Q2

Given these three relations:
BOOK(book_id, book_title, book_author)
REVIEW(reader_id, book_id, review_date, review_stars, review_comment)
READER(reader_id, reader_name, reader_emailaddress)

List of symbols for copying/pasting as you enter your answers below:
project: π, select: σ , join: $\bowtie$

(a) Show the book_id, review_date and review_comment of all reviews which were given 5 stars by the reviewer. (1 mark)

(b) Show the book_title, book_author, reader_name, review_stars, and review_comment of all reviews submitted on '23 July 2021'. (3 marks)

a)
σ π $\bowtie$
Ans = π book_id, review_date, review_comment (σ review_start = 5 REVIEW)

b)
Ans1 = π reader_id, book_id, review_stars, review_comment (σ review_date = '23 July 2021' REVIEW)
Ans2 = π book_title, book_author, reader_id, review_stars, review_comment (BOOK $\bowtie$ Ans1)
Ans3 = π book_title, book_author, reader_name, review_stars, review_comment ((π reader_id, reader_name READER) $\bowtie$ Ans2)

Q5

Monash Automotive wishes to record the companies which supply it with the various parts used in services. A given part can be supplied by many suppliers and a given supplier may supply many parts. Each supplier will be assigned a supplier code (5 characters), and will have their supplier company name and contact phone number recorded.

When a part is required from a supplier an order will be raised with the supplier by Monash Automotive. An order number (numeric up to 99999) will be assigned to the order. The supplier code, date of the order, quantity ordered and line cost (up to $9999.99) for the order will be recorded. An order is for a specific (only one) part.

Monash Automotive management will then make a decision and set a standard price for the part in the PART table based on current stock and the cost of the new stock. Setting this part unit cost is not part of this tasks requirement.

Code the SQL statements to change the database to meet these requirements. Column comments are not required as part of your answer.

Empty markdown cell, double click or press enter to edit.

(a) List all vehicles manufactured before the current year, which are of a "Mazda" or "Ford" make. Show the current details of the customer who owns the vehicle (customer number, name, and contact phone number) and a single column called VEHICLEDETAILS which shows the vehicle's year, make and model. The output should be in customer number order and for a given customer show their vehicles with the oldest ones first. Typical output would have the form: (8 marks)

CUST_NO	CUST_NAME	CUST_PHONE	VEHICLEDETAILS
1080	Fredra Doulton	5625108047	2014 Ford Falcon
1080	Fredra Doulton	5625108047	2017 Ford Focus

```
select
    cust_no,
    cust_name,
    cust_phone,
    to_char(veh_year, 'yyyy') || ' '
    || veh_make || ' '
    || veh_model as VEHICLEDETAILS
from
    vehicle
    natural join customer
where
    to_char(veh_year, 'yyyy') < (select to_char(sysdate, 'yyyy') from dual)
    and (veh_make = 'Mazda' or veh_make = 'Ford')
order by
    cust_no,
    VEHICLEDETAILS;
```

Python

(b) For every part stocked by Monash Automotive list the part code, part description, the quantity of these items which have been charged out via a part charge and the total amount of such charges. In arriving at your solution it is important to note that the current unit cost listed in the part table may not be the price the item was charged out at due to part price variations. Your output should be listed with the part which has been used the most times first. Typical output would have the form: (10 marks)

PART_CODE	PART_DESCRIPTION	QUANTITY_USED	TOTAL_CHARGES
GEN123	Rear Tail Light set	2	69.90
341490	Castrol GTX Ultra Clean Engine Oil 5 lt	2	87.78
WA5045	Wesfil Air Filter	1	128.00
ONE2-5	Nulon One Coolant	1	158.00
TPS146	Tridon Oil Pressure Sensor	1	146.95
T23000	Gates Timing Belt	1	75.99
TIM333	Motorkool A/C Compressor	1	207.80
N32780	Protex Brake Shoes	1	60.99
CTG009	Protorque Injector Pump	0	0.90

```
select
    p.part_code,
    part_description,
    nvl(sum(pc_quantity), 0) as quantity_used,
    to_char(sum(pc_linecost), '$990.99') as total_amount_charge
from
    part p
    left join part_charge pc on pc.part_code = p.part_code
group by
    p.part_code,
    part_description
order by
    quantity_used;
```

Python

Q7

For all completed services in which the vehicle was ready for pickup later than the customer's requested pickup time, list the customer number, customer name, the service number, the required pickup time, the time the vehicle was ready for pickup and how late the delivery was in hours and minutes in the form 1 hr 15 mins. The output should show the longest delayed delivery first.

Typical output would have the form (you are required to use the format, output positions and column headings as shown below):

Cust_No	Customer_Name	Serv_No	Required Pickup Time	Ready for Pickup Time	Late delivery
1000	Andres Syphas	114	12:00 PM	12:30 PM	0 hr 30 mins
1040	Angie Eouzan	104	05:00 PM	05:30 PM	0 hr 30 mins
1050	Butch Japp	105	05:00 PM	05:10 PM	0 hr 10 mins

Code the SOL SELECT statement.

```
select
    s.cust_no,
    cust_name,
    serv_no,
    serv_req_pickup,
    serv_ready_pickup,
    floor((serv_ready_pickup - serv_req_pickup) * 24) || ' hr ' ||
    (((serv_ready_pickup - serv_req_pickup) * 24) -
    floor((serv_ready_pickup - serv_req_pickup) * 24)) * 60 || ' mins' as latency_time
from
    service s
    join customer c on s.cust_no = c.cust_no
where
    serv_ready_pickup is not null
    and serv_ready_pickup > serv_req_pickup
order by
    latency_time desc;
```

Python

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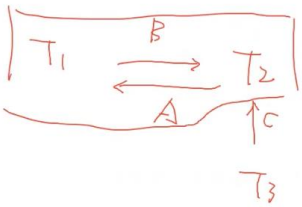
Code | Markdown | Run All | Clear Outputs of All Cells | Restart | Interrupt | Variables | Outline | Python 3.10.2 64-bit

Gi... transaction sequence:

TIME	TRANSACTION	ACTION	----A----	----B----	----C----
0	T1	READ A	S(T1)		
1	T2	READ B		S(T2)	
2	T2	READ C			S(T2)
3	T3	READ C			S(T3)
4	T1	READ B		S(T1)	
5	T3	UPDATE C			T3 WF T2
6	T1	READ B		S(T1)	
7	T1	UPDATE B		T1 W T2	
8	T2	READ A	S(T2)		
9	T2	UPDATE A	T2 W T1		



(a) Complete the table by clearly indicating what locks are present at each of the indicated times (Time O to Time 9). (3 marks)

Cell entries must have the form:

- S(Tn) - for a shared lock by Tn,
- X(Tn) - for an exclusive lock by Tn or
- Tn wait Tm - for a wait of Tn due to Tm (where n and m are transaction numbers).

(b) Does a deadlock exist in this transaction sequence? Explain why you came to this conclusion. (2 marks)

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```
{
    "_id":113,
    "date": "28-05-2020",
    "veh_rego":"F4I963",
    "service_job":[
        {
            "number": 1,
            "desc": "Engine Missing"
        },
        {
            "number": 2,
            "desc": "Tail Lights Out"
        },
        {
            "number": 3,
            "desc": "Brakes"
        }
    ]
}
]
```

Assume that a set of such documents have been stored in a MongoDB database with a collection name of **SERVICE**:
(a) Write a MongoDB command to show vehicle rego and service jobs of all services completed on "28-05-2020". Do not show the id in the output. (2 marks)
(b) Write a MongoDB command to remove service job number 3 ("Brakes") of service id 113. (4 marks)

```
a)
db.service.find({"date": "28-05-2020"}, {"_id":0, "date": 0}).pretty();
b)
db.service.updateOne({"_id": 113}, {$pull: {"service_job: {"number": 3, "desc": "Brakes"}"}});
```

Markdown