

Binary Search Tree (BST)

Examples

List of pets

ID	Species (Breed)	Age	Health Condition	Vaccines
0	Reptiles (Hamster)	3	80	4
1	Cat (Persian)	5	60	3
2	Rabbit (Angora)	1	20	2
3	Dog (Husky)	4	70	2
4	Bird (Budgerigar)	2	90	1

BST Rule: In a binary search tree, the elements are arranged following a specific order. The rule is that the value of a left node must be smaller than its parent node, and the value of a right node must be greater than its parent node.

NOTE:

1)

Blue value

represent animal ID in each node for all trees

2)

Green color

represent added node in BST

3)

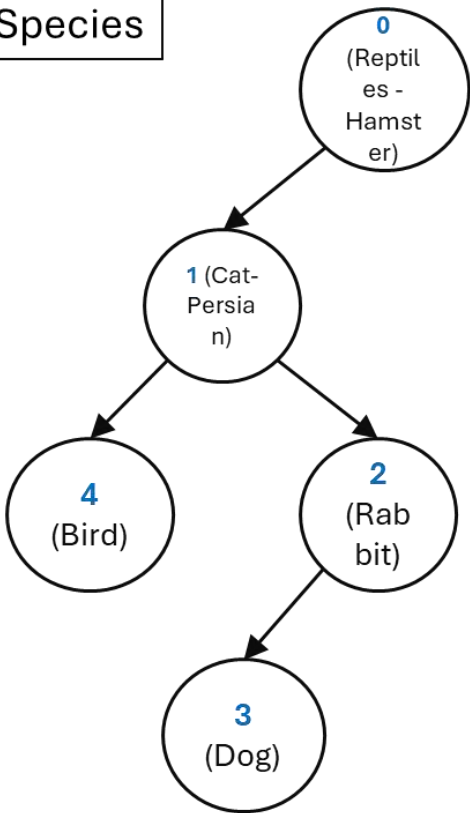
Yellow color

represent effected nodes after removal of node from BST

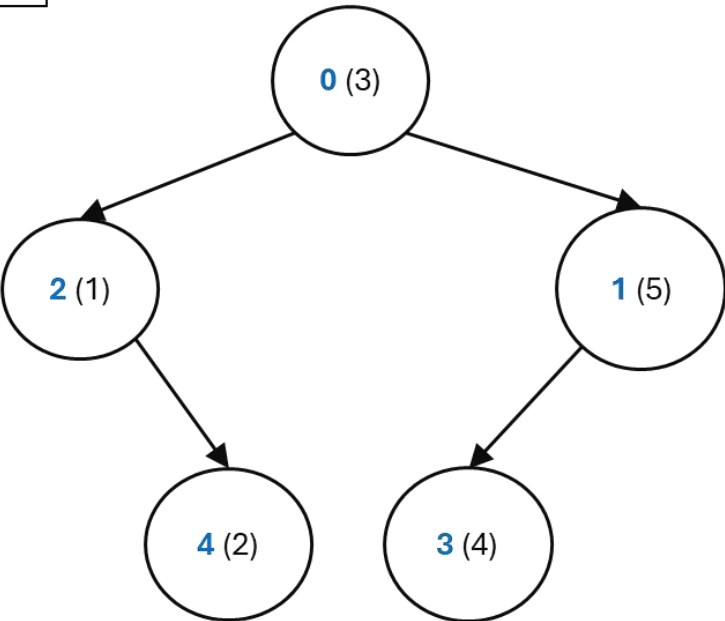
NOTE: Blue value represent animal ID in each node for all trees

1st Step: Create BST based on 4 criteria (Species, Age, Health Condition, Vaccines)

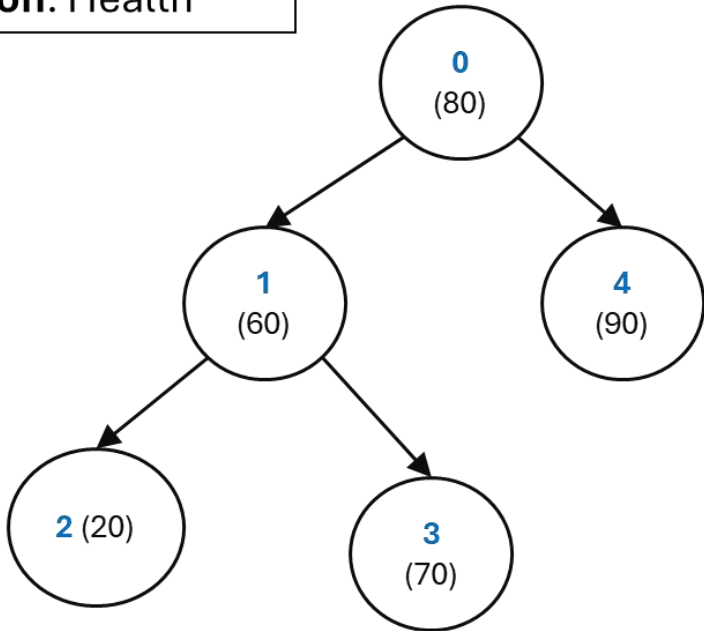
Based on: Species



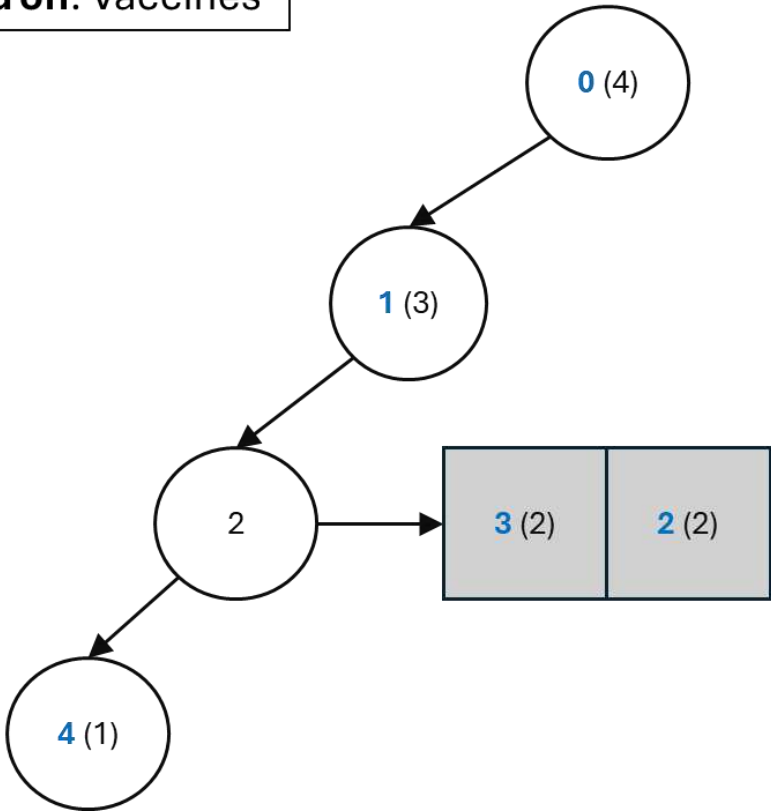
Based on: Age



Based on: Health



Based on: Vaccines

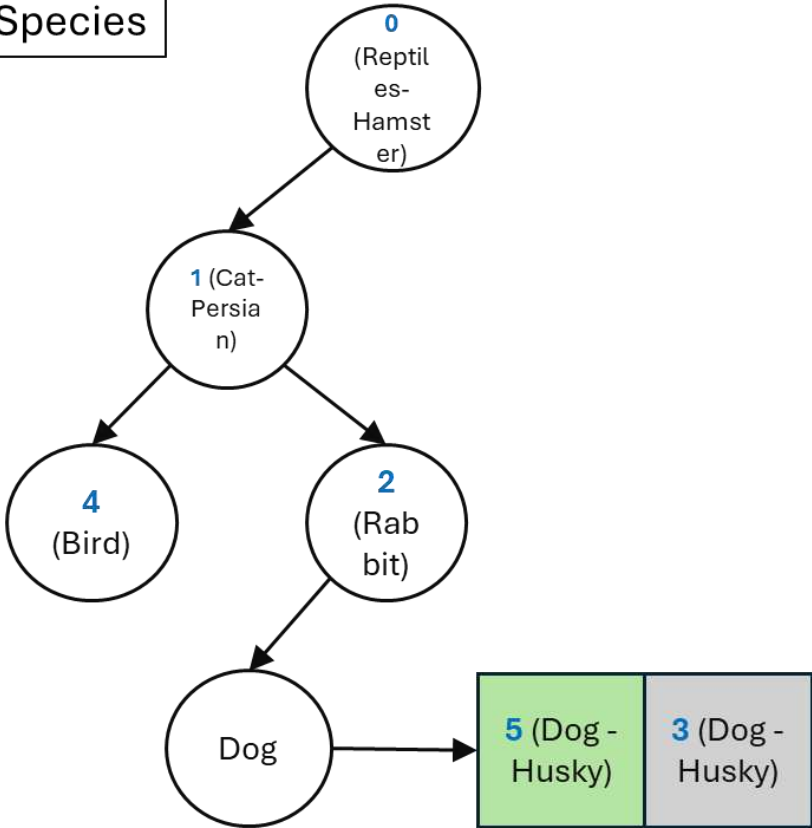


2nd Step: Adding a new animal into BST and updating the tree

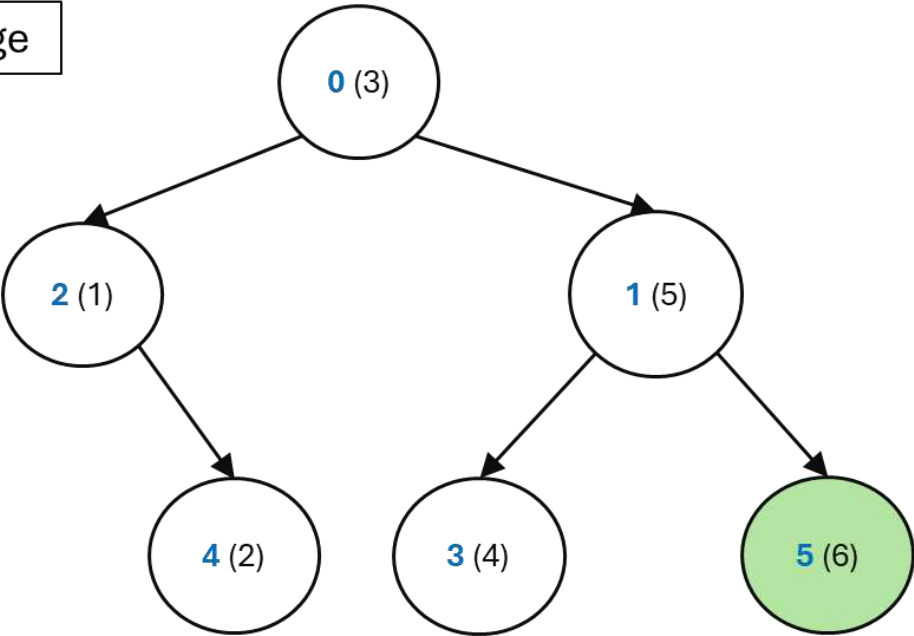
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
5	Dog (Husky)	6	100	5

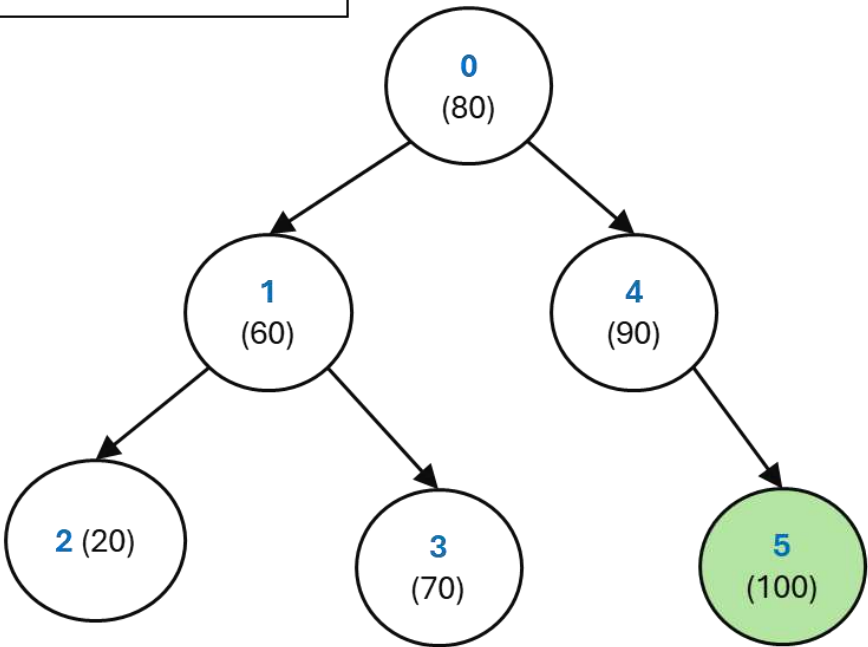
Based on: Species



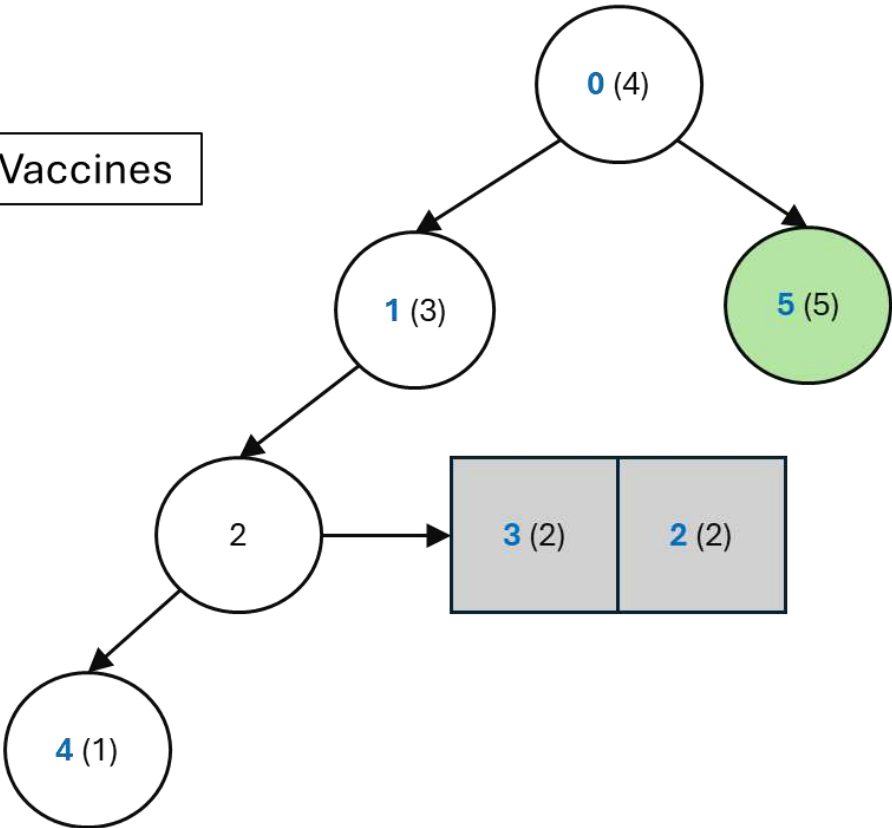
Based on: Age



Based on: Health Condition



Based on: Vaccines

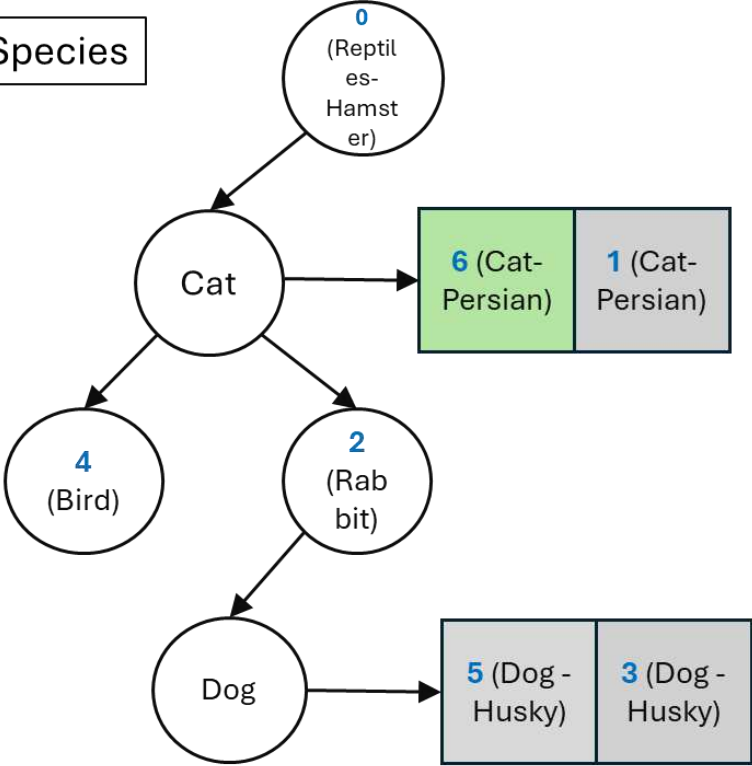


3rd Step: Adding another new animal into BST and updating the tree

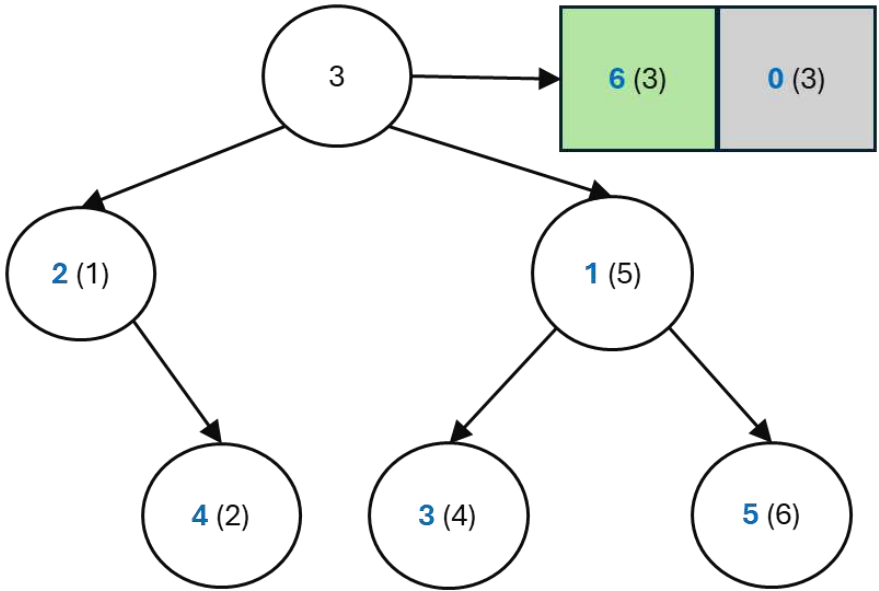
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
6	Cat (Persian)	3	50	2

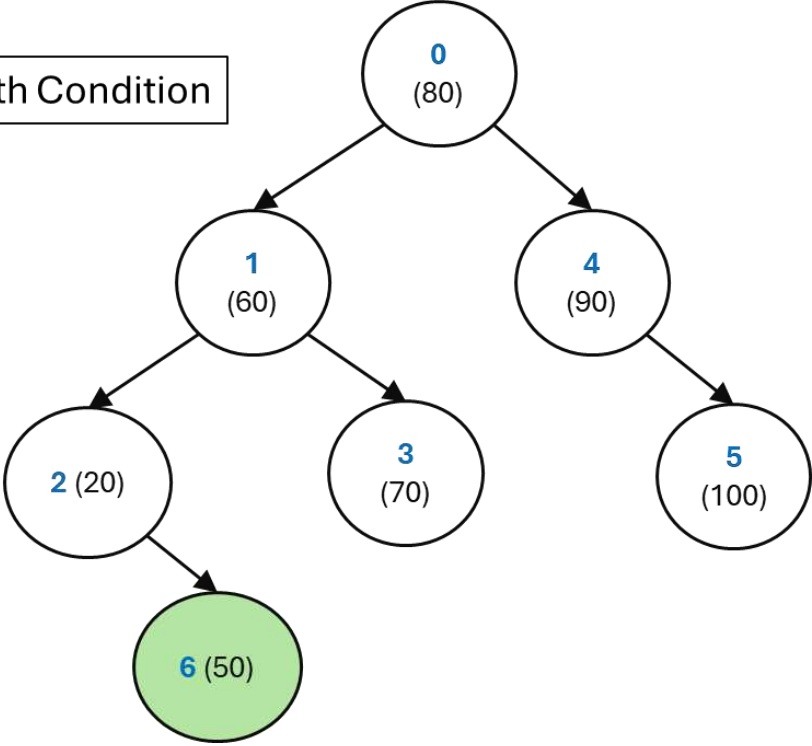
Based on: Species



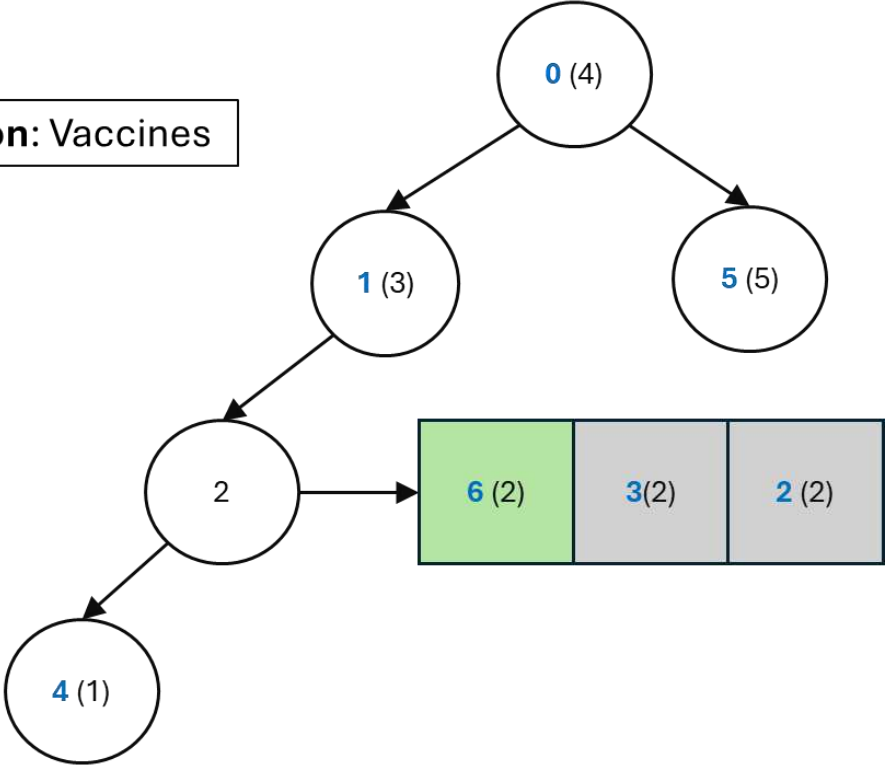
Based on: Age



Based on: Health Condition



Based on: Vaccines

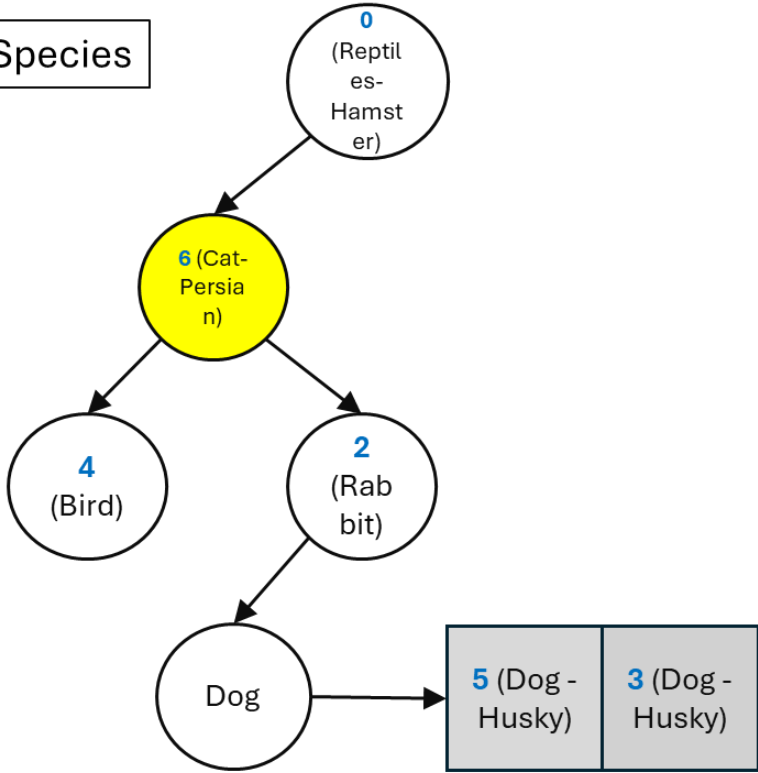


4th Step: Removing an animal from BST and updating the tree

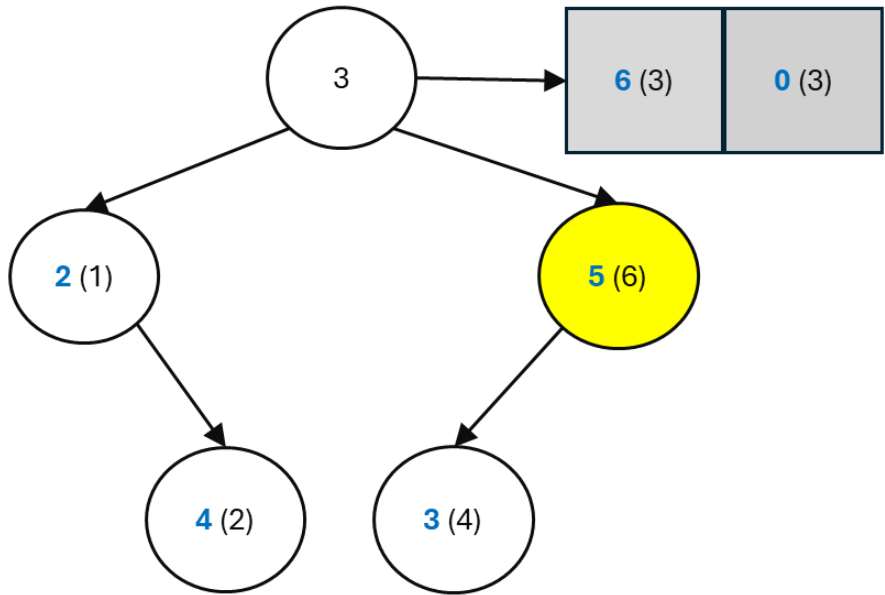
Remove an animal

ID	Species (Breed)	Age	Health condition	Vaccines
1	Cat (Persian)	5	60	3

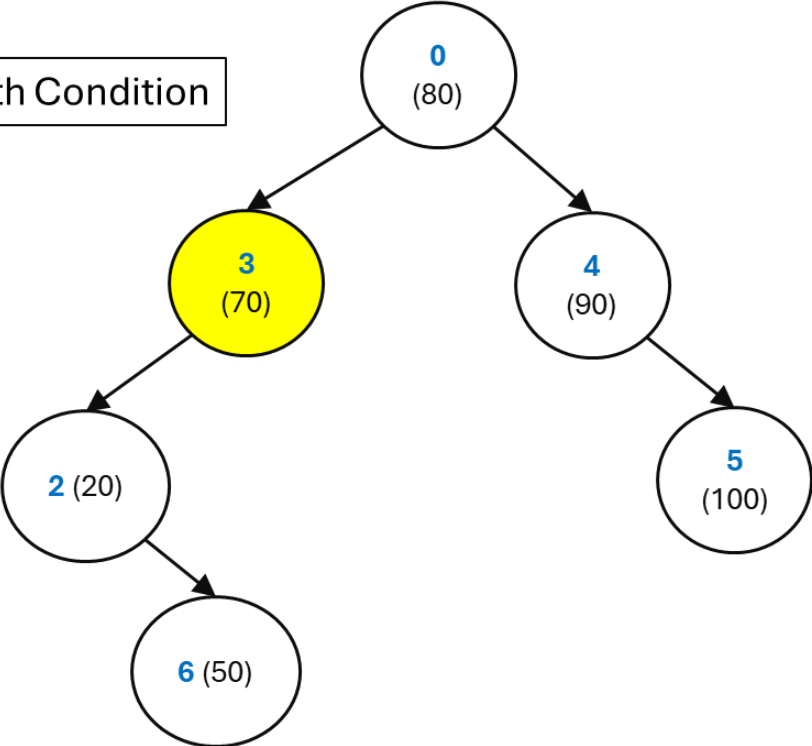
Based on: Species



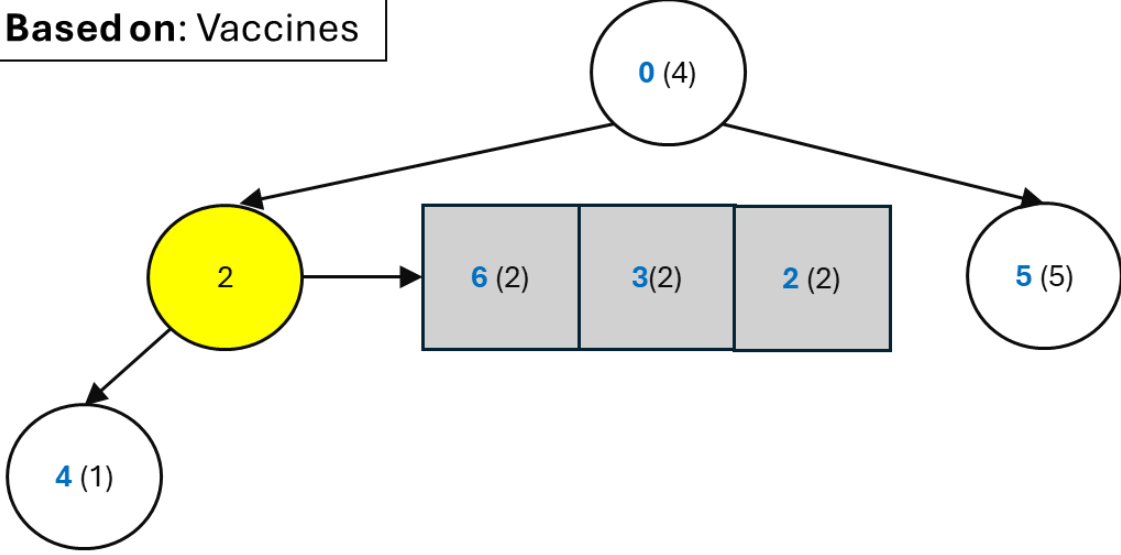
Based on: Age



Based on: Health Condition



Based on: Vaccines

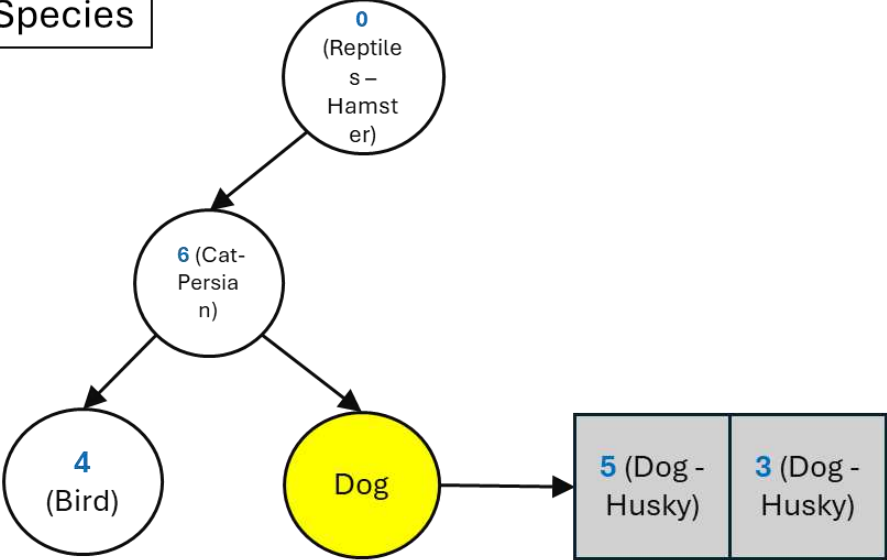


5th Step: Removing an animal from BST and updating the tree

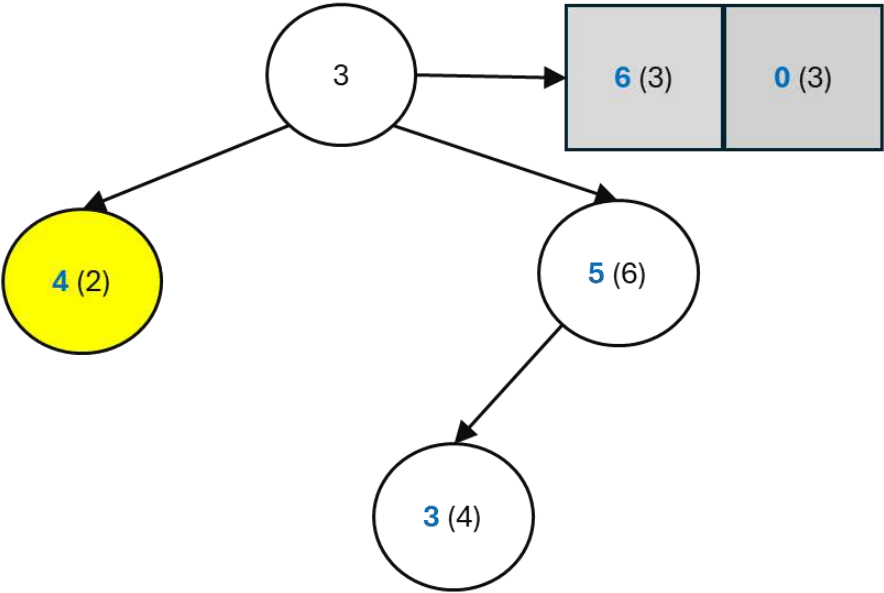
Remove an animal

ID	Species (Breed)	Age	Health condition	Vaccines
2	Rabbit (Angora)	1	20	2

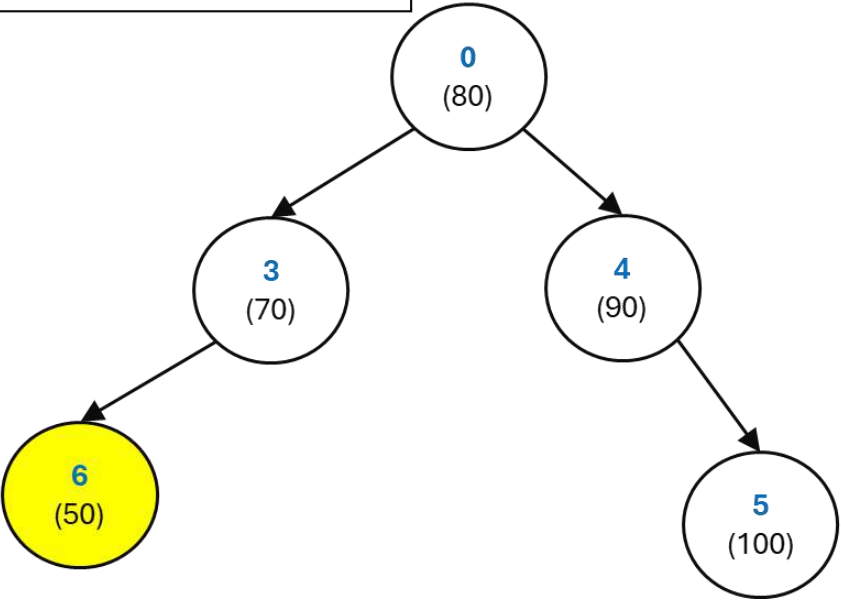
Based on: Species



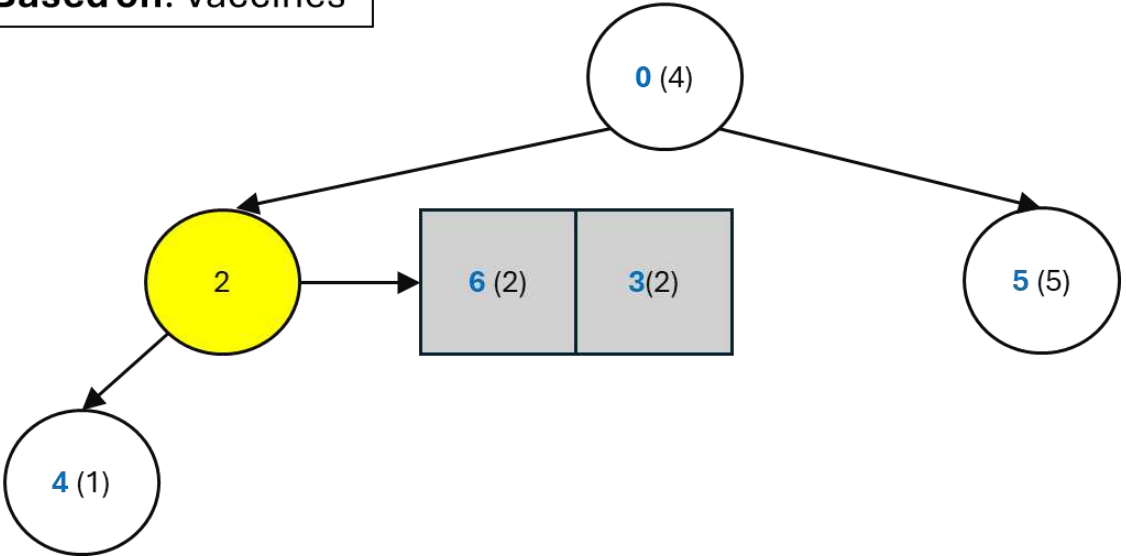
Based on: Age



Based on: Health Condition



Based on: Vaccines

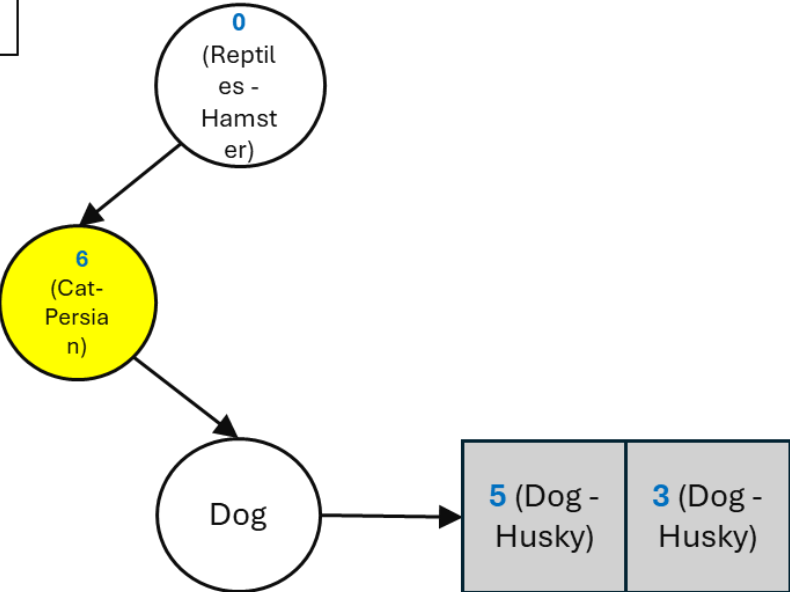


6th Step: Removing an animal from BST and updating the tree

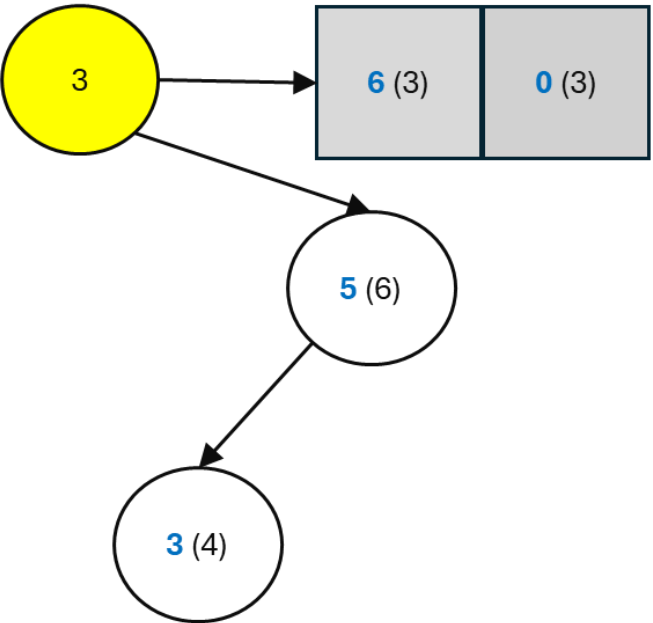
Remove an animal

ID	Species (Breed)	Age	Health condition	Vaccines
4	Bird (Budgerigar)	2	90	1

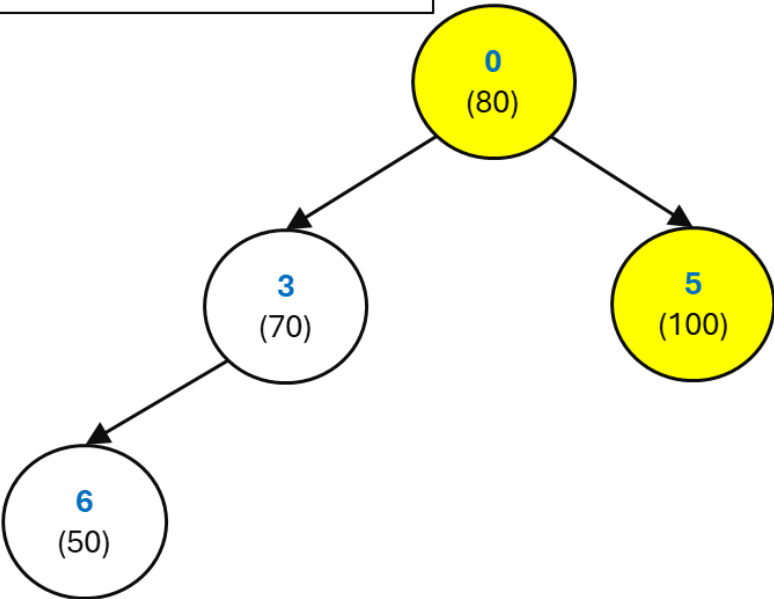
Based on: Species



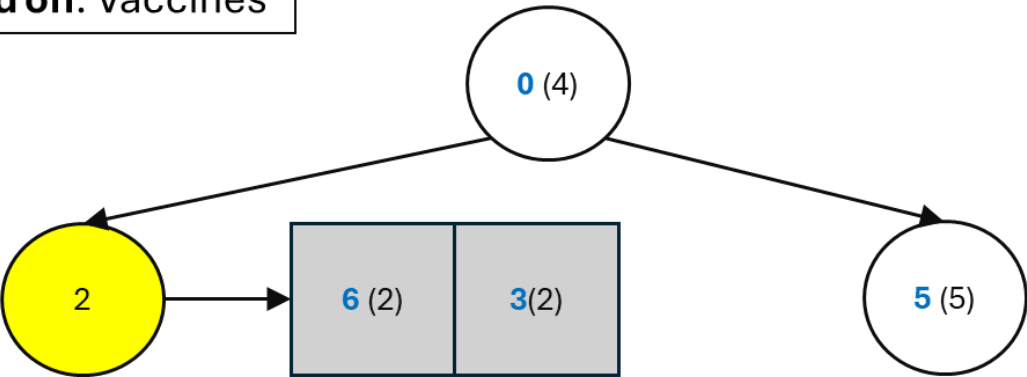
Based on: Age



Based on: Health Condition



Based on: Vaccines

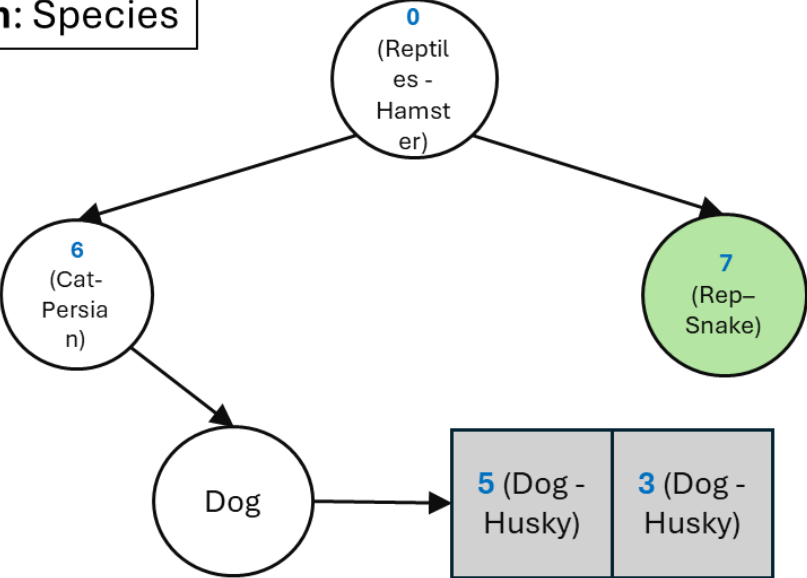


7th Step: Adding another new animal into BST and updating the tree

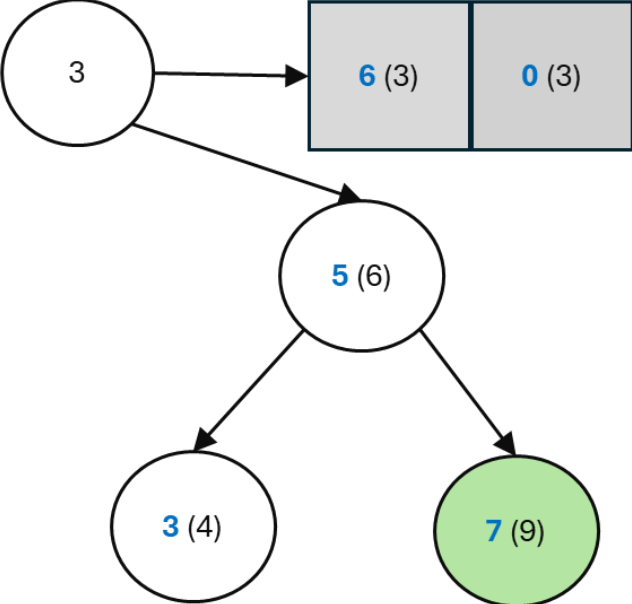
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
7	Reptiles (Snake)	9	20	6

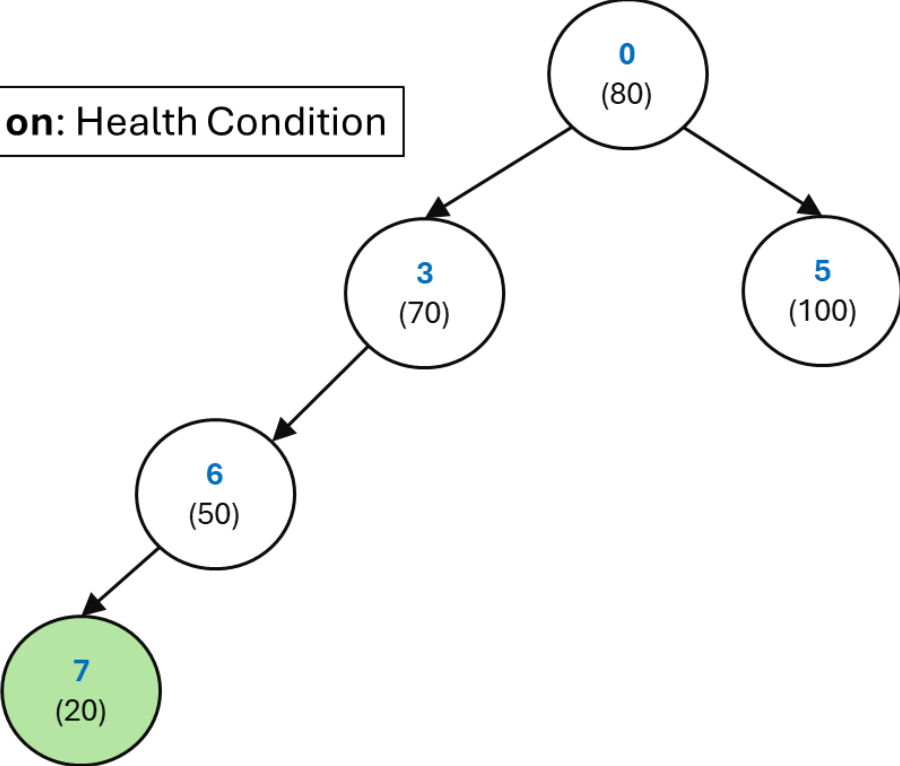
Based on: Species



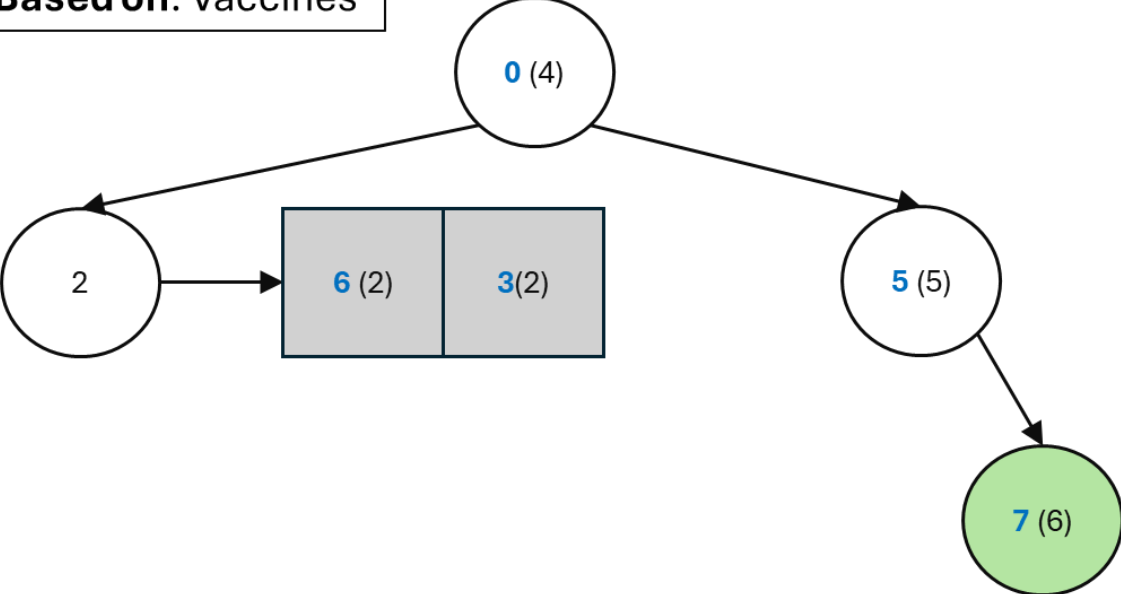
Based on: Age



Based on: Health Condition



Based on: Vaccines

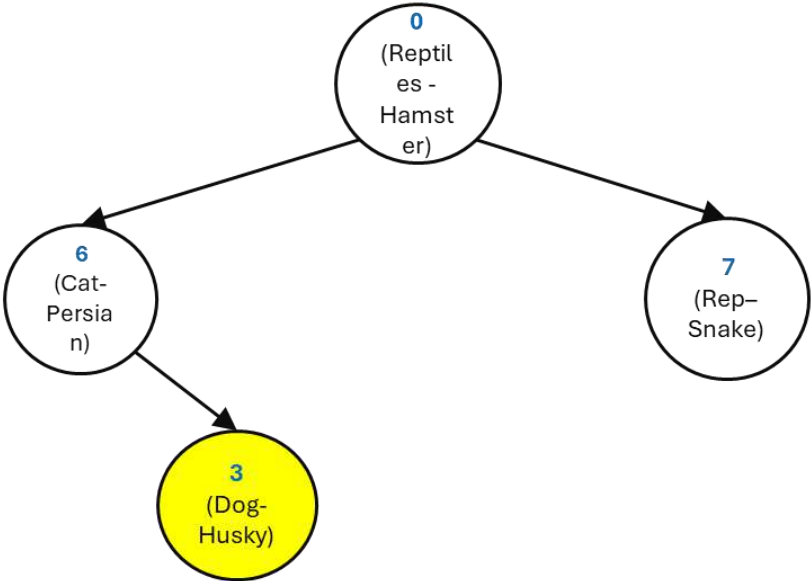


8th Step: Removing an animal from BST and updating the tree

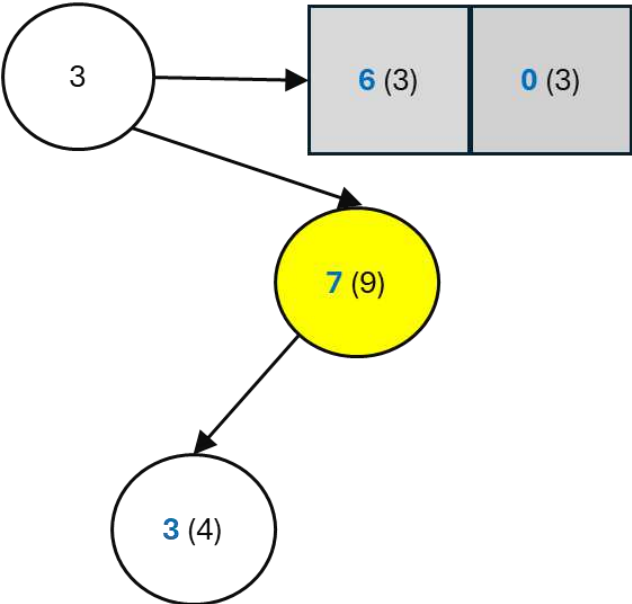
Remove an animal

ID	Species (Breed)	Age	Health condition	Vaccines
5	Dog (Husky)	6	100	5

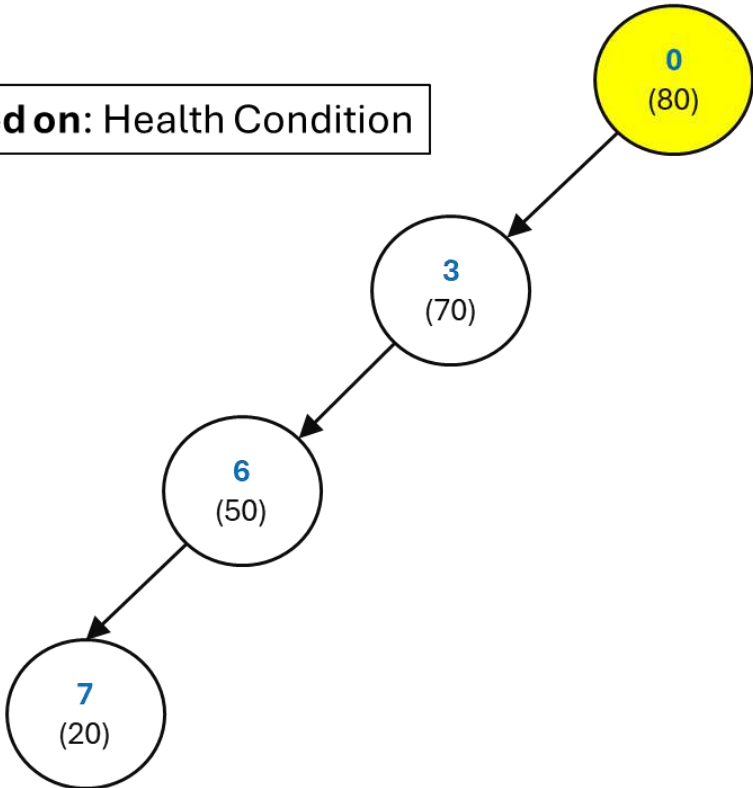
Based on: Species



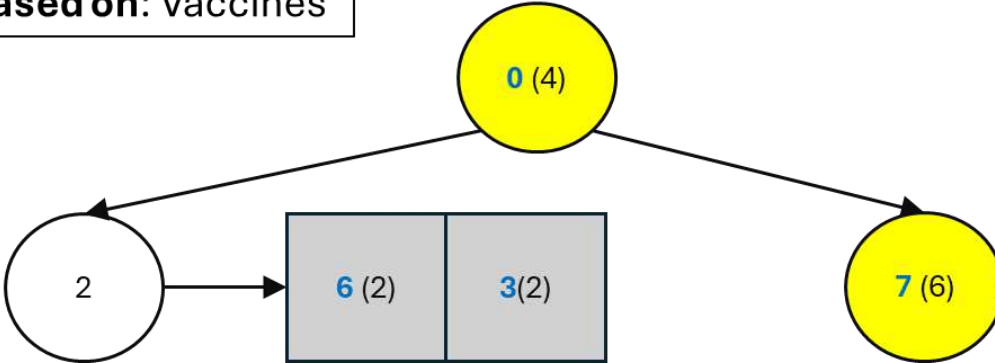
Based on: Age



Based on: Health Condition



Based on: Vaccines

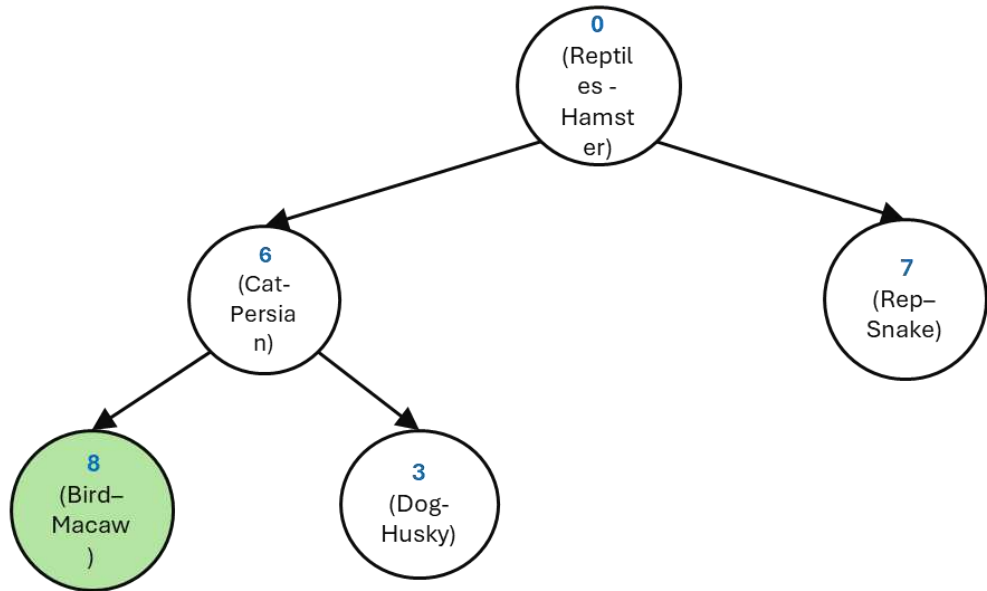


9th Step: Adding another new animal into BST and updating the tree

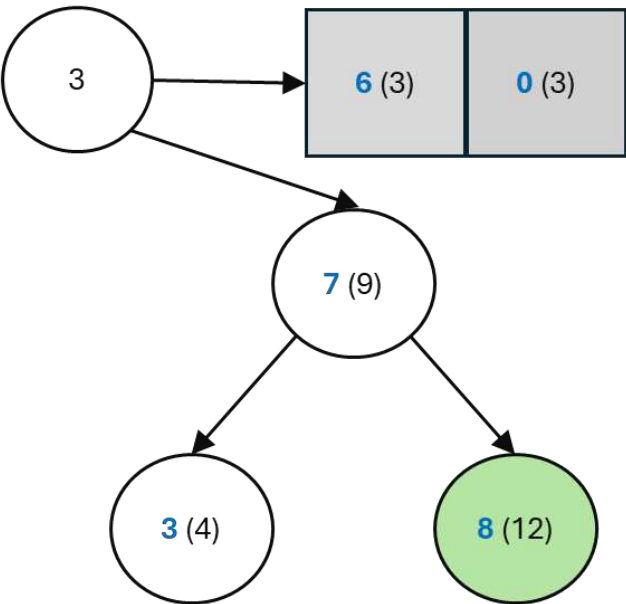
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
8	Bird (Macaw)	12	100	10

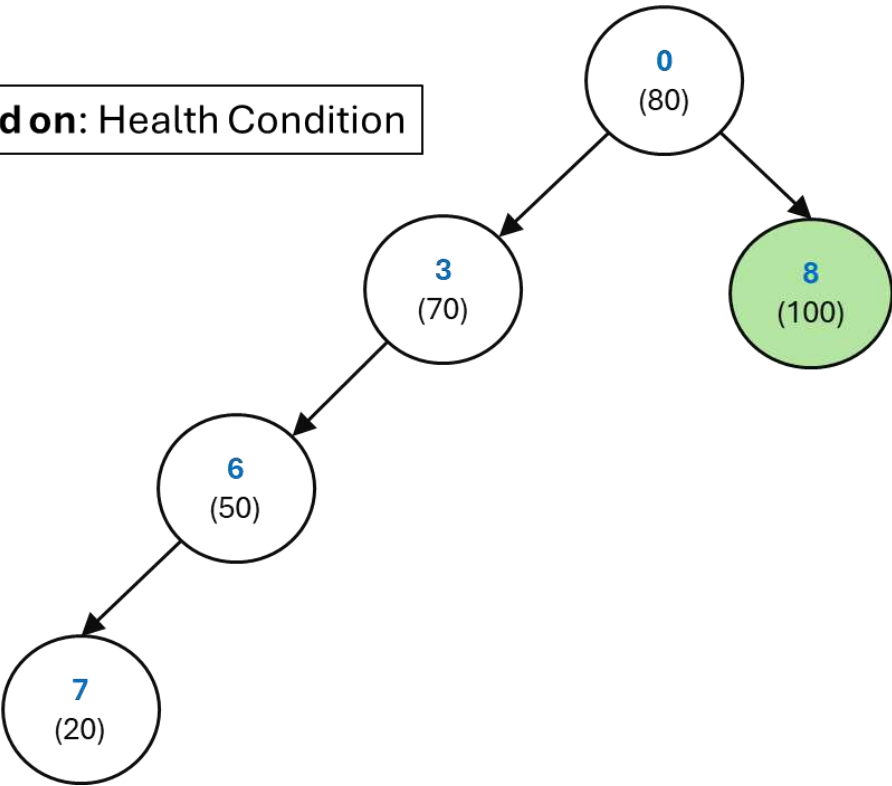
Based on: Species



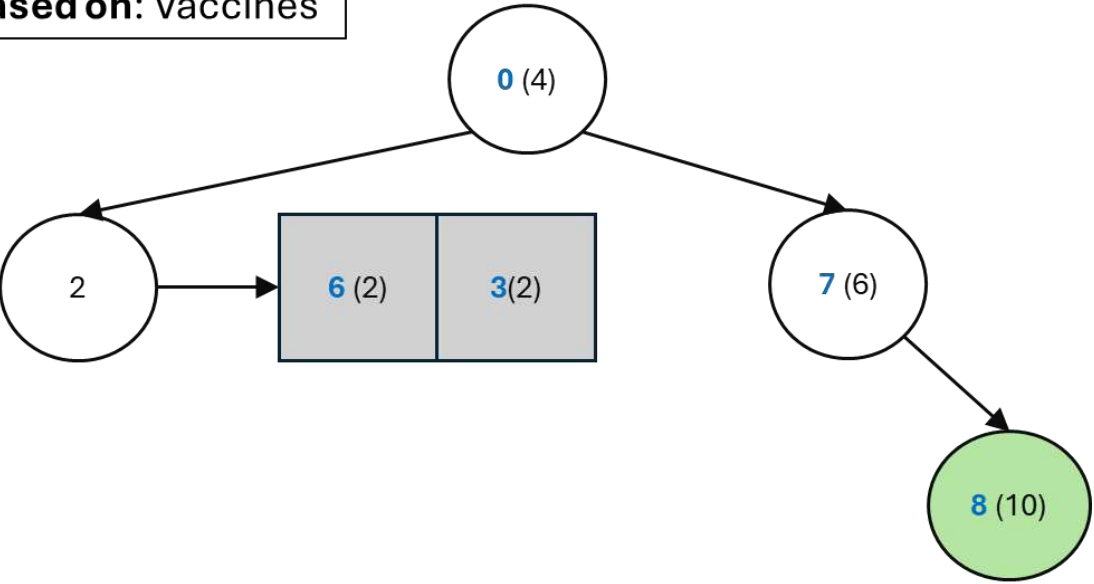
Based on: Age



Based on: Health Condition



Based on: Vaccines

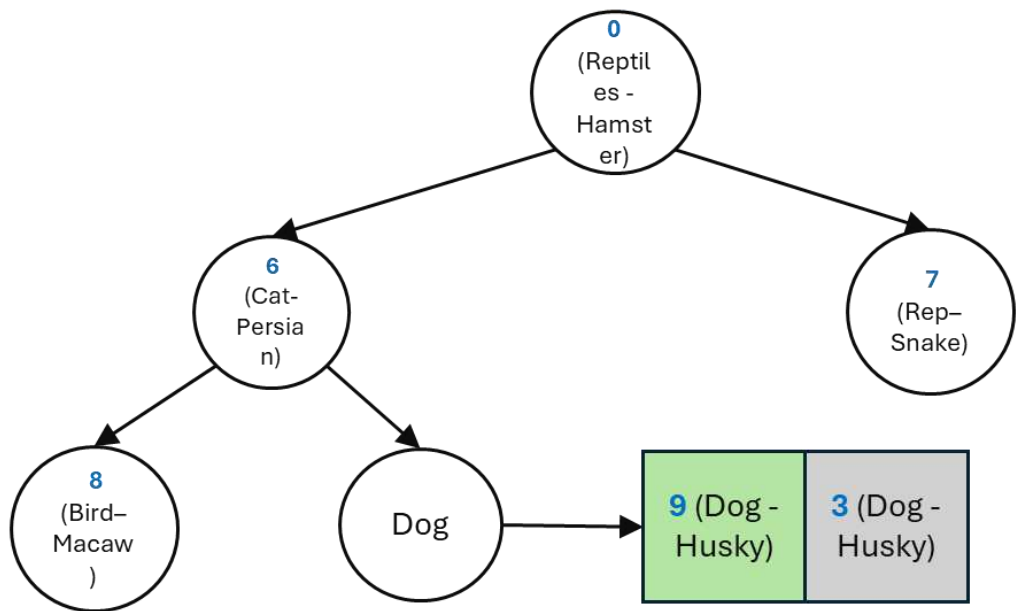


10th Step: Adding another new animal into BST and updating the tree

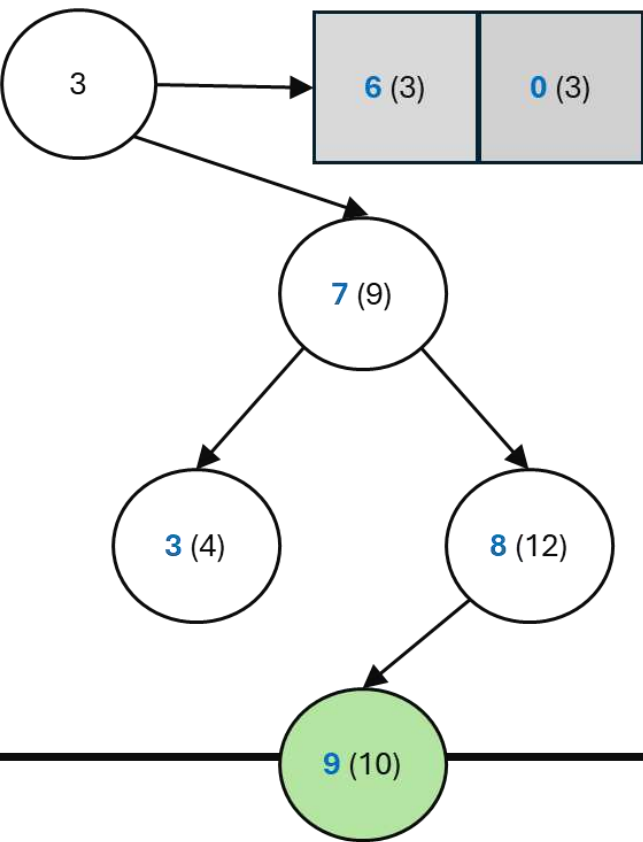
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
9	Dog (Husky)	10	90	7

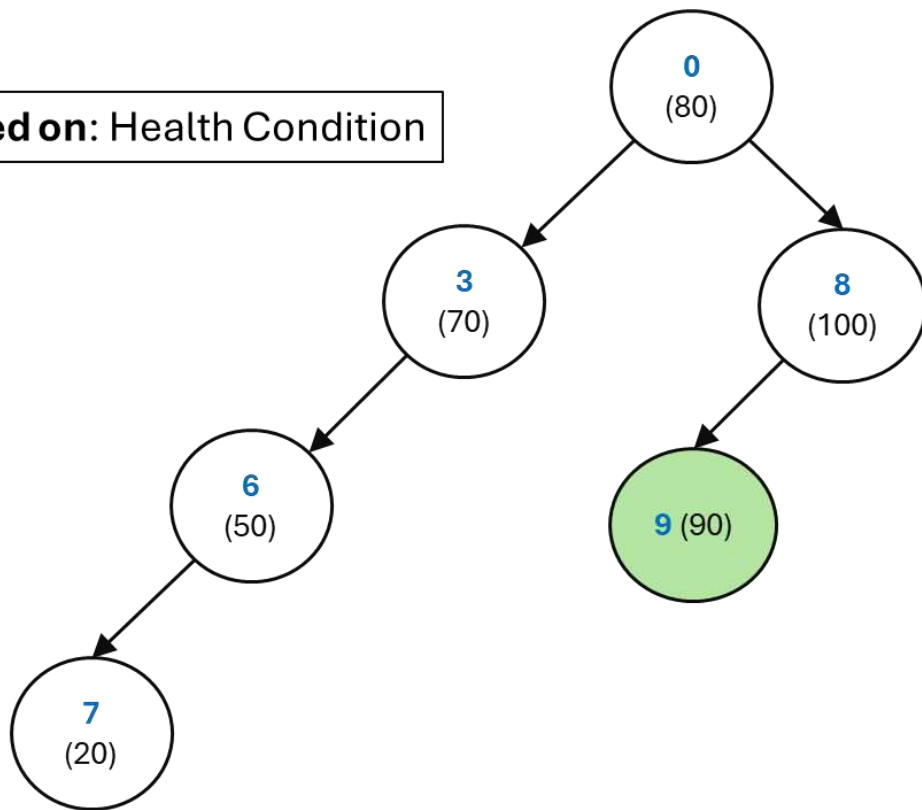
Based on: Species



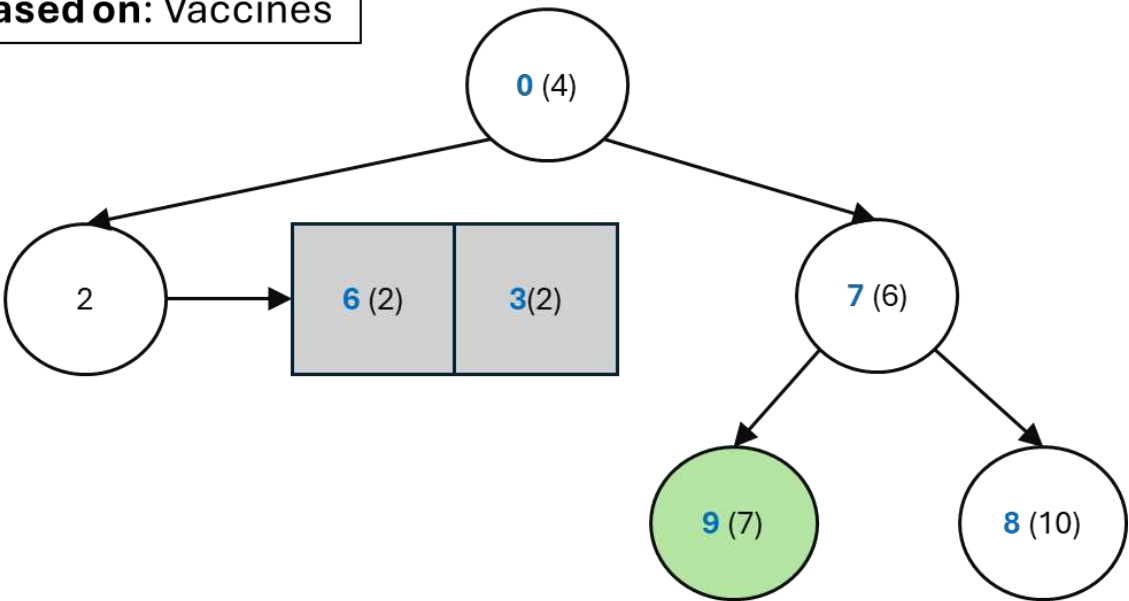
Based on: Age



Based on: Health Condition



Based on: Vaccines

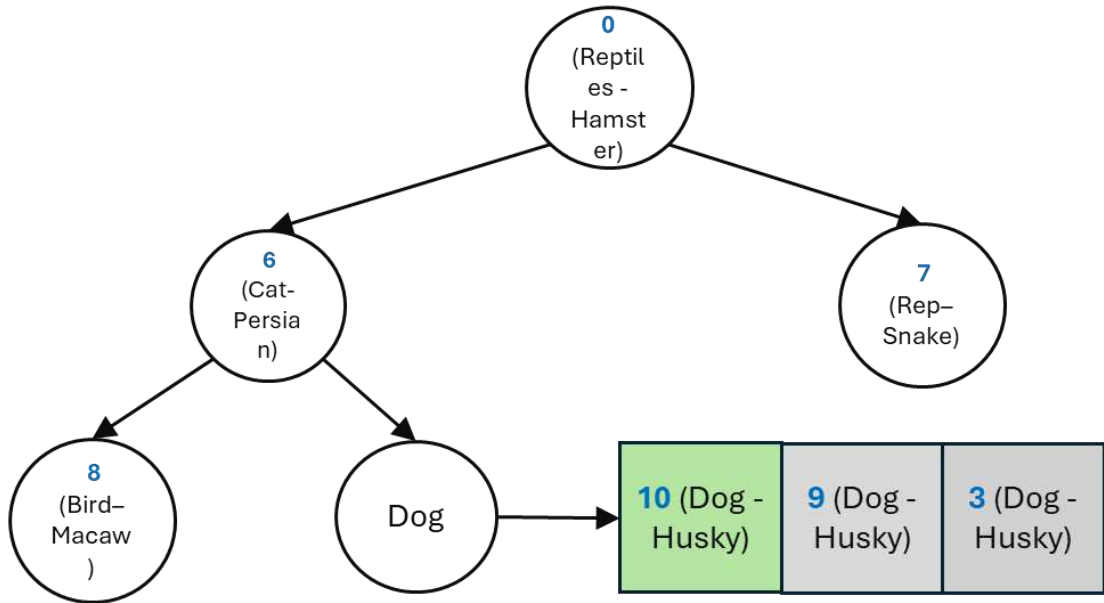


11th Step: Adding another new animal into BST and updating the tree

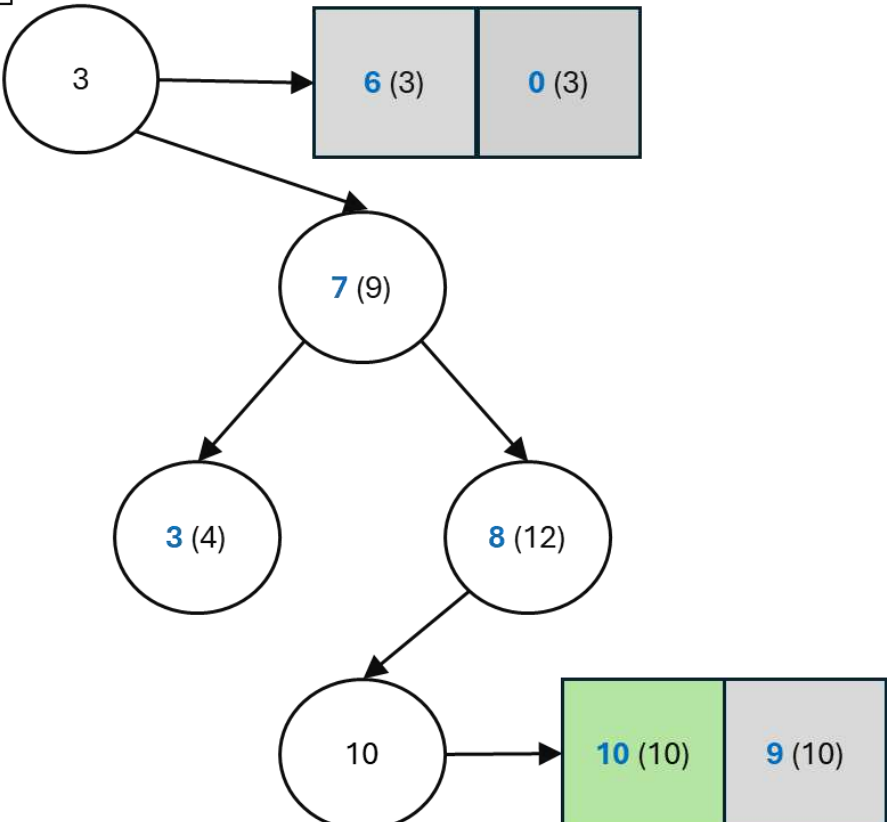
Add a new animal

ID	Species (Breed)	Age	Health condition	Vaccines
10	Dog (Husky)	10	120	2

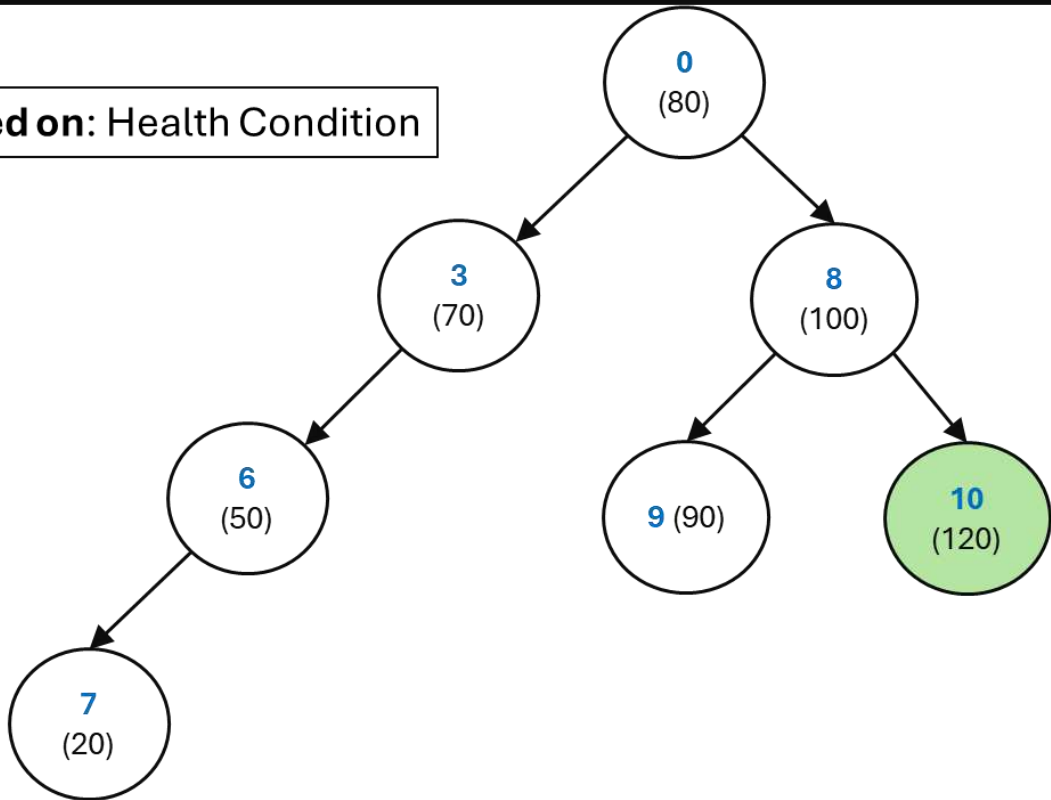
Based on: Species



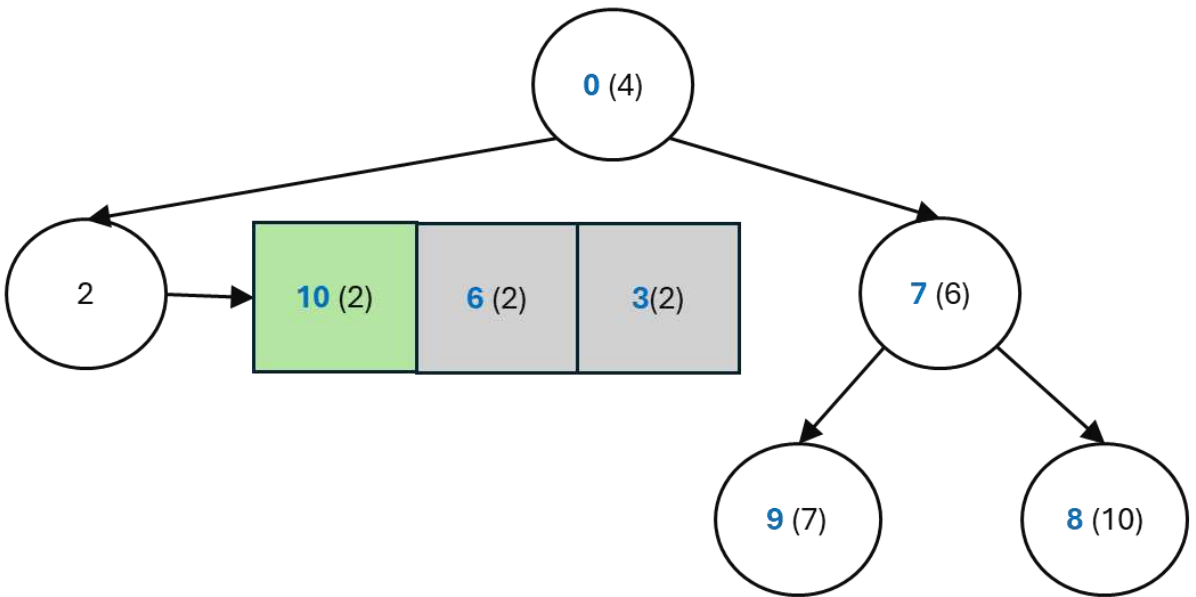
Based on: Age



Based on: Health Condition



Based on: Vaccines

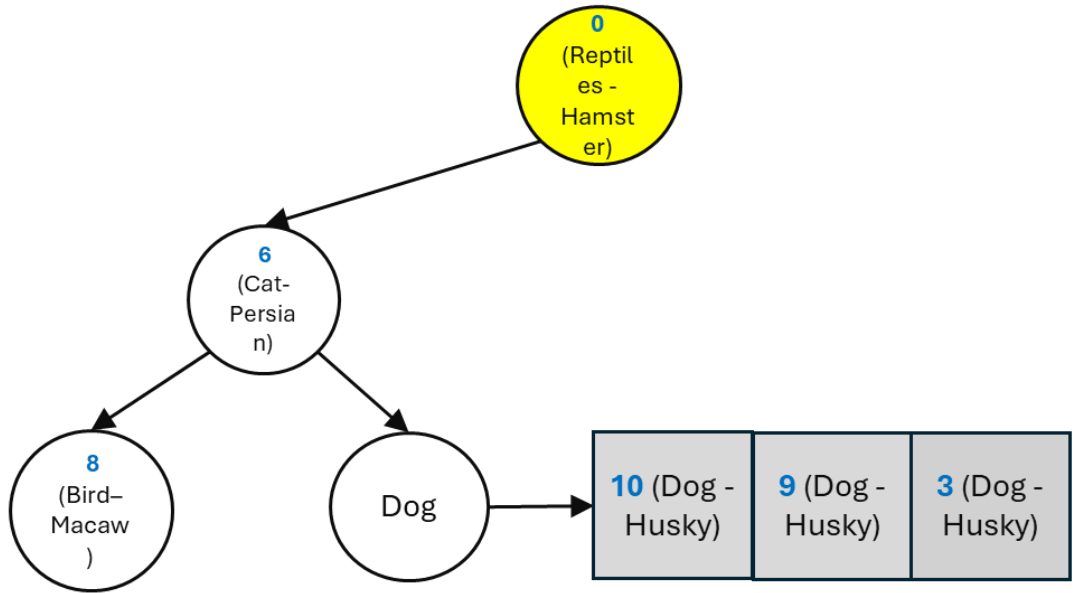


12th Step: Removing an animal from BST and updating the tree

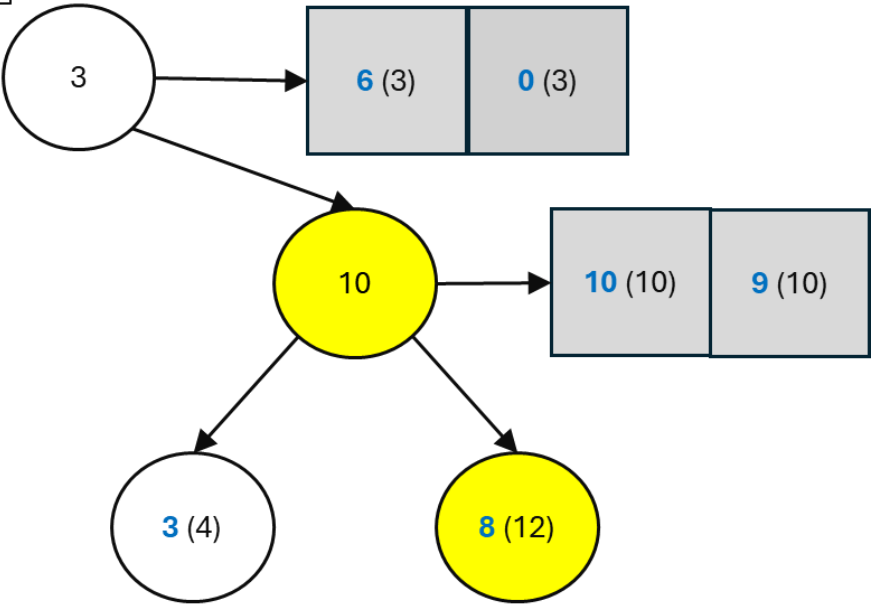
Remove an animal

ID	Species (Breed)	Age	Health condition	Vaccines
7	Reptiles (Snake)	9	20	6

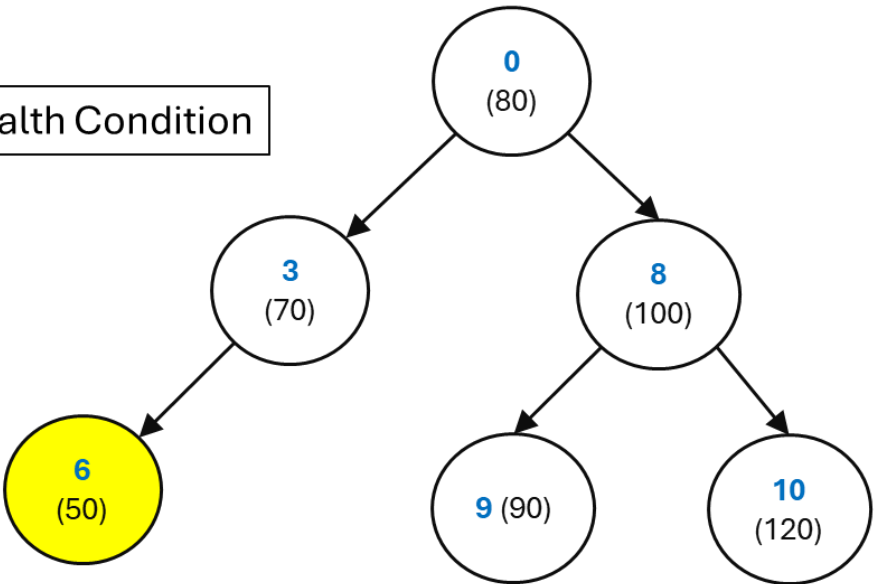
Based on: Species



Based on: Age



Based on: Health Condition



Based on: Vaccines

