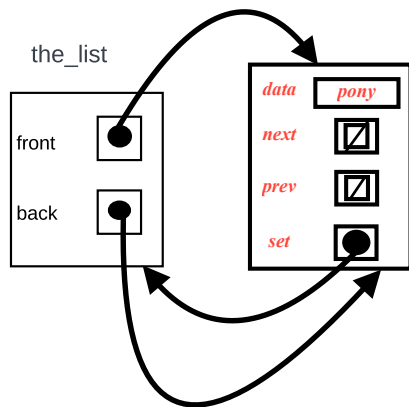


What does the following function call do to this object?  
What does the function return?

`the_list.make_set("pony")`



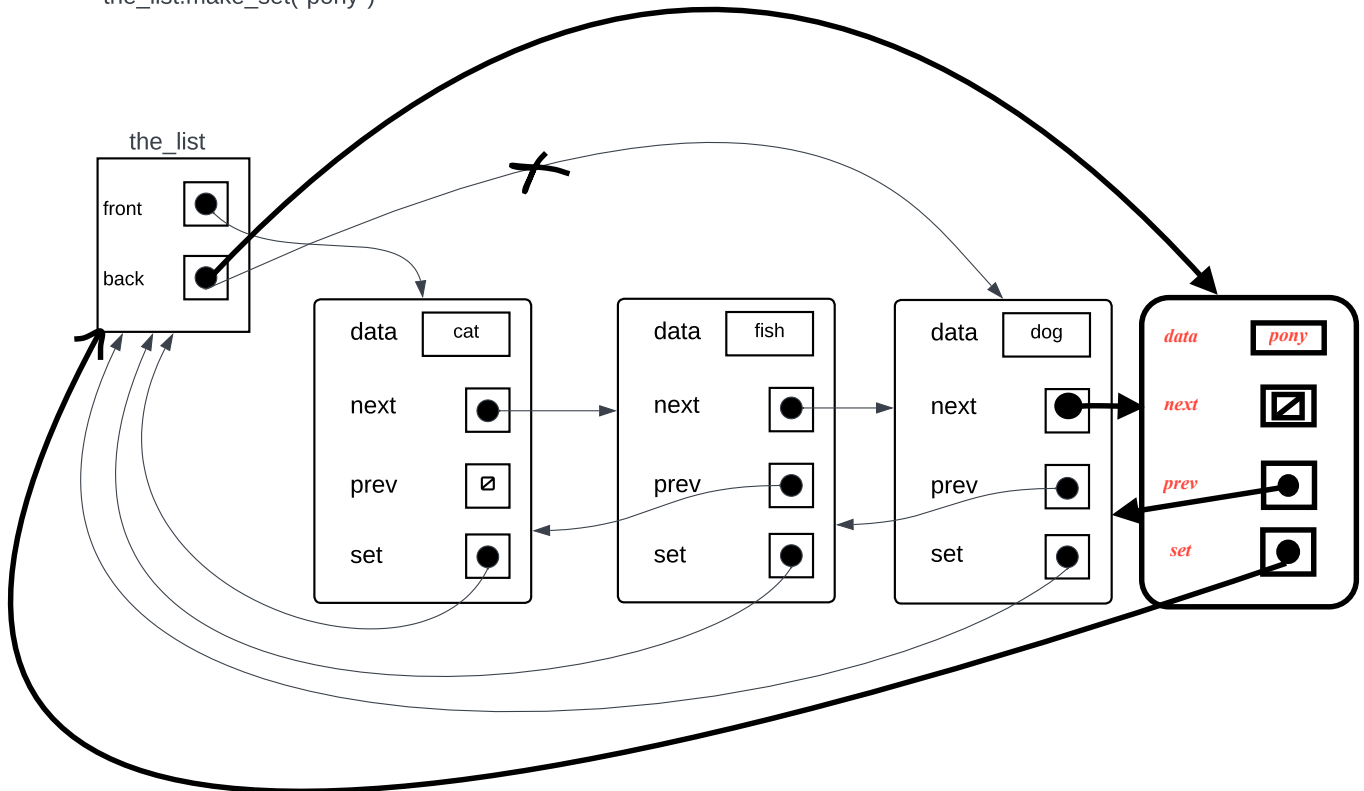
***Tushardeep singh 160427217***  
***Date of completion : 26th Febuary'2023***

*Initially, “the\_list” object is empty, and make\_set() is called on the\_list which creates a node whose ‘data’ attribute is equal to “pony”. The ‘front’ and ‘back’ both reference to new node created. The next and previous node of newly created node will be None i.e. at this point only one node exists in the\_list object.*

*Since, the the\_list is empty initially, make\_set() will return reference to created node.*

What does the following function call do to this object?  
What does the function return?

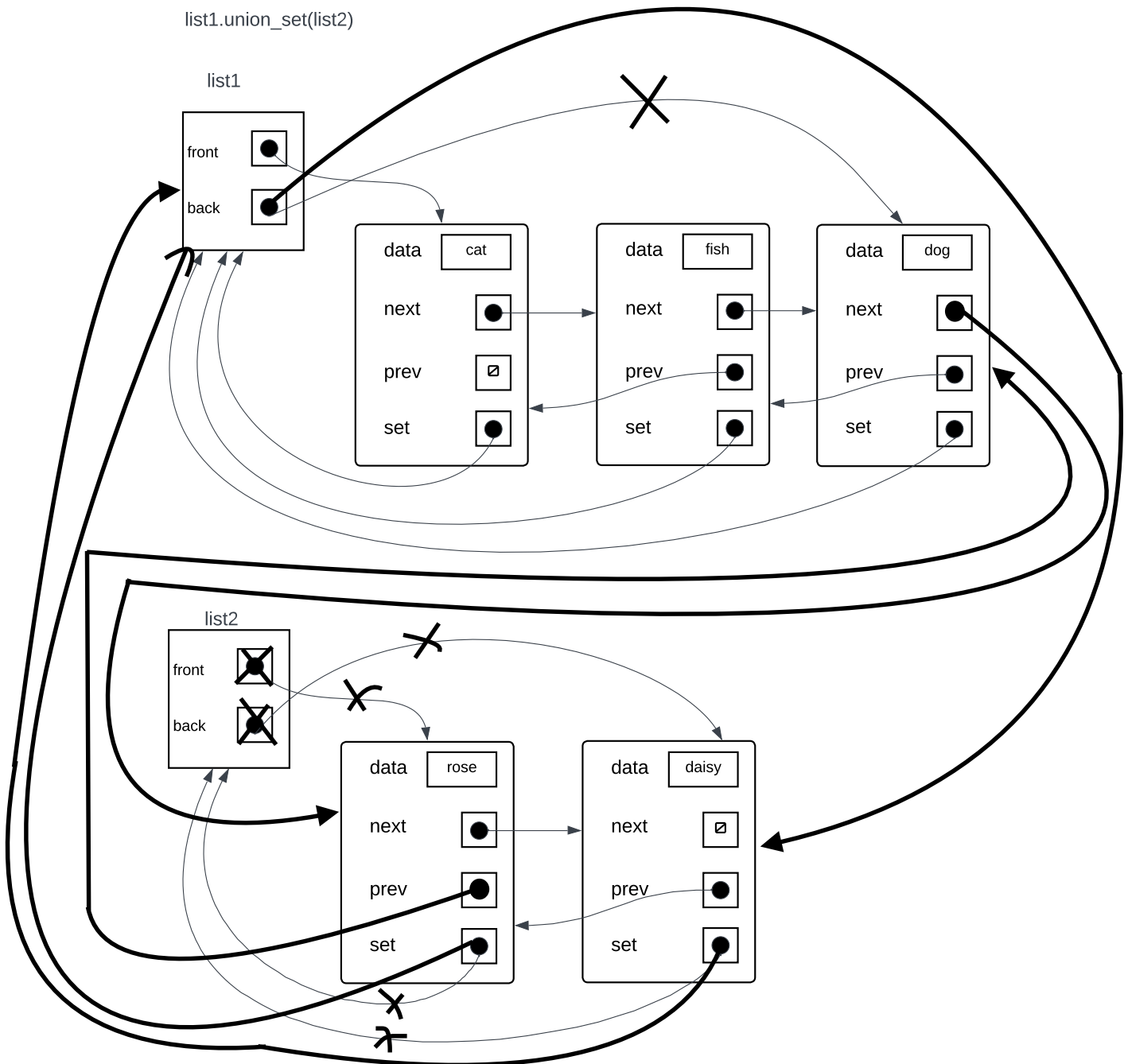
```
the_list.make_set("pony")
```



*The `make_set()` searches the 'data' attributes of nodes in 'the\_list' object, if it finds a matching data, returns false. If no matching data is found, a new node is created with data attribute set to "pony", next attribute set to 'None', previous node attribute pointing to node with data "dog", and back attribute of the\_list object points to newly created node, the next attribute of the node with data 'dog' points to newly created node, the function then returns true indicating new node has been created and added to the set.*

What does the following function call do to these objects?  
What does the function return?

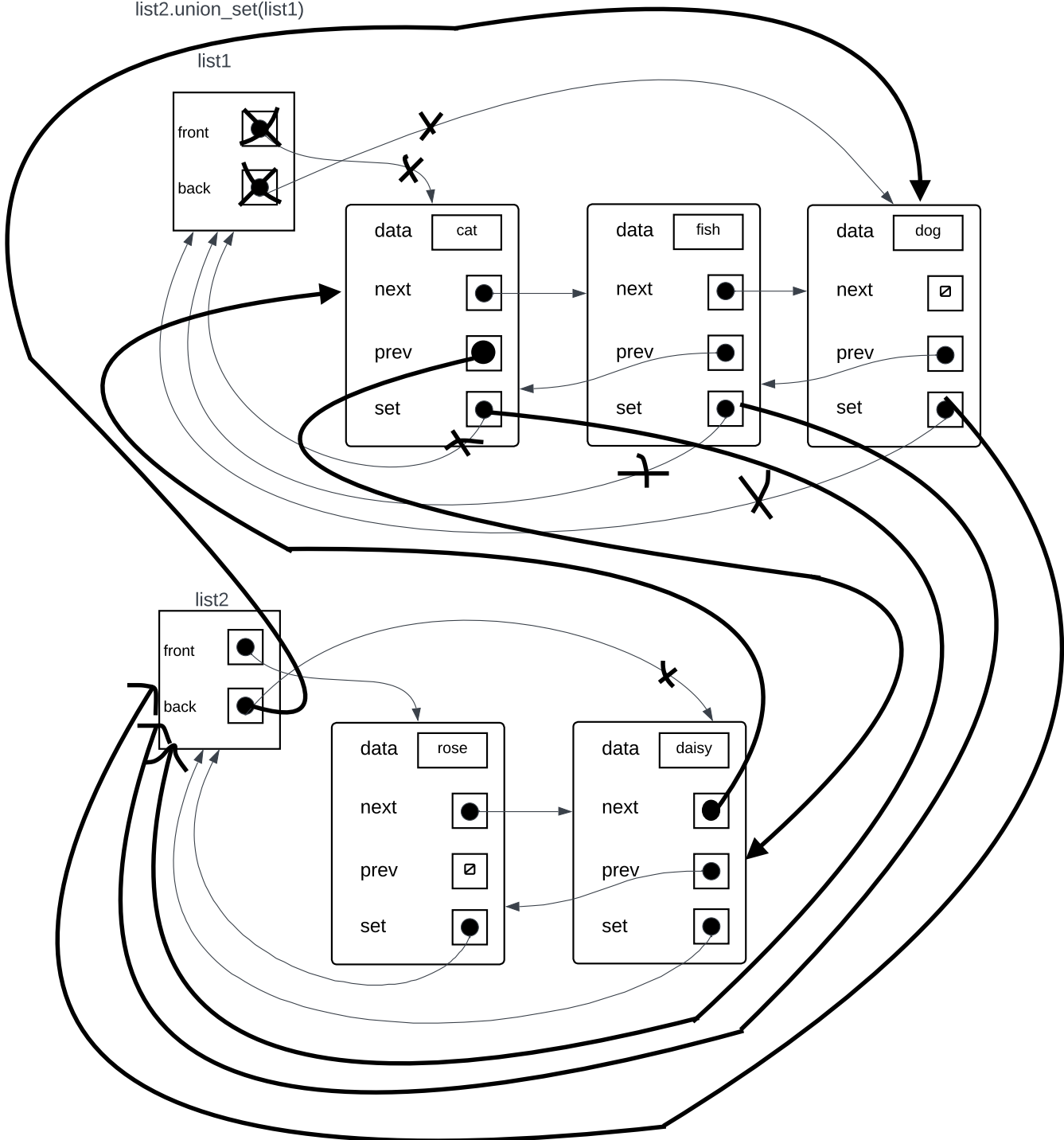
`list1.union_set(list2)`



***union\_set() function call will merge list2 into list1. After function call, all 'set' attributes of nodes in list2 will start pointing towards list1 object. The next attribute of the back of list1 will start pointing to front attribute of list2, previous attribute of front of list2 will start pointing to back of list1. The back attribute of list1 will be updated to back of list2. The front and back attributes of list2 will be set to 'None'. As per the assignment, function will return number of nodes transferred which will be equal to length of list2.***

What does the following function call do to these objects?  
What does the function return?

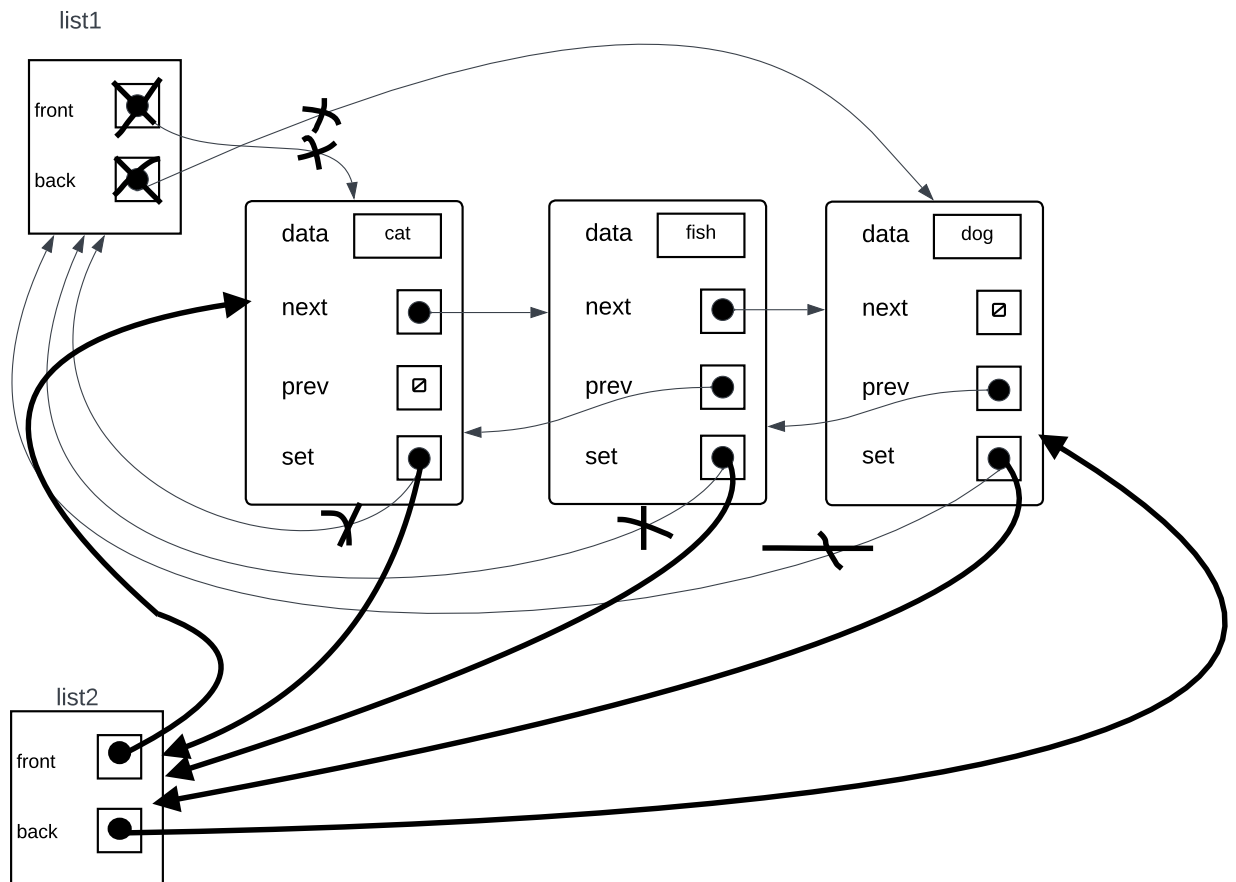
`list2.union_set(list1)`



*union\_set() will merge list1 with list2. After function call, all 'set' attributes of all nodes in list1 will start pointing towards list2 object. The back attribute of list2 object will start pointing to back of list1. The next attribute of back of list2 will start pointing towards front of list1 and 'prev' attribute of front of list1 will start to point towards back of list2. The front and back attributes of list1 object will be set to 'None'. As per the assignment, union\_set() will return number of nodes transferred which is equal to length of list1.*

What does the following function call do to these objects?  
What does the function return?

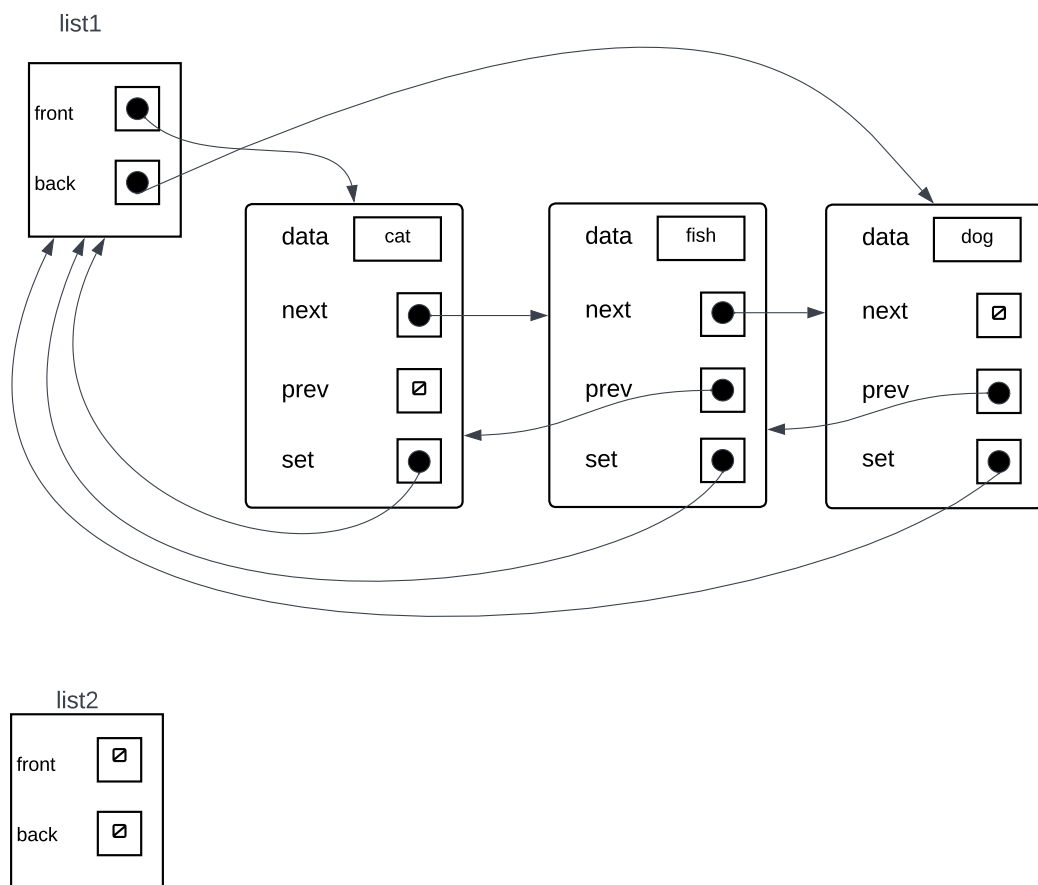
`list2.union_set(list1)`



*`union_set()` will merge `list1` with `list2`. After `union_set()`, all 'set' attributes of all nodes of `list1` will start pointing towards `list2` object. The `front` attribute of `list2` will start pointing towards `front` attribute of `list1`, and `back` attribute of `list2` will start pointing towards `back` attribute of `list1`. The `front` and `back` attributes of `list1` will be set to 'None'. As per assignment, `union_set()` will return number of nodes transferred which is equal to length of `list1`.*

What does the following function call do to these objects?  
What does the function return?

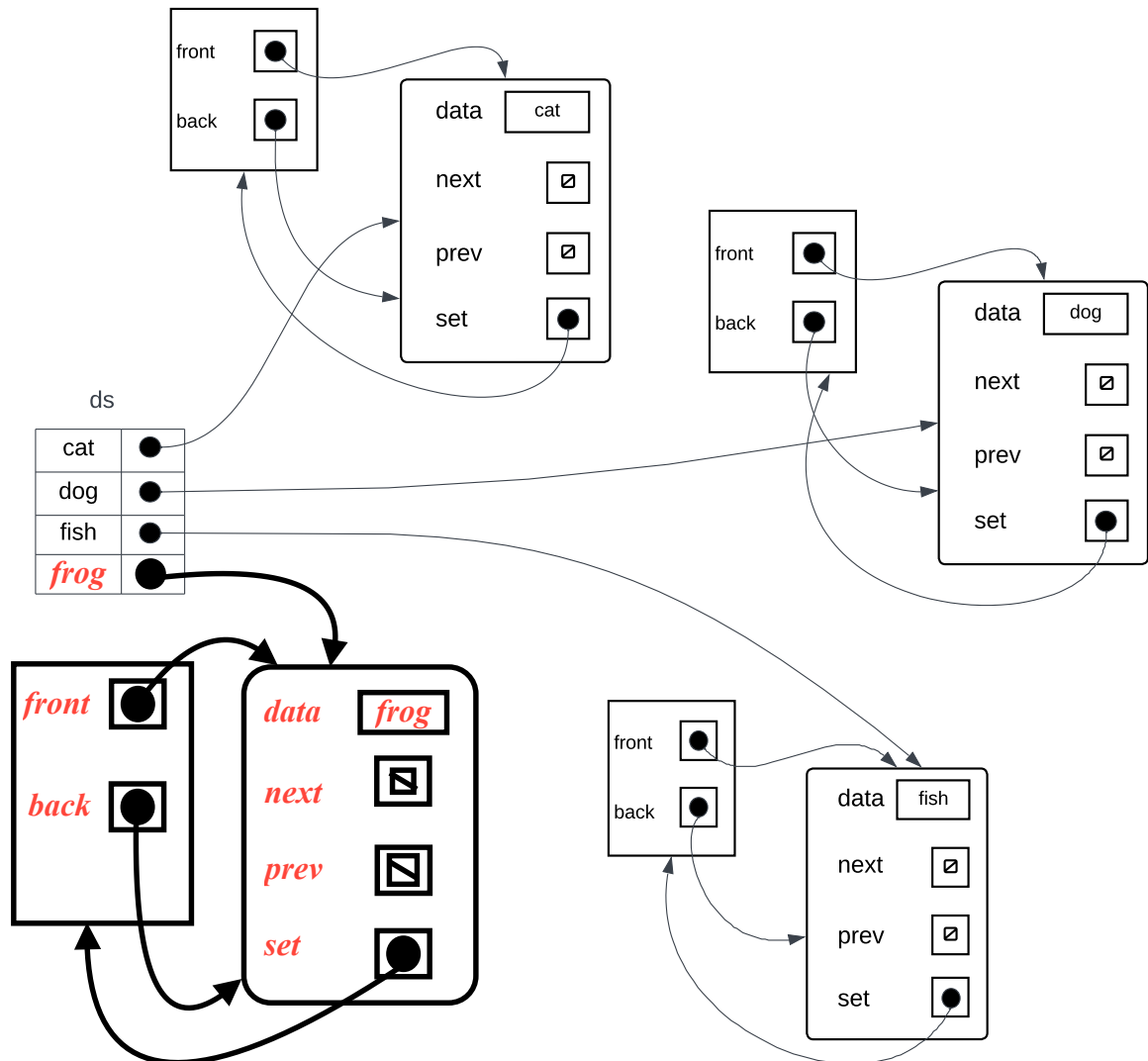
```
list1.union_set(list2)
```



*There will be no change in object structure since list2 contains no nodes. The function will return length of list2 which is 0.*

What does the following function call do to these objects?  
What does the function return?

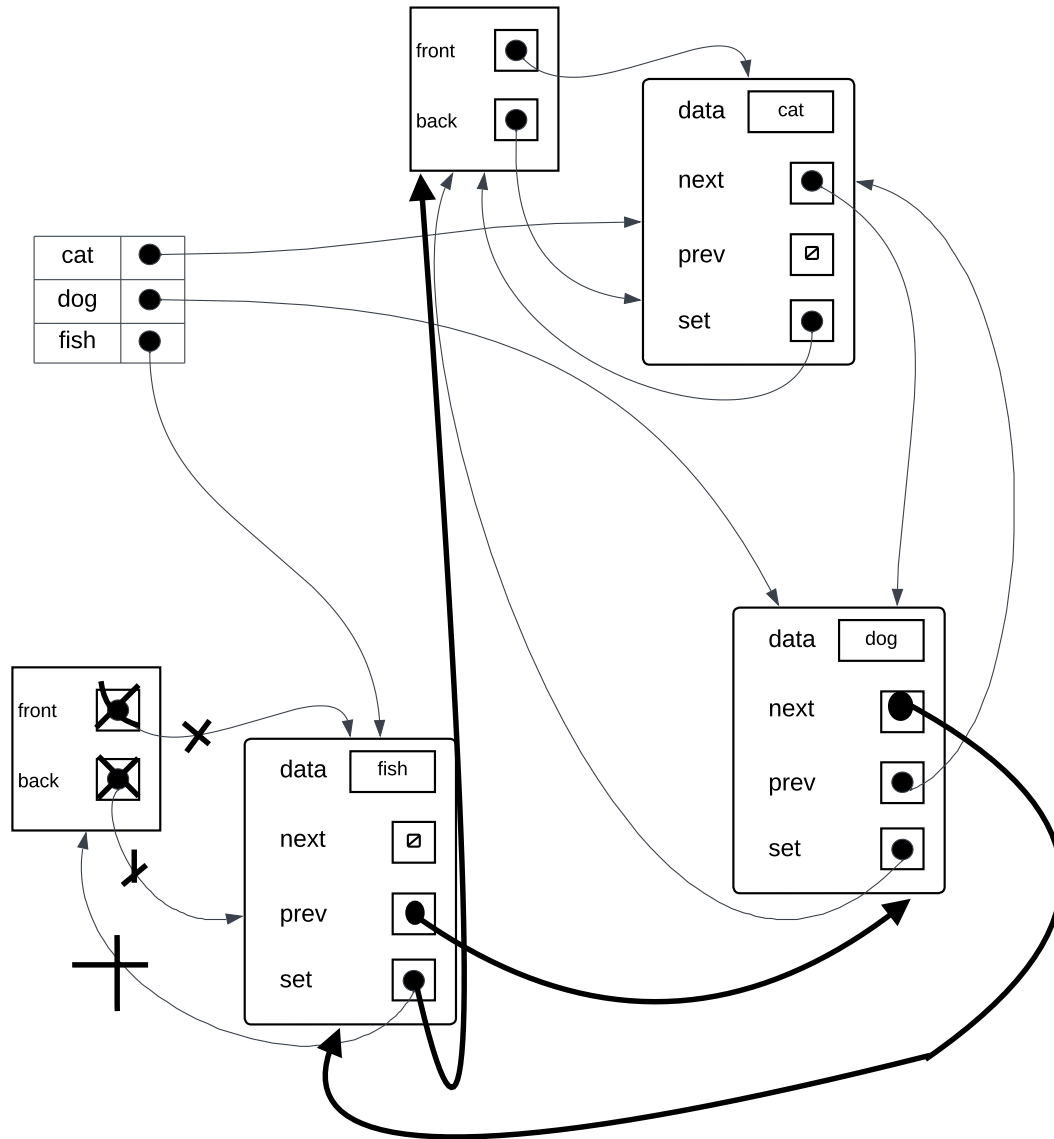
`ds.make_set("frog")`



*make\_set() will first check if "frog" matches any keys in dictionary 'ds', if it does, make\_set() will return false. Else, a new list object will be created with a new node which will be the only node in it with 'data' attribute set to "frog". A new key-value pair will be created in dictionary 'ds' with key "frog" and value pointing to newly created node, make\_set() will then return True.*

What does the following function call do to these objects?  
What does the function return?

```
ds.union_set("fish","dog")
```



*union\_set() will first check if “fish” and “dog” are a part of dictionary, if either of them is not or if they already belong to same set, union\_set() will return False. set with element “dog” has more size than set with element “fish”, so union\_set() will make node with data “fish” point towards the representative of node with data “dog”. The function will then return True.*