

```
1  #include <string>
2  #include "galaxy.h"
3  // Class Planet is a node in the route graph. It contains a sequence
4  // of edges plus additional fields to allow implementation of
5  // Dijkstra's shortest-path algorithm.
6  class Planet {
7  public:
8      Planet(const std::string& name) : name(name) {}
9      void add(Edge* e) { edges.push_back(e); }
10
11     // reset() clears the fields set by Dijkstra's algorithm so the
12     // algorithm may be re-run with a different origin planet.
13     void reset() { predecessor = nullptr; best_leg = Leg(); }
14
15     // search() computes the shortest path from the Planet to each of the
16     // other planets and returns the furthest planet by travel time.
17     Planet* search(PriorityQueue<Planet, int>*(Planet*, Planet*)>& queue);
18
19     // make_itinerary() builds the itinerary with the earliest arrival
20     // time from this planet to the given destination planet.
21     Itinerary* make_itinerary(Planet* destination);
22
23     // arrival_time() is the time to arrive at this planet from the
24     // origin planet that was used to compute the most recent search().
25     Time arrival_time() const { return best_leg.arrival_time; }
26
27     // Debug-friendly output.
28     void dump(Galaxy* galaxy);
29
30     // Functions for priority queue:
31     int get_priority() { return priority; }
32     void set_priority(int new_priority) { priority = new_priority; }
33     static int compare(Planet* left, Planet* right) {
34         return Leg::compare(left->best_leg, right->best_leg);
35     }
36     const std::string name;
37 private:
38     // relax_neighbors(): for each neighboring planet of this planet,
39     // determine if the route to the neighbor via this planet is faster
40     // than the previously-recorded travel time to the neighbor.
41     void relax_neighbors(PriorityQueue<Planet, int>*(Planet*, Planet*)>& queue);
42
43     // edges shows the connections between this planet and it's
44     // neighbors. See class Edge.
45     std::vector<Edge*> edges;
46
47     // For Dijkstra's algorithm:
48     Planet* predecessor;
49     Leg best_leg;
50     int priority;
51 };
```