Q1) Calculate the Day 1 retention Date  
---------------------------------------------------------------------------------------------------------------------------------  
WITH cte\_1 AS (  
    SELECT  
        user\_id,  
        min(activity\_date) AS first\_activity\_date  
    FROM user\_activity  
    GROUP BY user\_id  
),  
cte\_2 AS (  
    SELECT  
        a.user\_id,  
        a.first\_activity\_date,  
        b.activity\_date AS next\_day\_login  
    FROM cte\_1 a  
    JOIN user\_activity b  
      ON a.user\_id = b.user\_id  
     AND b.activity\_date = a.first\_activity\_date + INTERVAL '1 day'  
)  
SELECT  
    a.first\_activity\_date AS activity\_date,  
    COUNT(a.user\_id) AS new\_users,  
    COUNT(b.user\_id) AS returned\_users,  
   cast( (coalesce(returned\_users,0)/new\_users) as decimal(18,2)) as day\_1\_retention\_rate  
FROM cte\_1 a  
LEFT JOIN cte\_2 b  
  ON a.user\_id = b.user\_id  
GROUP BY a.first\_activity\_date;  
ORDER BY a.first\_activity\_date;  
----------------------------------------------------------------------------------------------------------------------  
  
Q2- Task 1 ( User Session )  
----------------------------------------------------------------------------------------------------------------------  
WITH event\_dif AS (

SELECT

user\_id,

event\_type,

event\_time,

LAG(event\_time) OVER (PARTITION BY user\_id ORDER BY event\_time) AS previous\_event\_time

FROM user\_events

),

Flags\_session AS (

SELECT

user\_id,

event\_type,

event\_time,

CASE

WHEN previous\_event\_time IS NULL THEN 1

WHEN TIMESTAMPDIFF(MINUTE, previous\_event\_time, event\_time) > 30 THEN 1

ELSE 0

END AS is\_new\_session

FROM event\_dif

),

sessionlog AS (

SELECT

user\_id,

event\_type,

event\_time,

SUM(is\_new\_session) OVER (PARTITION BY user\_id ORDER BY event\_time) AS session\_id

FROM flags\_session

)

SELECT \* FROM sessionlog

ORDER BY user\_id, event\_time;

-----------------------------------------------------------------------------------------------------------------------------  
  
Q3. You are tasked with increasing the Day-on-Day (DoD) retention of users on the Seekho app. Currently, many users sign up and engage with content initially, but their activity drops off after the first day. What changes would you suggest to improve Day-on-Day retention? Consider both product features and data-driven strategies in your response.  
----------------------------------------------------------------------------------------------------------------------------  
**Solution:**

Data- Driven Approache  
● easily define" retention"  
What does our description of retention look like? Does it involve simply logging in, finishing assignments, engaging with content, etc.?  
  
● stoner Segmentation Assign druggies to groups according to when they inked up.  
Divide druggies into groups according to their demographics, pursuits, preferred styles of literacy, or in- app conditioning.  
Adapt tactics to every request member.  
● Breakdown The stoner trip must also be counterplotted.( From enrollment to the original contact to each navigation)  
Determine the drop- off locales. druggies are abandoning the app at what point?  
● A/ B Testing To corroborate variations, use A/ B testing. Test colorful onboarding procedures, suggested content, etc., and assess how these affect retention.  
2. Product point Advancements  
AI- driven Suggestions Make advantage of machine literacy to suggest material material grounded on stoner geste , learning history, and interests.  
  
The" Continue Learning" point allows druggies to pick up where they left off.  
Social Characteristics  
  
Community Forums Establish areas where people can communicate, exchange information, and pose questions.  
  
Study Groups Let druggies organize and work together in study groups.  
  
Social participating Give consumers the option to post about their accomplishments and progress on social media.  
  
individualized monuments Notify druggies when they need to finish classes or interact with content.  
  
Progress Updates Inform druggies of their accomplishments and progress.  
  
announcements of Applicable Content Inform druggies of events or new content that may be of interest to them.  
  
Mobile Experience Make sure the operation is responsive.  
  
At last, we can also ask druggies to fill out a small check to assay figure out the problem directly.