Questions

1.A company record its employees movement In and Out of office in a table with 3 columns
(Employee id, Action (In/Out), Created)
There is NO sample data for this question. You only need to submit the queries

Employee id	Action	Created
1	In	2019-04-01 12:00:00
1	Out	2019-04-01 15:00:00
1	In	2019-04-01 17:00:00
1	Out	2019-04-01 21:00:00

- First entry for each employee is **"In"**
- Every "**In"** is succeeded by an "**Out"**
- No data gaps and, employee can work across days

1. Find number of employees inside the Office at current time
2. Find number of employees inside the Office at "2019-05-01 17:20:00"
3. Measure amount of hours spent by each employee inside the office since the day they started (Account for current shift if she/he is working)
4. Measure amount of hours spent by each employee inside the office between "2019-04-01 14:00:00" and "2019-04-02 11:00:00"

2.There are 10 stacks of 10 coins each, where each coin weighs 10gms. However, one of the stacks is defective, and that stack contains coins which weigh 9gms. Determine the minimum number of weights needed to identify the defective stack.

3.Estimate the number of cigarettes consumed monthly in India.

4.There are 5 pirates in a ship. Pirates have hierarchy C1, C2, C3, C4 and C5. C1 designation is the highest and C5 is the lowest. These pirates have three characteristics: a. Every pirate is so greedy that he can even take lives to make more money. b. Every pirate desperately wants to stay alive. c.

They are all very intelligent.
There are a total of 100 gold coins on the ship. The person with the highest
designation on the deck is expected to make the distribution. If the majority
on the deck does not agree to the distribution proposed, the highest
designation pirates will be thrown out of the ship (or simply killed). Only the person with
the highest designation can be killed at any moment. What is
the right distribution of the coins proposed by the captain so that he is not
killed and does make the maximum amount?

5.Suppose there are two alternate roads which I can take to reach the main
road from my home to go to work. The average speed on each of the road
comes out around 30 km/hr. Let's call the two roads as road A and road B.
Total distance one needs to travel on road A and road B is 1 km and 1.3 km
respectively to hit the same point on the main road. Note that, before the
two roads split, I see a signal (say Z) which is common to both the roads
and hence does not come in this calculation. See figure for clarifications.
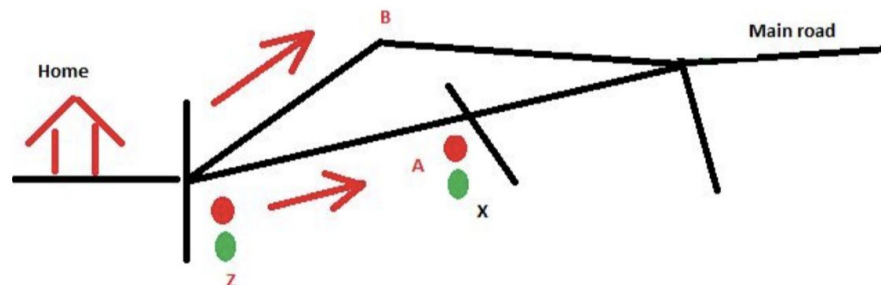
Considering the given situation, answer the following questions.
1. What are the possible factors, I should consider to come up with the
total time taken on each road?
2. Which road should one take to reach the main road so as to
minimize the time taken? And what is the difference in total time
taken by the two alternate routes?
3. Recently, one of the junction (say, X) on road A got too crowded and a
traffic signal was installed on the same. The traffic signal was
configured for 80 seconds red and 20 seconds green. Let's denote
the seconds of signal as R1 R2 R3 ... G1 G2 G3 . Here, R1 denotes 1
sec after signal switched to red. Does it still makes sense to take road A, or to switch to
road B provided the average speed on the road
A is still the same except the halt at signal?
4. If I reach the signal at R1, I will be in the front rows to be released
once the signal turns green. Whereas, if I reach the signal at R80, I
might have to wait for some time even after signal turns green

because the vehicles in the front rows will block me for some seconds before I start. Let's take some realistic guesses for the wait time after the signal turns green.

R1 – R 10 : 0 sec , R11-R20 : 3 sec , R21 – R60 : 10 sec, R61 – R80 : 15 sec, G1-G15 : 5 sec, G15-G20 : 0 sec

Does it still makes sense to take road A, or to switch to road B provided the average speed on the road A is still the same except the halt at signal?