Bike Depots:

1, 3, 8, 35, 42, 46, 55

AI Production System (AIPS)

* Rules
* Control Strategy (CS)
* Database (DB)

**Bike Inventory Management System (BIMS)**

1. Database

(Ne, Na, T)

1. Rules
2. Reserve a bicycle at time Tr
3. Request a bicycle from a neighbor
4. Send a bicycle to the neighbor
5. Let the user check out a bicycle
6. Refund to the user’s account
7. Remove the bicycle reservation at time Tr + 5
8. Receive the returned bicycle from the user
9. Charge fine to the user’s account
10. IF (user requests bike at time Tr) and (Ne > 0 for T >= Tr), THEN (decrement Ne for T >= Tr), (respond CONFIRMED)
11. IF (user requests bike at time Tr), (Ne = 0 for some T >= Tr), (there is neighbor less than Tr away), THEN (request bike from the neighbor), (respond PENDING)
12. IF (user requests bike at time Tr), (Ne = 0 for some T >= Tr), (there is no neighbor less than Tr away), THEN (respond NOT AVAILABLE)
13. IF (user requests bike at time Tr), (Ne = 0 for some T >= Tr), (there is neighbor less than Tr away), (the neighbor responds YES to the bike request), THEN (respond CONFIRMED)
14. IF (user requests bike at time Tr), (Ne = 0 for some T >= Tr), (there is neighbor less than Tr away), (the neighbor responds NO to the bike request), THEN (respond NOT AVAILABLE)
15. IF (neighbor requests bike at time Tr – Tt), (Ne > 0 for T >= Tr – Tt), THEN (decrement Ne for T >= Tr - Tt), (respond YES), (Send bike at Tr – Tt)
16. IF (neighbor requests bike at time Tr – Tt), (Ne = 0 for some T >= Tr – Tt), THEN (respond NO)
17. If (user arrives at Tr), (Na > 0), THEN (decrement Na for T >= Tr)
18. If (user arrives at Tr), (Na = 0), THEN (respond Tep)
19. If (user arrives at Tr), (Na = 0), (user does not wait) THEN (refund)
20. If (user arrives at Tr), (Na = 0), (user is waiting), (Na > 0), THEN (decrement Na)
21. If (user arrives at Tr), (Na = 0), (user waited for more than 5 min), THEN (refund)
22. If (user arrives before Tr), (Ne > 0 for Tc <= T < Tr), THEN (decrement Ne for Tc <= T < Tr), (decrement Na)
23. If (user arrives before Tr), (Ne = 0 for some Tc <= T < Tr), THEN (user waits)
24. If (user arrives after Tr), (user arrives less than equal to 5min after Tr), THEN (decrement Na)
25. If (user arrives after Tr), (user arrives more than 5min after Tr), THEN (increment Na), (respond NOT AVAILABLE), (charge fine)
26. If (user is expected to return bike at Ter), THEN (increment Ne)
27. If (user returns bike at Ter), THEN (increment Na)
28. If (user returns bike before Ter), THEN (increment Ne), (increment Na)
29. If (user expected to return at Ter), (user did not return) THEN (decrement Ne)
30. If (user returns bike at Tl > Ter), THEN (increment Ne), (increment Na)
31. If (Tl – Ter > 5), THEN (charge fine)
32. Control Strategy