UNIVERSITY OF SCIENCE

ITEC

Project Management

Proof of Concept – Group D

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Table of content

A. Introduction 3

B. Source code for concept 3

C. Proof of concept 5

A. Introduction

Datetime booking requirement:

- Start time, end time match with each employee **(1)**
  - Monday - Tuesday: 10:00 - 19:00
  - Tuesday - Friday: 9:00 - 18:00
  - Saturday: 9:00 - 15:00
  - Sunday: 9:00 - 20:00
- Start time on current day should in the next 30-min of current time **(2)**
  - Current time is 10:20 => the earliest booking should be at 10:50
- Start time booking + Time of services should not later than End Time **(3)**
  - Booking at 15:00 with 2-hour services will not be available if the end time is 16:00
- **New booking will not intersect the other booking (the most important) (4)**
  - The ongoing booking at 14:00 with 2-hour services. Then the earliest available time should be from 16:00 to the end of time.

B. Source code for concept

Solve the (1) problem

```sql
SELECT
    employees.employee_id id,
    employees.first_name firstname,
    employees.last_name lastname
FROM employees, employees_schedule
where employees.employee_id = employees_schedule.employee_id
and employees_schedule.day_id = weekday(date(?))+1 and
employees_schedule.from_hour <= time(?) and time(?) <= employees_schedule.to_hour
```

The (2) problem is solved with some basic formula

```php
if ($isstartdate)
    // $start = date("H:00");  //get time now by time zone
    if (isset($_GET['admin'])){
        $start = $open_time;
    }else{
        $step = date("i") + constant("nexttimestep") + (constant("nexttimestep") - (int)date("i")%constant("nexttimestep")); //
        next earliest time slot
        $start = date("H:i", strtotime(date("H:i")) + $step*60);
    }
else
    $start = $open_time;
```

The (3) and (4) problems are solved by multiple queries to check the empty of the time slot, then add it to the array

- We need to negate the statement of available appointments using Discrete mathematics
  => Busy appointments with stylists
- Then we just except it with available stylists

```
except
SELECT
    employees.employee_id id,
    employees.first_name firstname,
    employees.last_name lastname
from employees, appointments
where
    employees.employee_id = appointments.employee_id
    and appointments.canceled = 0
    and date(appointments.start_time) = date(?)
    and ( (
            ? >= appointments.start_time
            or ? > appointments.start_time
        )
        and (
            appointments.end_time_expected > ?
            or appointments.end_time_expected >= ?
        )
    )
");
```

C. Proof of concept

We use Postman to test this function

There are time slots on a new day 24-06-2022 (the current is 21-06-2022). All time slot is empty from open time to end time, with these stylists available at that time.

There are time slots on the current day (30-07-2022 16:02). The earliest time slot will be 16:30, later than at least 30mins from now. (2)

After the customer books a 1-hour service from 11:00, the time slot from 11:00 to 12:00 will disappear the busy stylists, avoid intersecting appointments


"11:00": [
{
"id": 5,
"firstname": "David",
"lastname": "Luis"
},
{
"id": 6,
"firstname": "Erling",
"lastname": "Haaland"
}
],
"11:15": [
{
"id": 5,
"firstname": "David",
"lastname": "Luis"
},
{
"id": 6,
"firstname": "Erling",
"lastname": "Haaland"
}
],
Find and Replace
Console