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1  """
2  Assignment 1: RIP protocol
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4  Timer main program
5  """
6  import random, time
7
8  class RTimer:
9      PRINT_TIMEOUT = 0
10     PERIODIC_TIMEOUT = 1
11     ENTRY_TIMEOUT = 2
12     GARBAGE_TIMEOUT = 3
13     ENTRIES_TIMEOUT = 4
14     GARBAGES_TIMEOUT = 5
15     def __init__(self, base):
16         self._timeout = base
17         self._time_logs = [-1.0, -1.0, -1.0, -1.0, -1.0, -1.0]
18
19     def get_print_timeout(self):
20         """ How often to print routing table """
21         return self._timeout * 1/2
22
23     def get_periodic_timeout(self):
24         """ From config, Ripv2 value 30 +- (0,5) """
25         return self._timeout * (1-random.uniform(-1/5, 1/5))
26
27     def get_entry_timeout(self):
28         """ Expiry of a routing entry. Ripv2 value 180 """
29         return self._timeout * 6
30
31     def get_garbage_timeout(self):
32         """ Delete expired entry delay. Ripv2 value 120 """
33         return self._timeout * 4
34
35     def get_entry_check_timeout(self):
36         """ Router periodic check expired entries """
37         return 1 #self._timeout / 5
38
39     def get_garbage_check_timeout(self):
40         """ Router periodic check expired garbage """
41         return 1 # self._timeout / 5
42
43     def reset_timer(self, mode):
44         self._time_logs[mode] = time.time()
45
46     def is_expired(self, mode, curr_time, ttl=None):
47         """ Check time log """
48         curr_time = curr_time.timestamp()
49         if ttl is not None:
50             self._time_logs[mode] = ttl
51         if self._time_logs[mode] == -1:
52             return True
53
54         timeout_value = [self.get_print_timeout, self.get_periodic_timeout,
55                         self.get_entry_timeout, self.get_garbage_timeout,
56                         self.get_entry_check_timeout, self.get_garbage_check_timeout]
57         time_elapsed = curr_time - self._time_logs[mode]
58         return time_elapsed ≥ timeout_value[mode]()

```