Data Warehousing

Practical Task # 04 **R-tree & Bitmap Indexes**

Task 4a

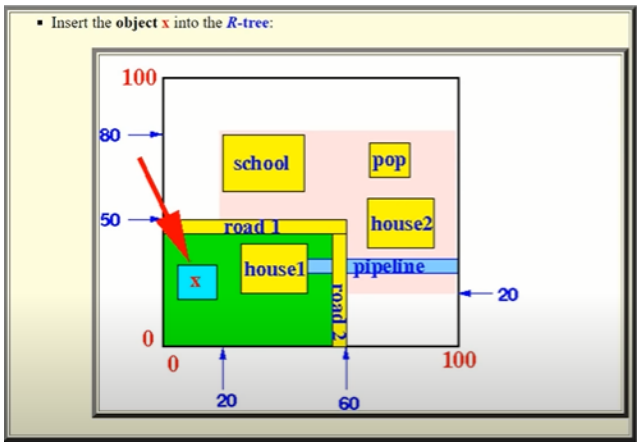
1. In the All Electronics data warehouse, suppose the dimension item at the top level has four values (representing item types): “home entertainment,” “computer,” “phone,” and “security.” Each value (e.g., “computer”) is represented by a bit vector in the item bitmap index table. Suppose that the cube is stored as a relation table with 100,000 rows. Because the domain of item consists of four values, the bitmap index table requires four bit vectors (or lists), each with 100,000 bits. Figure shows a base (data) table containing the dimensions item and city. Create a bitmap table for each of dimensions.

RID	*item*	*city*
R1	H	V
R2	C	V
R3	P	V
R4	S	V
R5	H	T
R6	C	T
R7	P	T
R8	S	T

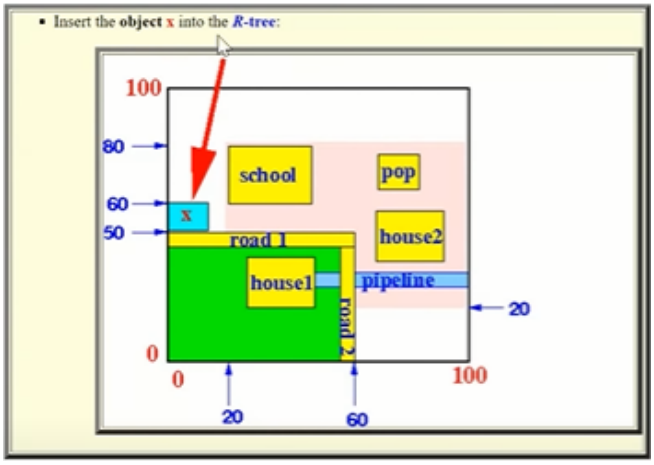
Note: H for “home entertainment,” C for “computer,” P for “phone,” S for “security,” V for “Vancouver,” T for “Toronto.”

2. Show how MBR looks like after following insertions at particular places.

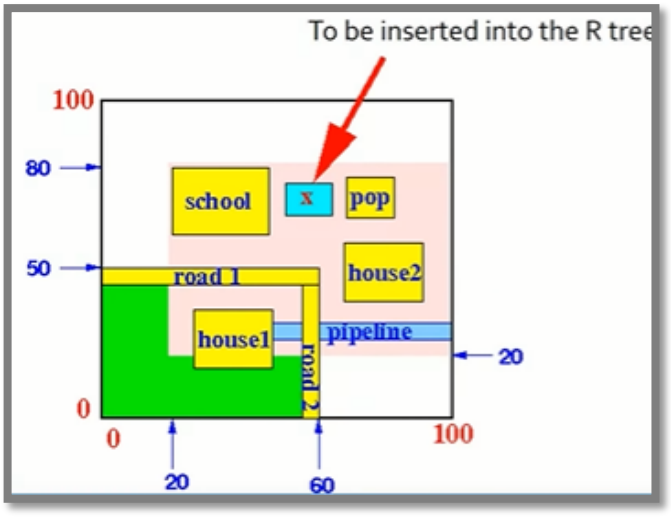
(a)


Insert the object x into the R-tree:
100
80
50
0
0
20
60
100
20
school
pop
house2
road 1
house1
pipeline
road 2
x

(b)


Insert the object x into the R-tree:
100
80
60
50
0
0
20
60
100
20
school
pop
house2
road 1
house1
pipeline
road 2
x

(c)


To be inserted into the R tree
100
80
50
0
0
20
60
100
20
school
x
pop
house2
road 1
house1
pipeline
road 2