Critical Thinking and Problem Solving Combination Problems Mathematical, Probability and Decision Trees

Name
Dicha Zelianivan Arkana

NIM
2241720002

Class
1i

Department
Information Technology

Study Program
D4 Informatics Engineering

Exercise

Combination Problems Mathematical, Probability and Decision Trees

There are two ways I go to work, both involve a two part journey.

- I can cycle to the bus stop; it usually takes 5 minutes, or 15 minutes if the railroad crossing is closed on the road, which happens on 10% of occasions.
- A bus takes an average of 5 minutes to arrive. I took the first bus, which may have been a slow bus that took 30 minutes or a fast bus that took 15 minutes. Chances of I get a slow bus is 20%
- Or, I could drive to the Park and Ride parking lot
- Driving normally takes 15 minutes, but about half the time there is a traffic jam and it taks 20 minutes.
- When I get to the Park and Ride, sometimes I get the bus right away, but there's a 60% chance I'll have to wait 10 minutes for the next bus.
- The bus took 10 minutes to take me to work.

Questions

1. What is my shortest time to start to work?

   From the statements above, we can gather up these informations:

   (a) The First Route
   - Cycle: 5 minutes
   - Bus: 0 minutes
   - Fast Bus: 15 minutes

   Total: 20 minutes

   (b) The Second Route
   - Drive: 15 minutes
   - Wait for a Bus: 0 minutes
   - Riding the Bus: 10 minutes

   Total: 25 minutes

   Based on the data that we've summarised, the shorted path would be the first one because it only takes 20 minutes to travel.

2. On average, what is my best option for going to work and how much time do I need?

3. What is the probability that the first trip option takes 40 minutes or more?