

Aurora Tiffany-Davis
attiffan
CSC 520
HW 2
Readme
9/25/17

Source Code: SearchUSA.java

To Compile: javac SearchUSA.java

To Run: java SearchUSA searchtype srccityname destcityname

Example: java SearchUSA greedy toronto montreal

Example output:

Expanded Nodes:

toronto, ottawa

Expanded Nodes: 2

Nodes in Solution Path:

toronto, ottawa, montreal

Nodes in Path: 3

Total Distance of Solution Path: 401

There is an optional 4th argument, which can take the value “numPath” or “numExpansion”. If one of these is used, the program will only print out a tab character followed by the applicable number, rather than the expected output. This was put in place solely for debugging, as it allowed me to write batch files which put multiple search results into a single file for easy reference. One such batch file:

```
REM @echo off
SET hwDir=C:\Users\la3141\workspace\520_hw2\src
SET assistDir=C:\Users\la3141\Desktop\School\CSC520\HW2\assistSmart

REM compile homework
cd %hwDir%
javac SearchUSA.java

REM establish list of search types
set types=astar greedy uniform

REM establish partial list of cities
set cities=albanyGA albanyNY albuquerque atlanta augusta austin bakersfield baltimore batonRouge beaumont boise boston buffalo calgary charlotte
chattanooga chicago cincinnati cleveland coloradoSprings columbus dayton daytonaBeach denver desMoines elPaso eugene europe ftWorth fresno
grandJunction greenBay greensboro houston indianapolis jacksonville japan kansasCity keyWest lafayette lakeCity laredo lasVegas lincoln littleRock
losAngeles macon medford memphis mexia mexico miami midland milwaukee minneapolis modesto montreal nashville newHaven newOrleans newYork
norfolk oakland oklahomaCity omaha orlando ottawa pensacola philadelphia phoenix pittsburgh pointReyes portland providence provo raleigh redding
reno richmond rochester sacramento salem salinas saltLakeCity sanAntonio sanDiego sanFrancisco sanJose santaFe saultSteMarie savannah seattle
stLouis stamford stockton tallahassee tampa thunderBay toledo toronto tucson tula uk1 uk2 vancouver washington westPalmBeach wichita winnipeg
yuma

REM we are interested in several comparisons
REM Different path from city A to city B versus city B to city A
REM Different # expansions city A to city B versus city B to city A
REM Different path from city A to city B in search 1 versus search 2
REM Different # expansions from city A to city B in search 1 versus search 2

REM Different path from city A to city B in search 1 versus search 2
(for %%a in (%types%) do (
    (for %%b in (%types%) do (
        REM Loop through possible goal cities
        (for %%c in (%cities%) do (
            (for %%d in (%cities%) do (
                IF NOT %%a == %%b (
                    IF NOT %%c == %%d (
                        Echo %%a %%b %%c %%d >> %assistDir%\Algorithm_Path.txt
                        java SearchUSA %%a %%c %%d numPath >> %assistDir%\Algorithm_Path.txt
                        java SearchUSA %%b %%c %%d numPath >> %assistDir%\Algorithm_Path.txt
                        Echo . >> %assistDir%\Algorithm_Path.txt
                    )
                )
            )
        )
    )
)
))
))

REM pause
pause
```