Requirements Analysis

FUN-CITY-LOCS

The program will loosely simulate the Hasting City with four locations: Mayfair, Akina, Stortford lodge, and Mahora.

FUN-OUTSIDE-CITY

A fifth location, Outside City, shall stand for a driver outside the city limits.

FUN-EXITS

The city has four main exits, Karamu Road, Havelock Road, Railway Road and Omahu Road.

FUN-STREETS

Streets and locations are joined in such way that:

* From a location, drivers can traverse to an intersection
* From an intersection, drivers can traverse through a street to an end node (FUN-OUTSIDE-CITY) or another location (FUN-CITY-LOCS).
* Drivers cannot travel from and end node to another location

Streets are treated as ‘*one way streets*’ with ‘*two way streets*’ are treated as two ‘*one way streets*’

* ie location1 is joined to location2 via street1 which is the same street as
* location2 is joined to location1 via street1

FUN-FIVE-DRIVERS

Five drivers, numbered 1 through 5, shall traverse the city, one after the other driver.

FUN-AKINA-COUNT

For each driver there is a counter of how many times they visited Akina. At the end of the run, it will print "Driver n met with John Jamieson x time(s).", where n is the driver’s number and x is the amount of times it visited Akina. If a driver starts on the Akina location, this counts as a time visiting Akina once.

FUN-AKINA-EDGES

If a driver visited Akina three or more times, then an additional line shall be printed stating "This driver needed lots of help!"

If a driver never visits Akina, the additional line shall be printed stating "That passenger missed out!"

If a driver visited Akina one or two times, then no additional line shall be printed.

This extra line shall be the last line printed out for each driver’s iteration. (if applicable)

FUN-START-LOC

A driver may start in any of the four locations listed in FUN-CITY-LOCS. Drivers may not start outside of the city

FUN-ITERATION

A driver will drive from the current Location to one of the possible Locations that can be reached from the original Location.

(Assumption, the Outside city covered in  FUN-OUTSIDE-CITY can also be traveled to under this requirement).

The decision shall be made pseudorandomly based on a seed passed in from the command line, as covered by FUN-ARGS.

FUN-END

The iteration shall end when the driver exits through a FUN-EXIT.

FUN-ARGS

The system shall accept an integer seed from the command line for the pseudorandom number generator.

If no arguments are provided, more than one argument is provided, or the single argument is not an integer, the system shall inform the user and exit.

For example, 123 would continue the program.

While the following would exit:

“ ” (Empty space)

123 123

Foobar

Foobar 123

FUN-OTHER-CITIES

If a driver exits the city via Karamu road, then the program shall display that the driver has gone to Napier. If a driver exits the city via Omahu Road, then the program shall display that the driver has gone to Flaxmere.

(Assumption, the other two exit streets covered by FUN-EXITS, Havelock Road and Railway Road can be also be exited but will not print the additional line.)

FUN-DASHES

After each iteration, it will display on the screen, a line of five dashes shall be printed. This line of dashes shall occur after all information from that iteration has been printed out.

Contradictions and Assumptions

In the original requirements specifications states that for FUN-ARGS

“The system shall accept an integer seed from the command line for the pseudorandom number generator. No other arguments shall be accepted. If no arguments are provided, more than one argument is provided, or the single argument is not an integer, the system shall inform the user and exit.”

This means that the 3rd part, exting if the variable is not an integer and the 2nd part, not accepting any other variables except integers.

The 2nd part will be omitted as covered above in FUN-ARGS.

Final Notes

This system loosely emulates graph theory, with locations and intersections (an intermediary locations) as nodes and streets as edges that are not weighted.

