**Problem Statement:**

"ABC is a real-money online gaming company providing multiplayer games such as Ludo. A user can register as a player,
deposit money in the platform and play games with other players on the platform.

If he/she wins the game then they can withdraw the winning amount while the platform charges a nominal fee for the services.

To retain players on the platform, the company ABC gives loyalty points to their players based on their activity on the platform.

Loyalty points are calculated on the basis of the number of games played, deposits and withdrawals made on the platform by a particular player.

The criteria to convert the number of games played, deposits and withdrawals into points is given as below:"

| Type of Action | Weightage per activity | Formulae | eg. |
|---|---|---|---|
| Deposit of money on the platform | 0.01 | 0.01 * Deposit Amount | 0.01 * (1000 RS Deposit) = 10 Points |
| Withdrawal of money from the platform | 0.005 | 0.005 * Withdrawal Amount | 0.005 * (500 Rs Withdrawal) = 2.5 Points |
| How many more times did a player do deposit than withdrawal | 0.001 | 0.001 * maximum of (#deposit - #windrawal) or 0 | 0.001 * max((5-3, 0))<br>= 0.001 * 2<br>= 0.002 points<br><br>where number of deposit = 5<br>and number of withdrawal = 3 |
| Number of games played | 0.2 | 0.2 *Number of Games Played | 0.2 * (50 Total Games Played) = 10 Points |

## Final Loyalty Point Formula

Loyalty Point = (0.01 * deposit) + (0.005 * Withdrawal amount) + (0.001 * (maximum of (#deposit - #withdrawal) or 0)) + (0.2 * Number of games played)

**"Part A - Calculating loyalty points**

On each day, there are 2 slots for each of which the loyalty points are to be calculated:
S1 from 12 am to 12 pm
S2 from 12 pm to 12 am"
"Based on the above information and the data provided answer the following questions:

1. Find Playerwise Loyalty points earned by Players in the following slots:-
2.

a. 2nd October Slot S1
b. 16th October Slot S2
b. 18th October Slot S1
b. 26th October Slot S2

2. Calculate overall loyalty points earned and rank players on the basis of loyalty points in the month of October.
In case of tie, number of games played should be taken as the next criteria for ranking.

3. What is the average deposit amount?
4. What is the average deposit amount per user in a month?
5. What is the average number of games played per user?"

**"Part B - How much bonus should be allocated to leaderboard players?**

After calculating the loyalty points for the whole month find out which 50 players are at the top of the leaderboard. The company has allocated a pool of Rs 50000 to be given away as bonus money to the loyal players.

Now the company needs to determine how much bonus money should be given to the players.

Should they base it on the amount of loyalty points? Should it be based on number of games? Or something else?

That's for you to figure out.

Suggest a suitable way to divide the allocated money keeping in mind the following points:
1. Only top 50 ranked players are awarded bonus

Part C

Would you say the loyalty point formula is fair or unfair?

Can you suggest any way to make the loyalty point formula more robust?"

**Dataset Description**

Following are the themes the fields fall under real-money online gaming dataset

## User gameplay data

1. User Id: unique id for every user
2. Games Played: number of games played by user at that time
3. Datetime: Timestamp"

## Deposit data

1. User Id: unique id for every user
2. Amount: amount deposited by user
3. Datetime: Timestamp"

## Withdrawal data

1. User Id: unique id for every user
2. Amount: amount withdrawn by user
3. Datetime: Timestamp

## Approach :

1. Import the required library and dataset
2. Data cleaning (checking nan values, duplicate values, data info)
3. First rename the column ( without rename it shows the key error when I merge two datasets)
4. Data is disordered so I sorted the data first
5. Combine all the data of user columns that are located in different rows and group them in one row with the help of the groupby function
6. Merge the three datasets into one and then calculated the loyalty_point
7. Handling DateTime by converting date and time in a different column
8. calculating loyalty points for S1 slot
9. calculating loyalty points for S2 slot
10. solving questions that are present in the problem