1. *Refer to the ERD in the next page, map it to logical relations, write out the table types, identify PKs, FKs*

Student(**Stud#**, Name, City, Gender);

Module(**Module#**, Title, Credit, *Lecturer#*); Lectuer# is FK to Lecturer

Lecturer(**Lecturer#**, Name, Telephone);

Student\_module\_result(**Stud#, Module#, test\_date**, result).

Stud# and Module# are FKs referring to Student and Module. *For Student\_module\_result, the composite primary key consists of Stud#, Module# and test\_date.*

1. *Choose suitable data type , create this database in your Oracle database schema*

create table student(  
stud# number(5,0) primary key,  
Name varchar2(20) not null,  
City varchar2(20),  
Gender number(1,0));

create table lecturer(  
lecturer# number(3,0) primary key,  
name varchar2(20) not null,  
telephone char(10));

create table module(  
module# number(5,0) primary key,  
title varchar2(20) not null,  
credit number(2,0),  
lecturer# number(3,0) CONSTRAINT fk\_module REFERENCES lecturer);

create table stud\_module(  
stud# number(5,0) CONSTRAINT fk102 REFERENCES student,  
module# number(5,0) CONSTRAINT fk103 REFERENCES module,  
result number(6,2) not null,  
test\_date date,  
constraint pk\_stud\_module primary key (stud#,module#,test\_date));

1. *Populate each tables with at least 5 rows of data, more data needed for those tables representing relationships*

Insert into student values(1,'John','Lecicester',1);  
Insert into student values(2,'Jenny','Nottingham',0);  
Insert into student values(3,'Ray','London',1);  
Insert into student values(4,'Anna','Loughboropugh',0);  
Insert into student values(5,'Smith','Birmingham',1);

Insert into lecturer values(1,'Mary','1234567890');  
Insert into lecturer values(2,'Kate','5234673900');  
Insert into lecturer values(3,'Peter','9876543210');

Insert into module values(1,'Database',15,1);  
Insert into module values(2,'Math',10,2);  
Insert into module values(3,'Computing',20,3);  
Insert into module values(4,'AI',15,1);  
Insert into module values(5,'Geology',10,2);

Insert into stud\_module values(1,1,90,'01-SEP-20');  
Insert into stud\_module values(1,2,80,'10-JUN-20');  
Insert into stud\_module values(2,1,60,'01-SEP-20');  
Insert into stud\_module values(2,2,70,'10-JUN -20');  
Insert into stud\_module values(2,3,40,'21-APR-20');  
Insert into stud\_module values(3,1,80,'01-SEP-20');  
Insert into stud\_module values(3,2,70,'10-JUN-20');  
Insert into stud\_module values(3,4,50,'11-MAR-20');  
Insert into stud\_module values(4,3,60,'21-APR-20');  
Insert into stud\_module values(4,1,98,'01-SEP-20');

1. *Work out the following queries:*

*List all students with a grade over 85% for Database*

*select s.name, sm.result  
from student s, stud\_module sm, module m  
where s.stud#=sm.stud# and m.module#=sm.module# and sm.result>85 and m.title='Database';*

*List all module titles chosen by students with over 95% for Database*

*select m.title, s.name  
from module m, stud\_module sm, student s  
where m.module#=sm.module# and s.stud#=sm.stud# and s.stud# in  
(select stud# from stud\_module sm2, module m2 where  
sm2.module#=m2.module# and sm2.result>=95 and m2.title='Database');*

*List all the names of students taught by Mary*

*select distinct s.name  
from student s, stud\_module sm, module m, lecturer l  
where s.stud#=sm.stud# and sm.module#=m.module# and m.lecturer#=l.lecturer# and l.name='Mary';*

*List all students with the highest module results in each module*

*select s.name, sm.result, m.title  
from student s, stud\_module sm, module m  
where m.module#=sm.module# and s.stud#=sm.stud# and sm.result=  
(select max(sm2.result) from stud\_module sm2 where sm2.module#=sm.module#);*

*List student name and lecturer name for each student and his/her lecturer for his/her best module*

*select s.name, l.name  
from student s, stud\_module sm, module m, lecturer l  
where m.module#=sm.module# and s.stud#=sm.stud# and m.lecturer#=l.lecturer# and sm.result=  
(select max(sm2.result) from stud\_module sm2 where sm2.stud#=sm.stud#);*

*drop table stud\_module;  
drop table module;  
drop table lecturer;  
drop table student;  
purge recyclebin;*