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Project 1: `uk.json` Project 1 Output

The following is the output from using the `uk.json` file. This assumes that `uk.json` is in the same directory as the client and server JavaScript files.

Section 1: Network tests

In one shell the command below is used.

```
node railway_network.js
```

In another shell the command below is used

```
node client_network.js uk.json
```

The output is below.

```
NETWORK Tests

===Network TEST=1=NETWORK=NAME===
United Kingdom Railway System

===Network TEST=2=GETTING=ROUTES=ARRAY===
There are 14 routes on this network
The type of the routes is object

===Network TEST=3=ROUTE=NAMES===
[
  'East Coast Main Line',
  'West Coast Main Line',
  'Great Western Railway',
  'Network South West',
  'South Western Main Line',
  'Cherwell Valley Line',
  'Great Eastern Main Line',
  'High Speed 1',
  'Midland Main Line',
  'Wales Main Line',
  'Central Wales Line',
  'West Scotland Line',
  'Edinburgh Main Line',
  'Glasgow-Edinburgh'
]

===Network TEST=4=ROUTE=NAMES=TOSTRING===
```

```
East Coast Main Line,
West Coast Main Line,
Great Western Railway,
Network South West,
South Western Main Line,
Cherwell Valley Line,
Great Eastern Main Line,
High Speed 1,
Midland Main Line,
Wales Main Line,
Central Wales Line,
West Scotland Line,
Edinburgh Main Line,
Glasgow-Edinburgh

===Network TEST=5=Total_Stations===
There are 56 stations in this network.

===Network TEST=6=FIND=LONGEST=ROUTE===
Longest route is: ROUTE:West Coast Main Line(blue)
STATIONS:
1 London 0 miles
2 St Albans 60 miles
3 Northampton 130 miles
4 Birmingham 195 miles
5 Wrexham 265 miles
6 Liverpool 305 miles
7 Manchester 340 miles
8 Lancaster 390 miles
9 Kendall 450 miles
10 Carlisle 525 miles
11 Glasgow 635 miles
Total Route Distance: 635 miles
```

Section 2: Route summary tests

In one shell the command below is used.

```
node railway_routeSummary.js
```

In another shell the command below is used

```
node client_routeSummary.js uk.json
```

The output is below.

```
ROUTE SUMMARY Tests

===Route Summary TEST=1=ROUTE=SUMMARY===
Routes Summary
==============
East Coast Main Line - London          to Edinburgh      - 500 miles
West Coast Main Line - London          to Glasgow        - 635 miles
Great Western Railway - London          to Fishguard      - 325 miles
Network South West    - Birmingham     to Truro          - 345 miles
South Western Main Line - London         to Plymouth       - 245 miles
Cherwell Valley Line - Reading         to Birmingham     - 125 miles
Great Eastern Main Line - London         to Kings Lynn     - 170 miles
High Speed 1         - London          to Paris          - 295 miles
Midland Main Line    - Birmingham      to York           - 240 miles
Wales Main Line      - Cardiff         to Holyhead       - 235 miles
Central Wales Line   - Cardiff         to Aberystwyth    - 175 miles
West Scotland Line   - Stranraer       to Fort William   - 270 miles
Edinburgh Main Line  - Edinburgh       to John O'Groats  - 323 miles
Glasgow-Edinburgh    - Stranraer       to Edinburgh      - 185 miles

===Route Summary TEST=2=SORT=ROUTE=BY=NAME=(ASC)===
Routes Summary
==============
Central Wales Line   - Cardiff         to Aberystwyth    - 175 miles
Cherwell Valley Line - Reading         to Birmingham     - 125 miles
East Coast Main Line - London          to Edinburgh      - 500 miles
Edinburgh Main Line  - Edinburgh       to John O'Groats  - 323 miles
Glasgow-Edinburgh    - Stranraer       to Edinburgh      - 185 miles
Great Eastern Main Line - London         to Kings Lynn     - 170 miles
Great Western Railway - London          to Fishguard      - 325 miles
High Speed 1         - London          to Paris          - 295 miles
Midland Main Line    - Birmingham      to York           - 240 miles
Network South West   - Birmingham      to Truro          - 345 miles
South Western Main Line - London         to Plymouth       - 245 miles
Wales Main Line      - Cardiff         to Holyhead       - 235 miles
West Coast Main Line - London          to Glasgow        - 635 miles
West Scotland Line   - Stranraer       to Fort William   - 270 miles

===Route Summary TEST=3=SORT=ROUTE=BY=NAME=(DESC)===
Routes Summary
==============
West Scotland Line   - Stranraer       to Fort William   - 270 miles
West Coast Main Line - London          to Glasgow        - 635 miles
Wales Main Line      - Cardiff         to Holyhead       - 235 miles
South Western Main Line - London         to Plymouth       - 245 miles
Network South West   - Birmingham      to Truro          - 345 miles
Midland Main Line    - Birmingham      to York           - 240 miles
High Speed 1         - London          to Paris          - 295 miles
Great Western Railway - London          to Fishguard      - 325 miles
Great Eastern Main Line - London         to Kings Lynn     - 170 miles
Glasgow-Edinburgh    - Stranraer       to Edinburgh      - 185 miles
Edinburgh Main Line  - Edinburgh       to John O'Groats  - 323 miles
East Coast Main Line - London          to Edinburgh      - 500 miles
```

```
    Cherwell Valley Line - Reading         to Birmingham    - 125 miles
    Central Wales Line   - Cardiff         to Aberystwyth   - 175 miles


    ===Route Summary TEST=4=SORT=ROUTE=BY=LENGTH=(ASC)===
    Routes Summary
    ==============
    Cherwell Valley Line - Reading         to Birmingham    - 125 miles
    Great Eastern Main Line - London          to Kings Lynn    - 170 miles
    Central Wales Line   - Cardiff         to Aberystwyth   - 175 miles
    Glasgow-Edinburgh    - Stranraer       to Edinburgh     - 185 miles
    Wales Main Line      - Cardiff         to Holyhead      - 235 miles
    Midland Main Line    - Birmingham      to York          - 240 miles
    South Western Main Line - London          to Plymouth      - 245 miles
    West Scotland Line   - Stranraer       to Fort William  - 270 miles
    High Speed 1         - London          to Paris         - 295 miles
    Edinburgh Main Line  - Edinburgh       to John O'Groats - 323 miles
    Great Western Railway - London           to Fishguard     - 325 miles
    Network South West   - Birmingham      to Truro         - 345 miles
    East Coast Main Line - London          to Edinburgh     - 500 miles
    West Coast Main Line - London          to Glasgow       - 635 miles


    ===Route Summary TEST=5=SORT=ROUTE=BY=LENGTH=(DESC)===
    Routes Summary
    ==============
    West Coast Main Line - London          to Glasgow       - 635 miles
    East Coast Main Line - London          to Edinburgh     - 500 miles
    Network South West   - Birmingham      to Truro         - 345 miles
    Great Western Railway - London           to Fishguard     - 325 miles
    Edinburgh Main Line  - Edinburgh       to John O'Groats - 323 miles
    High Speed 1         - London          to Paris         - 295 miles
    West Scotland Line   - Stranraer       to Fort William  - 270 miles
    South Western Main Line - London          to Plymouth      - 245 miles
    Midland Main Line    - Birmingham      to York          - 240 miles
    Wales Main Line      - Cardiff         to Holyhead      - 235 miles
    Glasgow-Edinburgh    - Stranraer       to Edinburgh     - 185 miles
    Central Wales Line   - Cardiff         to Aberystwyth   - 175 miles
    Great Eastern Main Line - London          to Kings Lynn    - 170 miles
    Cherwell Valley Line - Reading         to Birmingham    - 125 miles
```

Section 3: Route tests

In one shell the command below is used.

```
node railway_route.js
```

In another shell the command below is used

```
node client_route.js uk.json "Great Western Railway" "Cardiff" "Reading"
```

Great Western Railway is the route used in the first three tests. Cardiff and Reading are the two stops for the extra credit test. The extra credit test determines if there is any single route that contains both of those stops. If there is such a route, it returns a string specifying that route and the number of stops and distance traversed getting from the first to the second stop. Note that the route (if any) found in the extra credit test need not be the same route as the route specified as a command line argument.

In this example there is a route connecting Cardiff and Reading but it is just a coincidence that route, Great Western Railway, is also a command-line argument. The output is below.

```
ROUTE Tests

===Route TEST=1=GET=ROUTE===
Found: Great Western Railway

===Route TEST=2=ROUTE=TO=STRING===
ROUTE:Great Western Railway(Magenta)
STATIONS:
1 London 0 miles
2 Reading 35 miles
3 Bath 95 miles
4 Bristol 135 miles
5 Cardiff 180 miles
6 Swansea 235 miles
7 Pembroke 290 miles
8 Fishguard 325 miles
Total Route Distance: 325 miles

===Route TEST=3=ROUTE=DISTANCE===
Distance of Line as calculated: 325

====(OPTIONAL) Route TEST=4=BONUS1=FIND=FROM=TO===
Great Western Railway Cardiff to Reading 3 stops and 145 miles
```