


What are the Rules for the Quiz?



All Questions must be answered to be eligible for a prize.

Don't shout the answers!

Don't Google the answer.

No Cheating!

Judges decision is final *(we are right, you are not)*



Free Practice Question



What is the name of Niki Lauda's Mother?
Wie heißt die Mutter von Niki Lauda?

- A. Nicola Lauda
- B. Mama Laudaaa
- C. Angela Merkel
- D. Marlene Knaus



Modern Oracle Database Program... Install App alex

Modern Oracle Database Programming - Quiz Edition

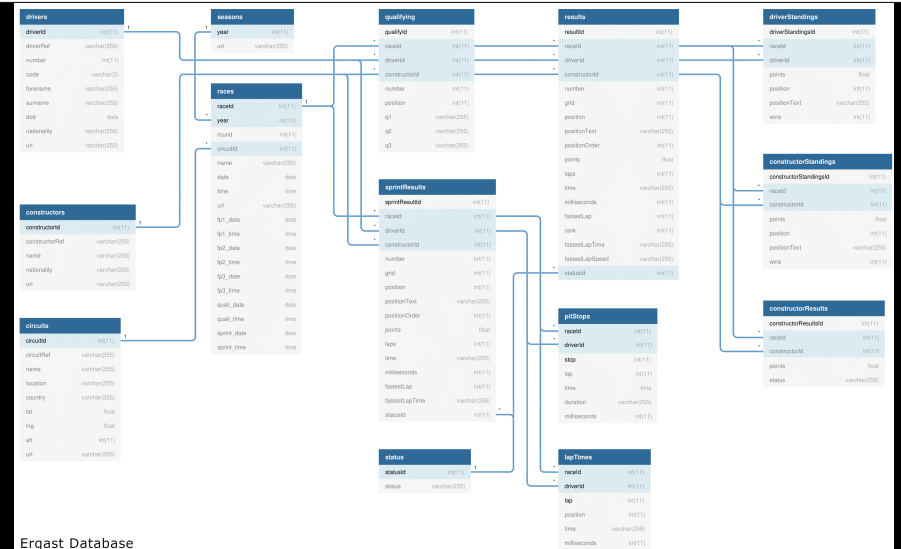
Hello ALEX, Thanks for Coming to this Session - Who Knows? You Might Win a Book...

Rules of the Modern Oracle Database Programming Quiz

Start Answering Questions



Question 1: Start Your Engines



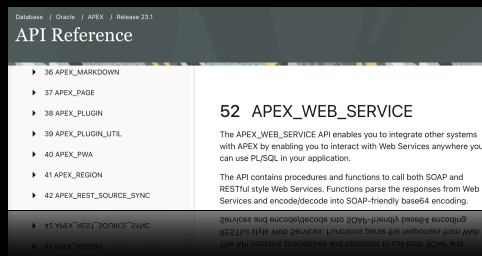
Web Service

`http[s]://ergast.com/api/<series>/<season>/<round>/...`



How can you call a Web Service from PL/SQL?

- A. Multi Language Engine
- B. UTL_WEB_SERVICE
- C. Java import with PL/SQL wrapper
- D. APEX_WEB_SERVICE



```
declare
  l_response clob;
begin
  l_response := apex_web_service.make_rest_request
    (p_url      => 'http://ergast.com/api/f1/current.json'
    ,p_http_method => 'GET'
    );
  --
  --> process the results from the web service <--
  --
end;
```

```

{
  "MRData": {
    "xmlns": "http://ergast.com/mrd/1.5",
    "series": "f1",
    "url": "http://ergast.com/api/f1/current.json",
    "limit": "30",
    "offset": "0",
    "total": "22",
    "RaceTable": {
      "season": "2023",
      "Races": [
        {
          "season": "2023",
          "round": "1",
          "url": "https://en.wikipedia.org/wiki/2023_Bahrain_Grand_Prix",
          "raceName": "Bahrain Grand Prix",
          "Circuit": {
            "circuitId": "bahrain",
            "url": "http://en.wikipedia.org/wiki/Bahrain_International_Circuit",
            "circuitName": "Bahrain International Circuit",
            "Location": {
              "lat": "26.0325",
              "long": "50.5106",
              "locality": "Sakhir",
              "country": "Bahrain"
            }
          },
          "date": "2023-03-05",
          "time": "15:00:00Z",
          "FirstPractice": {
            "date": "2023-03-03",

```

```

declare
  l_response blob;
begin
  l_response := apex_web_service.make_rest_request_b
    (p_url      => 'http://ergast.com/api/f1/current.json'
    ,p_http_method => 'GET'
    );
  --
  --> process the results from the web service <--
  --
end;

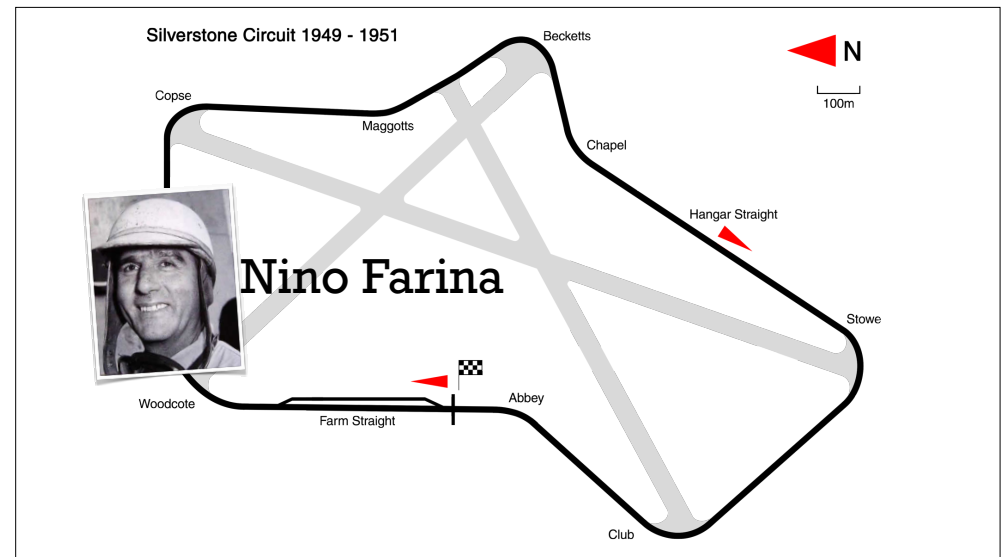
```



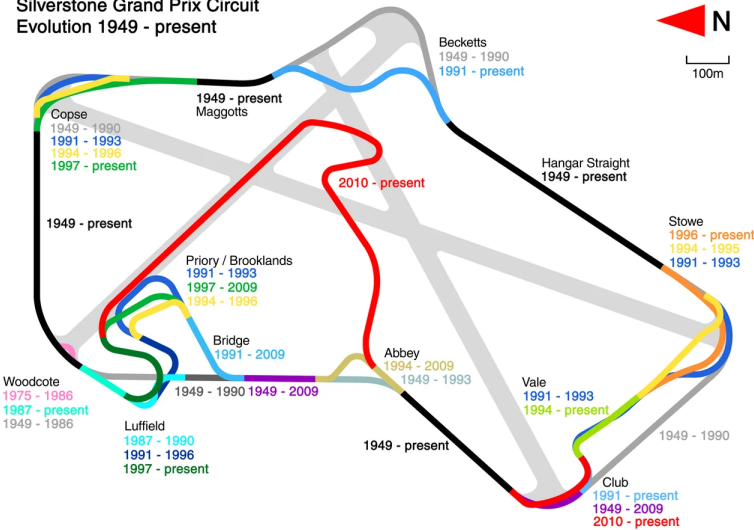
Question 2:

What year was the first Formula 1 race?

- A. 1950
- B. 1952
- C. 1954
- D. 1956



Silverstone Grand Prix Circuit
Evolution 1949 - present



Question 3:
Say my Name,
Say my Name



周冠宇



周冠宇

Zhou Guanyu
Guanyu Zhou





You want a view so your client can display the drivename either "firstname lastname" or "lastname, firstname".
What is your **best** option?

- A. View with all the separate fields, and let them figure it out
- B. View with both versions of the fullname
- C. Macro that can be used in the query
- D. Two views, each with a different naming convention

```
create or replace function driver( nationality_in in varchar2
                                , lastnamefirst_in in boolean default false)
return varchar2 sql_macro( table ) is
begin
    return q'[
select drv.driverid      as driverid
      , case lastnamefirst_in
          when true then drv.surname || ' ' || drv.forename
          else      drv.forename || ' ' || drv.surname
        end              as fullname
      , drv.nationality as nationality
from    fldata.drivers drv
where   drv.nationality like nationality_in
]';
end;
```

```
create or replace function driver( nationality_in in varchar2
                                , lastnamefirst_in in boolean default false)
return varchar2 sql_macro( table ) is
begin
    return q'[
select drv.driverid      as driverid
      , case lastnamefirst_in
          when true then drv.surname || ' ' || drv.forename
          else      drv.forename || ' ' || drv.surname
        end              as fullname
      , drv.nationality as nationality
from    fldata.drivers drv
where   drv.nationality like nationality_in
]';
end;
```

```
create or replace function driver( nationality_in in varchar2
                                , lastnamefirst_in in boolean default false)
return varchar2 sql_macro( table ) is
begin
    return q'[
select drv.driverid      as driverid
      , case lastnamefirst_in
          when true then drv.surname || ' ' || drv.forename
          else      drv.forename || ' ' || drv.surname
        end              as fullname
      , drv.nationality as nationality
from    fldata.drivers drv
where   drv.nationality like nationality_in
]';
end;
```

```

select *
from driver( 'Polish', false )
/

DRIVE FULLNAME      NATIONALITY
-----
9 Robert Kubica    Polish

select *
from driver( 'Polish', true )
/

DRIVE FULLNAME      NATIONALITY
-----
9 Kubica Robert    Polish

select *
from driver( 'Chinese', true )
/

DRIVE FULLNAME      NATIONALITY
-----
855 Zhou Guanyu    Chinese

select *
from driver( 'Chinese', false )
/

DRIVE FULLNAME      NATIONALITY
-----
855 Guanyu Zhou    Chinese

```

```

create or replace function driver( nationality_in in varchar2
, lastnamefirst_in in number default 0 )
return varchar2 sql_macro( table , is
begin
return q'[
select drv.driverid      as driverid
, case lastnamefirst_in
when 0 then drv.forename || ' ' || drv.surname
else      drv.surname  || ' ' || drv.forename
end          as fullname
, drv.nationality as nationality
from   fldata.drivers drv
where  drv.nationality like nationality_in
]';
end;

```

```

select *
from driver( 'Polish', 0 )
/

DRIVE FULLNAME      NATIONALITY
-----
9 Robert Kubica    Polish

select *
from driver( 'Polish', 1 )
/

DRIVE FULLNAME      NATIONALITY
-----
9 Kubica Robert    Polish

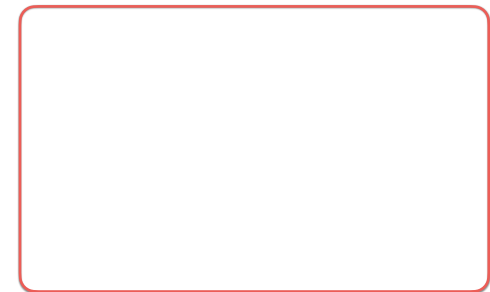
select *
from driver( 'Chinese', 1 )
/

DRIVE FULLNAME      NATIONALITY
-----
855 Zhou Guanyu    Chinese

select *
from driver( 'Chinese', 0 )
/

DRIVE FULLNAME      NATIONALITY
-----
855 Guanyu Zhou    Chinese

```

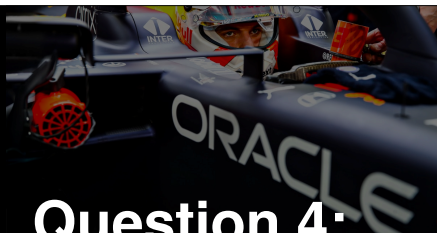




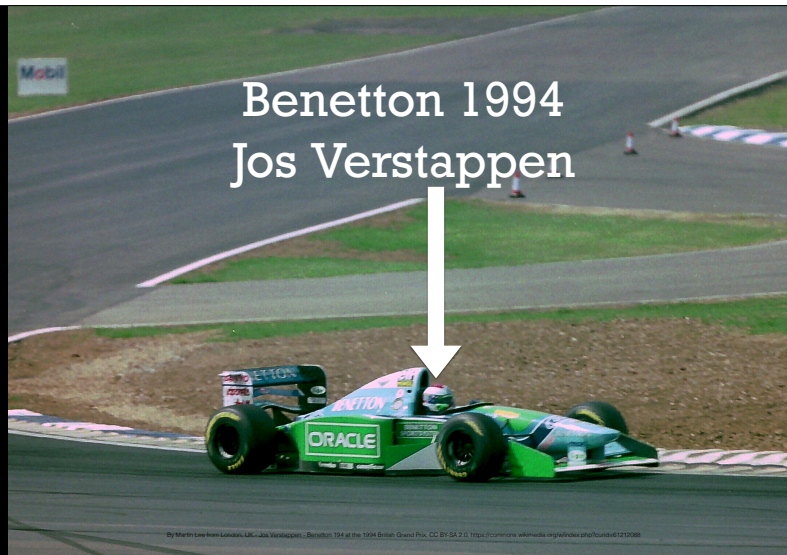
Question 4:

Is Red Bull the first Team to have Oracle on the Car?

- A. Yes
- B. No



Benetton 1994
Jos Verstappen



Question 5:
Jason Button



Question 5:
JSON Button





Question 5: JSON



Question 5: Jenson Button



```
{
  "constructorid": 1,
  "name": "AlphaTauri",
  "nationality": "Italian",
  "drivers": [
    {
      "driver": {
        "driverid": 3,
        "driver_number": 22,
        "driver_name": "Yuki Tsunoda",
        "nationality": "Japanese"
      }
    },
    {
      "driver": {
        "driverid": 4,
        "driver_number": 21,
        "driver_name": "Nyck de Vries",
        "nationality": "Dutch"
      }
    },
    {
      "driver": {
        "driverid": 5,
        "driver_number": 3,
        "driver_name": "Daniel Ricciardo",
        "nationality": "Australian"
      }
    }
  ]
}
```

```
{
  "constructorid": 1,
  "name": "AlphaTauri",
  "nationality": "Italian",
  "drivers": [
    {
      "driver": {
        "driverid": 3,
        "driver_number": 22,
        "driver_name": "Yuki Tsunoda",
        "nationality": "Japanese"
      }
    },
    {
      "driver": {
        "driverid": 4,
        "driver_number": 21,
        "driver_name": "Nyck de Vries",
        "nationality": "Dutch"
      }
    },
    {
      "driver": {
        "driverid": 5,
        "driver_number": 3,
        "driver_name": "Daniel Ricciardo",
        "nationality": "Australian"
      }
    }
  ]
}
```

DRIVER_NUM	DRIVER NAME	NATIONALITY
22	Yuki Tsunoda	Japanese
21	Nyck de Vries	Dutch
3	Daniel Ricciardo	Australian


```
select jt.*
  from docs t,
       json_table(t.thejson,
                  '$'
                  columns (
                    nested path '$.drivers[*]'
                      columns (
                        driver_number number          path '$.driver.driver_number',
                        driver_name   varchar2(4000) path '$.driver.driver_name',
                        nationality   varchar2(4000) path '$.driver.nationality')) as "JT"
```

DRIVER_NUM	DRIVER_NAME	NATIONALITY
22	Yuki Tsunoda	Japanese
21	Nyck de Vries	Dutch
3	Daniel Ricciardo	Australian

```
select j.*
  from docs t
 cross
 apply json_table (t.thejson.drivers[*]
                  columns (driver_number, driver_name, nationality)
                  ) j
```

```
select j.*
  from docs t
 nested thejson.drivers[*].driver
    columns (driver_number, driver_name, nationality) j
```

```
{
  "constructorid" : 1,
  "name" : "AlphaTauri",
  "nationality" : "Italian",
  "drivers" :
  [
    {
      "driver" :
      {
        "driverid" : 3,
        "driver_number" : 22,
        "driver_name" : "Yuki Tsunoda",
        "nationality" : "Japanese"
      }
    },
    {
      "driver" :
      {
        "driverid" : 4,
        "driver_number" : 21,
        "driver_name" : "Nyck de Vries",
        "nationality" : "Dutch"
      }
    },
    {
      "driver" :
      {
        "driverid" : 5,
        "driver_number" : 3,
        "driver_name" : "Daniel Ricciardo",
        "nationality" : "Australian"
      }
    }
  ]
}
```

DRIVER_NUM	DRIVER_NAME	NATIONALITY
22	Yuki Tsunoda	Japanese
21	Nyck de Vries	Dutch
3	Daniel Ricciardo	Australian

```
select jt.*
  from docs t,
       json_table(t.thejson,
                  '$'
                  columns (
                    nested path '$.drivers[*]'
                      columns (
                        driver_number number          path '$.driver.driver_number',
                        driver_name   varchar2(4000) path '$.driver.driver_name',
                        nationality   varchar2(4000) path '$.driver.nationality')) as "JT"
```

```
{
  "constructorid" : 1,
  "name" : "AlphaTauri",
  "nationality" : "Italian",
  "drivers" :
  [
    {
      "driver" :
      {
        "driverid" : 3,
        "driver_number" : 22,
        "driver_name" : "Yuki Tsunoda",
        "nationality" : "Japanese"
      }
    },
    {
      "driver" :
      {
        "driverid" : 4,
        "driver_number" : 21,
        "driver_name" : "Nyck de Vries",
        "nationality" : "Dutch"
      }
    },
    {
      "driver" :
      {
        "driverid" : 5,
        "driver_number" : 3,
        "driver_name" : "Daniel Ricciardo",
        "nationality" : "Australian"
      }
    }
  ]
}
```

DRIVER_NUM	DRIVER_NAME	NATIONALITY
22	Yuki Tsunoda	Japanese
21	Nyck de Vries	Dutch
3	Daniel Ricciardo	Australian

```
select j.*
  from docs t
 nested thejson.drivers[*].driver
    columns (driver_number, driver_name, nationality) j
```

```
{
  "constructorid" : 1,
  "name" : "AlphaTauri",
  "nationality" : "Italian",
  "drivers" :
  [
    {
      "driver" :
      {
        "driverid" : 3,
        "driver_number" : 22,
        "driver_name" : "Yuki Tsunoda",
        "nationality" : "Japanese"
      }
    },
    {
      "driver" :
      {
        "driverid" : 4,
        "driver_number" : 21,
        "driver_name" : "Nyck de Vries",
        "nationality" : "Dutch"
      }
    },
    {
      "driver" :
      {
        "driverid" : 5,
        "driver_number" : 3,
        "driver_name" : "Daniel Ricciardo",
        "nationality" : "Australian"
      }
    }
  ]
}
```

DRIVER_NUM	DRIVER_NAME	NATIONALITY
22	Yuki Tsunoda	Japanese
21	Nyck de Vries	Dutch
3	Daniel Ricciardo	Australian

```
select j.*
  from docs t
 cross
 apply json_table (t.thejson.drivers[*]
                  columns (driver_number, driver_name, nationality)
                  ) j
```



Question 6:

Who was "up in the air" at 2001 Belgian Grand Prix?

- A. Michael Schumacher
- B. Mick Schumacher
- C. David Schumacher
- D. Ralph Schumacher



Question 7:

What Could Possibly go Wrong?

You want to add test code to you packages, i.e. utPL/SQL code but you don't want this code to be compiled in production, because you don't have the utPL/SQL framework installed in production.



What is the **best** option?

- A. Remove the test code from the packages after testing
- B. Use Conditional Compilation to maintain a single codebase
- C. Keep two versions of the code base
- D. Install the utPL/SQL in your production environment

Directives

Selection directive

```
$if $then [ $elsif ] [ $else ] $end
```

Inquiry directive

```
alter session set plsql_ccflags = 'myflag:true'
```

Error directive

```
$error 'error message' $end
```

```

create or replace package driver_info as
  $if $$expose_for_test $then
    procedure test_driver_info;
  $end
  --
  procedure show( driverid_in in number );
end driver_info;

```

```

create or replace package body driver_info as
  $if $$expose_for_test $then
    procedure test_driver_info
    is
    begin
      --
      --> Implementation of test code <--
      --
    end test_driver_info;
  $end
  --
  procedure show( driverid_in in number )
  is
  begin
    --
    --> Implementation of procedure <--
    --
  end show;
end driver_info

```

```

alter package driver_info compile
  PLSQL_CCFLAGS = 'expose_for_test:true'
/

begin
  dbms_preprocessor.
    print_post_processed_source
    ( object_type => 'PACKAGE'
      , schema_name => 'DEMO'
      , object_name => 'DRIVER_INFO'
    );
end;
/

```

```

package driver_info as

  procedure test_driver_info;

  --
  procedure show( driverid_in in number );
end driver_info;

```

```

alter package driver_info compile
  PLSQL_CCFLAGS = 'expose_for_test:false'
/

begin
  dbms_preprocessor.
    print_post_processed_source
    ( object_type => 'PACKAGE'
      , schema_name => 'DEMO'
      , object_name => 'DRIVER_INFO'
    );
end;
/

```

```

package driver_info as

  --
  procedure show( driverid_in in number );
end driver_info;

```

Prepare for new functionality

```

begin
  $if dbms db version.version >= 21 $then
    -- code using the iterators available from 21c
    for n in 2 .. 10 by 2 loop
      dbms_output.put_line(n);
    end loop;
  $else
    -- code using the iterators as available before 21c
    for n in 2 .. 10 loop
      if mod(n, 2) = 0 then
        dbms_output.put_line(n);
      end if;
    end loop;
  $end
end;

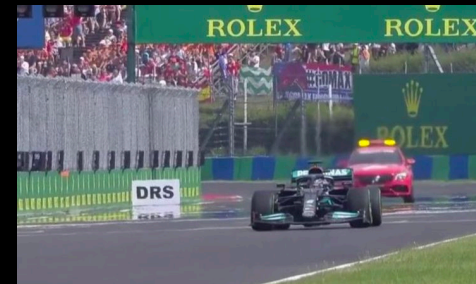
```



Question 8:

Which driver was alone on the Starting Grid?

- A. Hamilton
- B. Perez
- C. Verstappen
- D. Ocon



Hamilton
Hungary 2021



Question 9: What's going on?

Detect Pit Stops or Hazards



DRIVERID	DRIVER	LAP	MILLISECONDS
1	Lewis Hamilton	1	102630
1	Lewis Hamilton	2	102325
1	Lewis Hamilton	3	102175
1	Lewis Hamilton	4	102798
1	Lewis Hamilton	5	103196
1	Lewis Hamilton	6	102576
1	Lewis Hamilton	7	102702
1	Lewis Hamilton	8	103212
1	Lewis Hamilton	9	102672
1	Lewis Hamilton	10	102719
<--- lots of data --->			
855	Guanyu Zhou	52	103373
855	Guanyu Zhou	53	105200
855	Guanyu Zhou	54	104102
855	Guanyu Zhou	55	103812
855	Guanyu Zhou	56	103881

DRIVERID	DRIVER	LAP	MILLISECONDS
1	Lewis Hamilton	1	102630
1	Lewis Hamilton	2	102325
1	Lewis Hamilton	3	102175
1	Lewis Hamilton	4	102798
1	Lewis Hamilton	5	103196
1	Lewis Hamilton	6	102576
1	Lewis Hamilton	7	102702
1	Lewis Hamilton	8	103212
1	Lewis Hamilton	9	102672
1	Lewis Hamilton	10	102719
1	Lewis Hamilton	11	103208
1	Lewis Hamilton	12	103817
1	Lewis Hamilton	13	122611
1	Lewis Hamilton	14	102690
1	Lewis Hamilton	15	102891
1	Lewis Hamilton	16	102061
1	Lewis Hamilton	17	102511
1	Lewis Hamilton	18	118436
1	Lewis Hamilton	19	160143
1	Lewis Hamilton	20	156411

DRIVERID	DRIVER	LAP	MILLISECONDS
1	Lewis Hamilton	1	102630
1	Lewis Hamilton	2	102325
1	Lewis Hamilton	3	102175
1	Lewis Hamilton	4	102798
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1	Lewis Hamilton	8	103212
1	Lewis Hamilton	9	102672
1	Lewis Hamilton	10	102719
1	Lewis Hamilton	11	103208
1	Lewis Hamilton	12	103817
1	Lewis Hamilton	13	122611
1	Lewis Hamilton	14	102690
1	Lewis Hamilton	15	102891
1	Lewis Hamilton	16	102061
1	Lewis Hamilton	17	102511
1	Lewis Hamilton	18	118436
1	Lewis Hamilton	19	160143
1	Lewis Hamilton	20	156411

Pitstop?

DRIVERID	DRIVER	LAP	MILLISECONDS
1	Lewis Hamilton	1	102630
1	Lewis Hamilton	2	102325
1	Lewis Hamilton	3	102175
1	Lewis Hamilton	4	102798
1	Lewis Hamilton	5	103196
1	Lewis Hamilton	6	102576
1	Lewis Hamilton	7	102702
1	Lewis Hamilton	8	103212
1	Lewis Hamilton	9	102672
1	Lewis Hamilton	10	102719
1	Lewis Hamilton	11	103208
1	Lewis Hamilton	12	103817
1	Lewis Hamilton	13	122611
1	Lewis Hamilton	14	102690
1	Lewis Hamilton	15	102891
1	Lewis Hamilton	16	102061
1	Lewis Hamilton	17	102511
1	Lewis Hamilton	18	118436
1	Lewis Hamilton	19	160143
1	Lewis Hamilton	20	156411

Safety Car?



Is it possible to detect pit-stops and hazards with a **single** SQL statement?

- A. No, you are crazy!
- B. Yes, using Row Pattern Matching
- C. Yes, with PL/SQL function-calls
- D. Yes, but **only** with multiple self-joins

DRIVER	WHAT HAPPENED
Lewis Hamilton	Probably a pitstop in lap 12
Lewis Hamilton	** Hazard starting starting in lap 17 for 8 laps, ending in 25
Lewis Hamilton	Probably a pitstop in lap 34
Fernando Alonso	** Hazard starting starting in lap 17 for 8 laps, ending in 25
Sebastian Vettel	** Hazard starting starting in lap 17 for 8 laps, ending in 25
Sebastian Vettel	Probably a pitstop in lap 41
Sergio Pérez	Probably a pitstop in lap 14
Sergio Pérez	** Hazard starting starting in lap 17 for 8 laps, ending in 25
Sergio Pérez	Probably a pitstop in lap 38
Daniel Ricciardo	Probably a pitstop in lap 10

```

with laps
as (
  select drv.driverid
        , drv.forename||' '||drv.surname as driver
        , ltm.lap
        , ltm.milliseconds
        , avg (ltm.milliseconds)
          over (partition by drv.driverid) as avg_laptime
  from   fldata.laptimes ltm
  join   fldata.drivers drv
        on drv.driverid = ltm.driverid
  where  ltm.raceid = 1093 -- Circuit of the Americas
)

```

```

select driver
      , case lap_count
        when 1
        then 'Probably a pitstop in lap '||to_char (firstlap -1)
        else
          '** Hazard starting starting in lap '
          ||to_char (firstlap - 1)
          ||' for '||to_char (lap_count)
          ||' laps'
          ||', ending in '||to_char (lastlap)
        end as what_happened
  from   laps
 match_recognize (
    partition by driverid
    order by lap
    measures
      first (slow_lap.lap) as firstlap
      , last  (slow_lap.lap) as lastlap
      , count (slow_lap.lap) as lap_count
      , driver              as driver
    one row per match
    pattern (
      faster_than_avg{1} slow_lap{1,} faster_than_avg{1}
    )
    define
      faster_than_avg as milliseconds < avg_laptime
      , slow_lap as milliseconds > avg_laptime
  )

```

```

match_recognize (
  partition by driverid
  order by lap
  measures
    first (slow_lap.lap) as firstlap
    , last  (slow_lap.lap) as lastlap
    , count (slow_lap.lap) as lap_count
    , driver              as driver
  one row per match
  pattern (
    faster_than_avg{1} slow_lap{1,} faster_than_avg{1}
  )
  define
    faster_than_avg as milliseconds < avg_laptime
    , slow_lap as milliseconds > avg_laptime
)

```



Question 10:

How many drivers with First Name Esteban were there?

- A. 3
- B. 17
- C. 1
- D. 8



Esteban Tuero



Esteban Gutiérrez



Esteban Ocon



Question 11:

Which team had the "Pink Mercedes"?

- A. Petronas
- B. Racing Point
- C. Red Bull
- D. McLaren





and the Winner is....

and the Winner is....



SHOOT OUT





Why are Ferrari's red?



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