMSTUDPROGRESS  
**DOCUMENTATION\_TEMPLATE**  
INTERNATIONAL\_STUDENT  
LOCAL\_STUDENT  
SUPERVISOR

**DOCUMENTATION\_TEMPLATE**

Table Data Indexes Model Constraints Grants Statistics UI Defaults Triggers Dependencies SQL REST

Query Count Rows Insert Row

Data

EDIT	DOCUMENTATIONID	RESUMEFILE	BLI_2AForm	ADVERTISEMNTFILE	REJECTIONTEMPLATE	VERIFICATIONTEMPLATE	EMPLOYMENTHISTORY
	DC001	https://intendocor/file/resumefile/sc001/a23w0011	-	-	https://intendocor/file/rejectiontemplate/sc001/a23w0011	-	-
	DC003	https://intendocor/file/resumefile/sc003/a23w0030	-	-	-	https://intendocor/file/verificationfile/sc003	https://intendocor/comment/corD/c003/a23w0030
	DC004	https://intendocor/file/resumefile/sc004/cu0/a23w0010	-	-	-	https://intendocor/file/verificationfile/sc004	-
	DC005	https://intendocor/file/resumefile/sc005/a23w0101	-	-	https://intendocor/file/rejectiontemplate/sc005/a23w0101	https://intendocor/file/verificationfile/sc005	https://intendocor/comment/corD/c005/a23w0101

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row(s) 1 - 4 of 4

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## 8. SUMMARY

In phase 4, we have updated our logical entity relationship diagram (ERD) by creating two more tables (Manage Student Information and Acquire Documentation) to avoid many-to-many relationships in our design. The relationship changed from many-to-many to one-to-many after these two tables were created. We are able to apply the concept we learned during the lecture while driving relations for logical data models.

After we have finished the derived relation to form the logical entity relationship diagram. We proceed with the process of normalization of the logical entity relationship. Firstly, we listed the functional dependencies that we find in our relation. This included full functional dependencies, partial dependencies and transitive dependencies. There are a total of 27 attributes and we have derived it into 6 functional dependencies. After that, we defined the 2NF and 3NF from the functional dependencies we have listed. The 2NF is derived from a relation that has partial dependencies. On the other hand, by removing the repeating group and transitive dependency, the relations were transformed into the third normal form (3NF). However, because not all of the determinant is a candidate key, it was not in Boyce-Codd normal form (BCNF).

Furthermore, the relation in the administrator and documents entity are already in full functional dependency so the relation is already in 3NF. Then, based on the results of the normalization process, we updated the data dictionary and created the relational schema. Finally, we used Oracle Apex to discuss and execute the SQL statement. In this phase, we used the CREATE, INSERT, UPDATE, and DELETE statements. As a result, we have a better understanding of how to create a logical entity relationship diagram (ERD), how to normalize the relation into 2NF and 3NF forms, and how to write SQL statements using Oracle Apex in this phase 4.