Question 1. Find Player wise Loyalty points earned by Players in the following slots: -

a. 2nd October Slot S1

b. 16th October Slot S2

b. 18th October Slot S1

b. 26th October Slot S2

	user_id	2022-10-16 Slot S1	2022-10-16 Slot S2	2022-10-18 Slot S1	2022-10-18 Slot S2	2022-10-26 Slot S1	2022-10-26 Slot S2
0	2.0	0.2	0.4	0.4	440.2	0.2	990.000
1	3.0	0.2	0.0	0.4	0.2	0.6	0.000
2	5.0	6.9	12.8	1.6	8.9	22.6	11.800
3	7.0	0.6	0.0	0.6	0.2	0.0	33.285
4	8.0	2.2	1.0	1.8	1.0	1.8	1.400

Question 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.

	user_id	loyalty_points	ranks	games_played
0	634.0	49707.808	1.0	22.0
1	672.0	14487.300	2.0	8.0
2	566.0	13328.320	3.0	106.0
3	99.0	12428.300	4.0	4.0
4	740.0	11981.352	5.0	2.0

Question 3. What is the average deposit amount?

Average deposit amount: 5492.185

Question: 4. What is the average deposit amount per user in a month?

user_id	amount
1.0	5000.000
2.0	28350.000
3.0	10000.000
4.0	1750.000
5.0	1105.970
6.0	1328.571
9.0	1776.917
10.0	1991.048
11.0	2204.762
12.0	1911.596

Question 5. What is the average number of games played per user?

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Average number of games played per user: 1.0
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"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
2. leaderboard
3. Calculate the total sum of loyalty points for the top 50 players
4. Calculate the percentage contribution of each player's loyalty points to the total sum

	user_id	loyalty_points	ranks	percentage_contribution	bonus_allocation
0	634.0	49707.808	1.0	0.135696	6784.823308
1	672.0	14487.300	2.0	0.039549	1977.431206
2	566.0	13328.320	3.0	0.036385	1819.237255
3	99.0	12428.300	4.0	0.033928	1696.389821
4	740.0	11981.352	5.0	0.032708	1635.384049
5	30.0	11654.380	6.0	0.031815	1590.754295
6	369.0	10260.568	7.0	0.028010	1400.507158
7	992.0	9721.428	8.0	0.026538	1326.917720
8	365.0	9243.540	9.0	0.025234	1261.688820
9	421.0	9099.936	10.0	0.024842	1242.087719
10	238.0	8873.350	11.0	0.024223	1211.160064
11	352.0	8272.429	12.0	0.022583	1129.137883
12	920.0	7781.360	13.0	0.021242	1062.109854
13	915.0	7476.066	14.0	0.020409	1020.439019
14	2.0	7369.064	15.0	0.020117	1005.833876
15	538.0	7353.232	16.0	0.020073	1003.672901
16	978.0	7225.824	17.0	0.019726	986.282459
17	786.0	7011.300	18.0	0.019140	957.001195
18	678.0	6898.800	19.0	0.018833	941.645607
19	601.0	6570.495	20.0	0.017937	896.833906
20	182.0	6391.384	21.0	0.017448	872.386309
21	208.0	6254.226	22.0	0.017073	853.665049

22	344.0	6119.850	23.0	0.016706	835.323515
23	587.0	6023.700	24.0	0.016444	822.199606
24	294.0	5845.610	25.0	0.015958	797.891369
25	415.0	5798.856	26.0	0.015830	791.509723
26	989.0	5672.600	27.0	0.015486	774.276522
27	675.0	5665.800	28.0	0.015467	773.348362
28	78.0	5515.900	29.0	0.015058	752.887894
29	93.0	5455.248	30.0	0.014892	744.609253
30	200.0	5007.389	31.0	0.013670	683.479135
31	667.0	4945.638	32.0	0.013501	675.050487
32	612.0	4903.624	33.0	0.013386	669.315823
33	950.0	4481.700	34.0	0.012235	611.725679
34	856.0	4445.800	35.0	0.012137	606.825541
35	515.0	4379.600	36.0	0.011956	597.789630
36	540.0	4335.476	37.0	0.011835	591.766964
37	959.0	4309.850	38.0	0.011765	588.269166
38	547.0	4080.820	39.0	0.011140	557.007918
39	16.0	3910.708	40.0	0.010676	533.788631
40	417.0	3843.300	41.0	0.010492	524.587836
41	97.0	3835.384	42.0	0.010470	523.507348
42	663.0	3745.328	43.0	0.010224	511.215234
43	890.0	3724.384	44.0	0.010167	508.356501
44	599.0	3687.776	45.0	0.010067	503.359725
45	82.0	3488.110	46.0	0.009522	476.106491
46	153.0	3487.504	47.0	0.009520	476.023775
47	850.0	3477.304	48.0	0.009493	474.631535
48	245.0	3376.700	49.0	0.009218	460.899681
49	202.0	3361.736	50.0	0.009177	458.857183