I.Data Structure Introduction:

1. About Input Data

All our input data is stored in a file named Data. According to the characters of data, we can classify all data files into two parts.

1. Static Data(which means it keeps the same for the same client)

Station\_Zone.txt

Legitimate Threshold.txt

Available Key Word.txt

1. Dynamic Data(which means it always changes every time we run the LiveMum even for the same client)

Incident\_Zone.txt

Incident.txt

Reco Logs

Tracking

2. About Class Identification

(1) class Incident\_Zone: To store data in file Incident\_Zone

Inci, zone

(2)class Station\_Zone: To store data in Station\_Zone.txt

station, zone, time

1. class store: To store the status of unit.(ready or not ready)

II.Functions:

1. dist(station, incident)

Output “time distance” between ‘station’ and ‘incident’.

1. compare(loc1,loc2,inci)

Output a location which is closer to “inci.(loc1 or loc2)”

This function used dist(station, incident) to compare the distances.

1. accu(moveupstation,homestation,inci)= output 1 or 0. (1 means accurate moveup)

This function used compare(loc1,loc2,inci).

1. nearest(Currentlocofunit,AvaiMatrix,inci):

Output the nearest available unit to “ inci”.

This function used dist(station, incident).

1. tofindcurrentlocation()

Output current matrix for all units.

1. tofindhomeandmoveuplocation():

Output a class stored all moveup data.

1. tofindAvaiMatrix(t)

Given a time point t, output the available matrix for all units.

1. durationtimetransfer(t,tt):

Give time t and time tt, output duration from t to tt in miniutes.

1. findtime(t,homestation):

At time t, unit leave homestation, output the time point that the unit come back to its home station.

1. incident\_Matrix(time1,time2):

Output all incident that happened during time1 and time 2.

1. usefulall(duration, moveupstation,homestation,Currentlocofunit,AvaiMatrix,INCIDENT):

Output a list (a,b,c), a,b,c is in Boolean to show if this move up is legitimate, productive and accurate.

This function used:

nearest(Currentlocofunit,AvaiMatrix,INCIDENT[i])

dist(moveupstation,INCIDENT[i])<=dist(local3,INCIDENT[i])

accu(moveupstation,homestation,INCIDENT[i])

1. run(t,moveupstation,homestation):

To find out the input augment for function usefulall and run the usefulall function and output its value.

This function used:

findtime(t,homestation)

durationtimetransfer(t,tt)

tofindcurrentlocation()

tofindAvaiMatrix(t)

incident\_Matrix(t,tt)

usefulall(duration,moveupstation,homestation,Currentlocofunit,AvaiMatrix,INCIDENT)

1. allmoveups():

The prior function only considers one move up recommendation. This function adds a loop so that it is in a view of all move up recommendations.

It outputs the statistical results of number of different move ups.

This function used:

tofindhomeandmoveuplocation()[0]

tofindhomeandmoveuplocation()[1]

run(t,moveupstation,homestation)