CS 180 Homework 3

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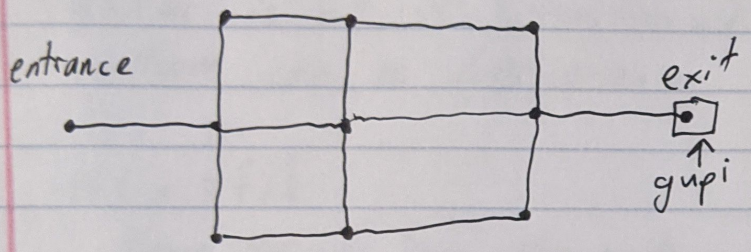
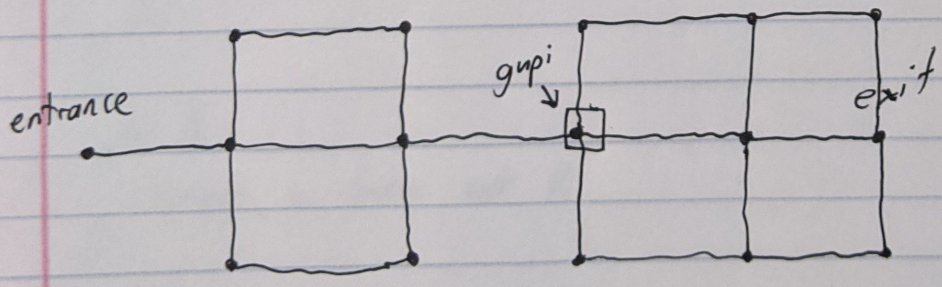
a) It is <u>not</u> always possible to go through the city. If, for example, the gupi is sitting at the exit intersection then it is impossible to go through the city:



As you can see by the above visual, no matter which path is taken, the gupi will kidnap anyone who tries to leave through the exit.

Even if the gupi is not at the exit, if it is sitting at a point that would be necessary to access in order to get to the exit, it would still be impossible:



In this example city, the gupi is not at the exit intersection, but it is still impossible to get through the city without running into the gupi.

c)
```
e = entrance to city
f = exit from city
R = {e}                    (Both R and S are
S = {e}                     sets of intersections)
while (set R is not empty){
   Choose the last element of set R and call it x
   if(car is not at intersection x){
      Move car to intersection x
   }
   if(x = f){
      Leave the city from the exit
      Stop the algorithm
   }
   if(x leads to an intersection not in set S){
      Choose such intersection y
      Add y to set S
      if(evil gupi is not at intersection y){
         Add y to the end of set R
      }
   }
   else {
      Remove x from set R
   }
}
Leave the city from the entrance
```