Networks Routing Assignment Tests

NOTE: Project utilizes two-way edges not directional edges

Part 1 - Setup and calculating cost of a packet [30 Marks]
 Get path function was tested using the provided example router setup and was used to search for every node which all returned the correct cost and path as shown below.

Start: a End: a Path: a Cost: 0 Start: a End: b Path: a->b Cost: 7 Start: a End: c Path: a->c Cost: 9 Start: a End: d Path: a->c->d Cost: 20 Start: a End: e Path: a->c->f->e Cost: 20 Start: a End: f Path: a->c->f Cost: 11

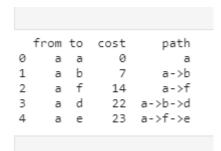
• Part 2 - Print routing table for router [30 Marks]

Print routing table function was implemented using the pandas dataframe as referenced in the brief. Function was called for router "a" below.

	from	to	cost	path
0	a	а	0	a
1	a	b	7	a->b
2	а	C	9	a->c
3	а	f	11	a->c->f
4	а	d	20	a->c->d
5	а	е	20	a->c->f->e

• Part 3 - Remove router [10 Marks]

Remove router function was implemented removes the router and any related edges from our graph. Seen below is the output provided by removing the c router from our network.



• Part 4 - Multiple Routers [20 Marks]

Multiple routers using a shared graph was implemented, each with their own calculated routing table. Removing a router successfully clears it from all routing tables.

```
router = Router('a', graph)
router_two = Router('b', graph)
router.print_routing_table()
 from to cost
  aa 0
                 a
1
   a b
         7
                 a->b
   ас
         9
                 a->c
   a f 11
              a->c->f
   a d
        20
               a->c->d
   a e
        20 a->c->f->e
router_two.print_routing_table()
 from to cost
               path
  ba 7
                 b->a
 b b
         0
1
                 b
                b->c
2
 b c 10
3
  b f
         12
              b->c->f
   b d
         15
                 b->d
   b e
         21 b->c->f->e
router.remove router('c')
 from to cost
              path
0
  a a
        0
               a
   a b
         7
1
               a->h
   a f
              a->f
2
         14
   a d
3
        22 a->b->d
        23 a->f->e
   a e
router_two.print_routing_table()
 from to cost
               path
   b a
         7
               b->a
   b b
          0
              b
1
2
   b f 21 b->a->f
  b d 15
3
             b->d
   b e 21 b->d->e
```

• Nice little extras [10 Marks]

I chose to implement NetworkX graph visualizations into my assignment. By calling graph.print_graph() you get an image of your router network as shown below.

