Question 1 result:

```
Final finger tables after initial join:
----------Node Id:0------------
Successor: 30  Predecessor: 230
Finger Table for Node 0:
Entry 1: Node 30
Entry 2: Node 30
Entry 3: Node 30
Entry 4: Node 30
Entry 5: Node 30
Entry 6: Node 65
Entry 7: Node 65
Entry 8: Node 160
--------------------------------

----------Node Id:30------------
Successor: 65  Predecessor: 0
Finger Table for Node 30:
Entry 1: Node 65
Entry 2: Node 65
Entry 3: Node 65
Entry 4: Node 65
Entry 5: Node 65
Entry 6: Node 65
Entry 7: Node 110
Entry 8: Node 160
--------------------------------

----------Node Id:65------------
Successor: 110  Predecessor: 30
Finger Table for Node 65:
Entry 1: Node 110
Entry 2: Node 110
Entry 3: Node 110
Entry 4: Node 110
Entry 5: Node 110
Entry 6: Node 110
Entry 7: Node 160
Entry 8: Node 230
--------------------------------

----------Node Id:110------------
Successor: 160  Predecessor: 65
Finger Table for Node 110:
Entry 1: Node 160
Entry 2: Node 160
Entry 3: Node 160
Entry 4: Node 160
Entry 5: Node 160
Entry 6: Node 160
Entry 7: Node 230
Entry 8: Node 0
--------------------------------

----------Node Id:160------------
Successor: 230  Predecessor: 110
Finger Table for Node 160:
Entry 1: Node 230
Entry 2: Node 230
Entry 3: Node 230
Entry 4: Node 230
Entry 5: Node 230
Entry 6: Node 230
Entry 7: Node 230
Entry 8: Node 65
--------------------------------

----------Node Id:230------------
Successor: 0  Predecessor: 160
Finger Table for Node 230:
Entry 1: Node 0
Entry 2: Node 0
Entry 3: Node 0
Entry 4: Node 0
Entry 5: Node 0
Entry 6: Node 30
Entry 7: Node 65
Entry 8: Node 110
--------------------------------
```

Question 2 result:

- Insert keys:

```
Visited Node 0
Key 3 inserted with value 3 at Node 30
Visited Node 30
Visited Node 160
Key 200 inserted with no value at Node 230
Visited Node 65
Visited Node 110
Key 123 inserted with no value at Node 160
Visited Node 110
Visited Node 0
Visited Node 30
Key 45 inserted with value 3 at Node 65
Visited Node 160
Visited Node 65
Key 99 inserted with no value at Node 110
Visited Node 65
Visited Node 230
Visited Node 30
Key 60 inserted with value 10 at Node 65
Visited Node 0
Visited Node 30
Key 50 inserted with value 8 at Node 65
Visited Node 110
Visited Node 0
Visited Node 65
Key 100 inserted with value 5 at Node 110
Visited Node 110
Visited Node 0
Visited Node 65
Key 101 inserted with value 4 at Node 110
Visited Node 110
Visited Node 0
Visited Node 65
Key 102 inserted with value 6 at Node 110
Visited Node 230
Key 240 inserted with value 8 at Node 0
Visited Node 230
Key 250 inserted with value 10 at Node 0
```

- Print keys that stored in each node:

```
Final keys stored in each node (before n2 leaves):
Keys stored in Node 0: (240,8) (250,10)
Keys stored in Node 30: (3,3)
Keys stored in Node 65: (45,3) (50,8) (60,10)
Keys stored in Node 110: (99,None) (100,5) (101,4) (102,6)
Keys stored in Node 160: (123,None)
Keys stored in Node 230: (200,None)
```

- Node6 join and print migrated keys: Used Node 0 as bootstrap node and result is correct (might looks weird)

```
Node 100 is joining using Node 0.
Visited Node 0
Visited Node 65
Visited Node 0
Visited Node 65
Visited Node 110
Visited Node 0
Visited Node 160
migrate 99 from node 110 to node 100
migrate 100 from node 110 to node 100
```

Question 3 result:

```
------------------------------------
Lookup initiated at node Visited Node 0
Key 3 is located at Node 30
30
Visited Node 0
Look-up result of key 3 from node 0 with path [ 0 30 ] value is 3
Visited Node 0
Visited Node 160
Look-up result of key 200 from node 0 with path [ 0 230 ] value is None
Visited Node 0
Visited Node 65
Visited Node 100
Visited Node 110
Look-up result of key 123 from node 0 with path [ 0 160 ] value is None
Visited Node 0
Visited Node 30
Look-up result of key 45 from node 0 with path [ 0 65 ] value is 3
Visited Node 0
Visited Node 65
Look-up result of key 99 from node 0 with path [ 0 100 ] value is None
Visited Node 0
Visited Node 30
Look-up result of key 60 from node 0 with path [ 0 65 ] value is 10
Visited Node 0
Visited Node 30
Look-up result of key 50 from node 0 with path [ 0 65 ] value is 8
Visited Node 0
Visited Node 65
Look-up result of key 100 from node 0 with path [ 0 100 ] value is 5
Visited Node 0
Visited Node 65
Visited Node 100
Look-up result of key 101 from node 0 with path [ 0 110 ] value is 4
Visited Node 0
Visited Node 65
Visited Node 100
Look-up result of key 102 from node 0 with path [ 0 110 ] value is 6
Visited Node 0
Visited Node 160
Visited Node 230
Look-up result of key 240 from node 0 with path [ 0 0 ] value is 8
Visited Node 0
Visited Node 160
Visited Node 230
Look-up result of key 250 from node 0 with path [ 0 0 ] value is 10
```

```
------------------------------------
Lookup initiated at node Visited Node 65
Visited Node 230
Visited Node 0
Key 3 is located at Node 30
30
Visited Node 65
Visited Node 230
Visited Node 0
Look-up result of key 3 from node 65 with path [ 65 30 ] value is 3
Visited Node 65
Visited Node 160
Look-up result of key 200 from node 65 with path [ 65 230 ] value is Non
Visited Node 65
Visited Node 100
Visited Node 110
Look-up result of key 123 from node 65 with path [ 65 160 ] value is Non
Visited Node 65
Visited Node 230
Visited Node 30
Look-up result of key 45 from node 65 with path [ 65 65 ] value is 3
Visited Node 65
Look-up result of key 99 from node 65 with path [ 65 100 ] value is None
Visited Node 65
Visited Node 230
Visited Node 30
Look-up result of key 60 from node 65 with path [ 65 65 ] value is 10
Visited Node 65
Visited Node 230
Visited Node 30
Look-up result of key 50 from node 65 with path [ 65 65 ] value is 8
Visited Node 65
Look-up result of key 100 from node 65 with path [ 65 100 ] value is 5
Visited Node 65
Visited Node 100
Look-up result of key 101 from node 65 with path [ 65 110 ] value is 4
Visited Node 65
Visited Node 100
Look-up result of key 102 from node 65 with path [ 65 110 ] value is 6
Visited Node 65
Visited Node 230
Look-up result of key 240 from node 65 with path [ 65 0 ] value is 8
Visited Node 65
Visited Node 230
Look-up result of key 250 from node 65 with path [ 65 0 ] value is 10
```

```
Lookup initiated at node Visited Node 100
Visited Node 230
Visited Node 0
Key 3 is located at Node 30
30
Visited Node 100
Visited Node 230
Visited Node 0
Look-up result of key 3 from node 100 with path [ 100 30 ] value is 3
Visited Node 100
Visited Node 160
Look-up result of key 200 from node 100 with path [ 100 230 ] value is None
Visited Node 100
Visited Node 110
Look-up result of key 123 from node 100 with path [ 100 160 ] value is None
Visited Node 100
Visited Node 230
Visited Node 30
Look-up result of key 45 from node 100 with path [ 100 65 ] value is 3
Visited Node 100
Visited Node 230
Visited Node 65
Look-up result of key 99 from node 100 with path [ 100 100 ] value is None
Visited Node 100
Visited Node 230
Visited Node 30
Look-up result of key 60 from node 100 with path [ 100 65 ] value is 10
Visited Node 100
Visited Node 230
Visited Node 30
Look-up result of key 50 from node 100 with path [ 100 65 ] value is 8
Visited Node 100
Visited Node 230
Visited Node 65
Look-up result of key 100 from node 100 with path [ 100 100 ] value is 5
Visited Node 100
Look-up result of key 101 from node 100 with path [ 100 110 ] value is 4
Visited Node 100
Look-up result of key 102 from node 100 with path [ 100 110 ] value is 6
Visited Node 100
Visited Node 230
Look-up result of key 240 from node 100 with path [ 100 0 ] value is 8
Visited Node 100
Visited Node 230
Look-up result of key 250 from node 100 with path [ 100 0 ] value is 10
```

Question 4 result:

```
Now let node 65 (n2) leave the network...
migrate 45 from node 65 to node 100
migrate 50 from node 65 to node 100
migrate 60 from node 65 to node 100
Node 65 has left the network.

Finger table for n0 after n2 leaves:
----------Node Id:0------------
Successor: 30  Predecessor: 230
Finger Table for Node 0:
Entry 1: Node 30
Entry 2: Node 30
Entry 3: Node 30
Entry 4: Node 30
Entry 5: Node 30
Entry 6: Node 100
Entry 7: Node 100
Entry 8: Node 160
--------------------------------


Finger table for n1 after n2 leaves:
----------Node Id:30------------
Successor: 100  Predecessor: 0
Finger Table for Node 30:
Entry 1: Node 100
Entry 2: Node 100
Entry 3: Node 100
Entry 4: Node 100
Entry 5: Node 100
Entry 6: Node 100
Entry 7: Node 100
Entry 8: Node 160
--------------------------------


Key distribution after n2 leaves:
Keys stored in Node 0: (240,8) (250,10)
Keys stored in Node 30: (3,3)
Keys stored in Node 110: (101,4) (102,6)
Keys stored in Node 160: (123,None)
Keys stored in Node 230: (200,None)
Keys stored in Node 100: (45,3) (50,8) (60,10) (99,None) (100,5)
```

Question 5 result: I didn’t do that