*Take a paper put your name.*

*All of your answers need to write on to this paper.*

1. Which answer is correct?

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

2

1

3

A

1= Table model or schema 2 = Entity

3 = Attribute

B

1= Table

2 = Entity

3 = Attribute

C

1= Table

2 = Attributes 3 = Entity

2. What is the type of : departure attribute ?

A B C

D

INTEGER BOOLEAN

E

STRING FLOAT DATE

| **FlightBook**  departureDate  canHaveDogs  lastName  age  company |
| --- |

3. What is the type of : age attribute ?

A B C

D

INTEGER BOOLEAN

E

STRING FLOAT DATE

| **FlightBook**  departureDate  canHaveDogs  lastName  age  compagny |
| --- |

4. What is the type of : company attribute ?

A B C

D

INTEGER BOOLEAN

E

STRING FLOAT DATE

| **FlightBook**  departureDate  canHaveDogs  lastName  age  compagny |
| --- |

5. What is the type of : canHaveDogs attribute ?

A B C

D

INTEGER BOOLEAN

E

STRING FLOAT DATE

| **FlightBook**  departureDate  canHaveDogs  lastName  age  compagny |
| --- |

6. **how many** PYTHON contests Cham performed ?

HACKER RANK CONTEST

| **Contest ID**  1 | **Contest name**  Python basics | **Language**  PYTHON |
| --- | --- | --- |
| 2 | Python Advanced | PYTHON |
| 3 | Javascript DOM | JAVASCRIPT |

HACKER RANK MEMBERS

| **Member ID**  1 | **Member name**  Cham | **Nickname**  The warrior |
| --- | --- | --- |
| 2 | Soklim | The crazy |
| 3 | Sreymoa | The amazing |

HACKER RANK RESULTS

| **Member ID** 1 | **Contest ID**  1 | **Result**  40 | **Time**  5 |
| --- | --- | --- | --- |
| 2 | 3 | 50 | 10 |
| 1 | 2 | 100 | 40 |
| 2 | 2 | 50 | 60 |
| 3 | 2 | 60 | 40 |
| 3 | 1 | 70 | 10 |
| 1 | 2 | 100 | 30 |

7. how much time in total Soklim competed on HackerRank ?

HACKER RANK CONTEST

| **Contest ID**  1 | **Contest name**  Python basics | **Language**  PYTHON |
| --- | --- | --- |
| 2 | Python Advanced | PYTHON |
| 3 | Javascript DOM | JAVASCRIPT |

HACKER RANK MEMBERS

| **Member ID**  1 | **Member name**  Cham | **Nickname**  The warrior |
| --- | --- | --- |
| 2 | Soklim | The crazy |
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HACKER RANK RESULTS

| **Member ID** 1 | **Contest ID**  1 | **Result**  40 | **Time**  5 |
| --- | --- | --- | --- |
| 2 | 3 | 50 | 10 |
| 1 | 2 | 100 | 40 |
| 2 | 2 | 50 | 60 |
| 3 | 2 | 60 | 40 |
| 3 | 1 | 70 | 10 |
| 1 | 2 | 100 | 30 |

8. Which contest is the most popular ?

HACKER RANK CONTEST

| **Contest ID**  1 | **Contest name**  Python basics | **Language**  PYTHON |
| --- | --- | --- |
| 2 | Python Advanced | PYTHON |
| 3 | Javascript DOM | JAVASCRIPT |

HACKER RANK MEMBERS

| **Member ID**  1 | **Member name**  Cham | **Nickname**  The warrior |
| --- | --- | --- |
| 2 | Soklim | The crazy |
| 3 | Sreymoa | The amazing |

HACKER RANK RESULTS

| **Member ID** 1 | **Contest ID**  1 | **Result**  40 | **Time**  5 |
| --- | --- | --- | --- |
| 2 | 3 | 50 | 10 |
| 1 | 2 | 100 | 40 |
| 2 | 2 | 50 | 60 |
| 3 | 2 | 60 | 40 |
| 3 | 1 | 70 | 10 |
| 1 | 2 | 100 | 30 |

**OBJECTIVES FOR TODAY **

✔ Understand the **relation many to many** between entities ✔ What is a **primary** key ?

✔ What is a **foreign** key ?

DB

**MANY TO MANY RELATION**

11

**Relation between Student and Course**

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

**??**

| **COURSE**  Course ID  Course Name  Teacher  Department |
| --- |

✓ How many courses can follow a student? ✓ How many students can follow one course?

12

**Many to many** relation

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

**many**

**many**

| **COURSE**  Course ID  Course Name  Teacher  Department |
| --- |

✓ A student has **many** courses ✓ A course can welcome **many** students

**ACTIVITY 1 **10 MIN

STUDENT ENROLMENT COURSE

| **Student ID** 1001 | **Student Name** Mengyi | **Date of birth** xxx | **Province**  xxx |
| --- | --- | --- | --- |
| 1002 | Tim | xxx | xxx |
| 1003 | Narong | xxx | xxx |
| 1004 | Nork | xxx | xxx |
| 1005 | Sophim | xxx | xxx |

| **Enrolment ID** 10011001 | **Student ID**  1001 | **Course ID** 1002 |
| --- | --- | --- |
| 10021002 | 1002 | 1002 |
| 10031002 | 1003 | 1002 |
| 10031001 | 1003 | 1001 |
| 10041001 | 1004 | 1001 |
| 10051001 | 1005 | 1001 |
| 10011004 | 1001 | 1004 |
| 10021004 | 1002 | 1004 |

**Course ID Course name Teacher Departmen t**

1001 JavaScript Clément WEP 1002 Oral comprehension Sokhom English 1003 Algorithm Ronan WEP 1004 Drawing Him Art

1. What courses follows Mengyi?

2. Who are the students that follow the Javascript course? 3. How many students follow the Drawing course?

STUDENT

What courses follows Mengyi?

ENROLMENT

| **Enrolment ID** 10011001 | **Student ID**  1001 | **Course ID** 1002 |
| --- | --- | --- |
| 10021002 | 1002 | 1002 |
| 10031002 | 1003 | 1002 |
| 10031001 | 1003 | 1001 |
| 10041001 | 1004 | 1001 |
| 10051001 | 1005 | 1001 |
| 10011004 | 1001 | 1004 |
| 10021004 | 1002 | 1004 |

| **Student ID**  1001 | **Student Name** Mengyi |
| --- | --- |
| 1002 | Tiim |
| 1003 | Narong |
| 1004 | Nork |
| 1005 | Sophim |

COURSE

| **Course ID**  1001 | **Course name**  JavaScript | **Teacher** Clément | **Department** WEP |
| --- | --- | --- | --- |
| 1002 | Oral comprehension | Sokhom | English |
| 1003 | Algorithm | Ronan | WEP |
| 1004 | Drawing | Him | Art |

STUDENT

Who are the students that follow the Javascript course?

ENROLMENT

| **Enrolment ID** 10011001 | **Student ID**  1001 | **Course ID** 1002 |
| --- | --- | --- |
| 10021002 | 1002 | 1002 |
| 10031002 | 1003 | 1002 |
| 10031001 | 1003 | 1001 |
| 10041001 | 1004 | 1001 |
| 10051001 | 1005 | 1001 |
| 10011004 | 1001 | 1004 |
| 10021004 | 1002 | 1004 |

| **Student ID**  1001 | **Student Name** Mengyi |
| --- | --- |
| 1002 | Tiim |
| 1003 | Narong |
| 1004 | Nork |
| 1005 | Sophim |

COURSE

| **Course ID**  1001 | **Course name**  JavaScript | **Teacher** Clément | **Department** WEP |
| --- | --- | --- | --- |
| 1002 | Oral comprehension | Sokhom | English |
| 1003 | Algorithm | Ronan | WEP |
| 1004 | Drawing | Him | Art |

**Many to many** relation

**one to many** relation between students and enrolments

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

| **ENROLMENT**  Enrolment ID  Student ID  Course ID  Date |
| --- |

**1 many**

many 1

| **COURSE**  Course ID  Course Name  Teacher  Department |
| --- |

**Many to many** relation

**one to many** relation between course and enrolments

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

| **ENROLMENT**  Enrollment ID  Student ID  Course ID |
| --- |

1 many

**many 1**

| **COURSE**  Course ID  Course Name  Teacher  Department |
| --- |

Enrolment is an **intersection table**

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

| **ENROLMENT**  Enrollment ID  Student ID  Course ID |
| --- |

1 many**many 1**

| **COURSE**  Course ID  Course Name  Teacher  Department |
| --- |

| **STUDENT**  Student ID  Student Name  Date of birth  Province |
| --- |

If there is an additional attribute, it is called a **ASSOCIATIVE TABLE**

| **ENROLMENT**  Enrollment ID  Student ID  Course ID  **Date** |
| --- |

**COURSE**

1 many

**many 1**

Course ID

Course Name Teacher

Department

**ACTIVITY 2 **10 MIN**PARENT**

| **STUDENT\_PARENT**  parent\_id  student\_id |
| --- |

| **STUDENT**  student\_id  gender  last\_name  shool\_name |
| --- |

parent\_id gender

last\_name job\_name

1 many**many 1**

1 What is the relation between Students and Parents?

2 The table Student\_Parents is called an Intersection table or an Associative table or is it just a normal table? Explain why.

A **primary key** is a unique identifier of an **entity record Primary key**

**Entity record**

| **Student ID**  1001 | **Student Name** Lyhour | **Date of birth**  XXX | **Province**  XXX | **Classroom ID**  1 |
| --- | --- | --- | --- | --- |
| 1002 | Srey Haem | XXX | XXX | 1 |
| 1003 | XXX | XXX | XXX | 2 |
| 1004 | XXX | XXX | XXX | 3 |
| 1005 | XXX | XXX | XXX | 2 |
| 1006 | XXX | XXX | XXX | 5 |

A **foreign key** is a reference to another **entity record foreign key Primary key**

| **Student ID**  1001 | **Student Name** Lyhour | **Date of birth**  XXX | **Province**  XXX | **Classroom ID**  1 |
| --- | --- | --- | --- | --- |
| 1002 | Srey Haem | XXX | XXX | 1 |
| 1003 | XXX | XXX | XXX | 2 |
| 1004 | XXX | XXX | XXX | 3 |
| 1005 | XXX | XXX | XXX | 2 |
| 1006 | XXX | XXX | XXX | 5 |

| **Classromm ID** 1 |
| --- |
| 2 |
| 3 |
| 4 |
| 5 |
| 6 |

*It is a primary key in another table*

**What is a ERD?**

Entity Relational Diagram ?

ENTITY

KEY TYPE

| **ENTITY**  PK  Key ID  Numeric  property  String  Property  Data/time  String  FK  Foreign ID  Numeric |
| --- |

**1 many**

RELATION

TYPE

| **ENTITY**  PK  Key ID  Numeric  property  String  Property  Data/time  String  FK  Foreign ID  Numeric |
| --- |

ATTRIBUTETYPE

**ACTIVITY 3 **10 MIN

Complete the model to precise for each id if they are a **Primary** Key (PK) or a **Foreign** Key (FK)

**PK**

**FK**

**ACTIVITY 4 **10 MIN

| **STUDENT**  student\_id  gender  name  province |
| --- |

many many

| **COURSE**  coure\_id  course\_name  departement |
| --- |

✓ Add a new table to manage the MANY to MANY relation ship ✓ For each attribute, write the TYPE and for the keys, specify PK or FK

**Can you answer to those questions ?**

✔ Understand the **relation many to many** between entities

✔ What is a **primary** key ?

✔ What is a **foreign** key ?

✔ What is a **ERD**?