**The problem: myTaxiService**

**Part I**

The government of a large city aims at optimizing its taxi service. In particular, it wants to: i) simplify the access of passengers to the service, and ii) guarantee a fair management of taxi queues.

Passengers can request a taxi either through a web application or a mobile app. The system answers to the request by informing the passenger about the code of the incoming taxi and the waiting time.

Taxi drivers use a mobile application to inform the system about their availability and to confirm that they are going to take care of a certain call.

The system guarantees a fair management of taxi queues. In particular, the city is divided in taxi zones (approximately 2 km2 each). Each zone is associated to a queue of taxis. The system automatically computes the distribution of taxis in the various zones based on the GPS information it receives from each taxi. When a taxi is available, its identifier is stored in the queue of taxis in the corresponding zone.

When a request arrives from a certain zone, the system forwards it to the first taxi queuing in that zone. If the taxi confirms, then the system will send a confirmation to the passenger. If not, then the system will forward the request to the second in the queue and will, at the same time, move the first taxi in the last position in the queue.

Besides the specific user interfaces for passengers and taxi drivers, the system offers also programmatic interfaces to enable the development of additional services (e.g., taxi sharing) on top of the basic one.

**Part II**

A user can reserve a taxi by specifying the origin and the destination of the ride. The reservation has to occur at least two hours before the ride. In this case, the system confirms the reservation to the user and allocates a taxi to the request 10 minutes before the meeting time with the user.

**Part III**

A user can enable the taxi sharing option. This means that he/she is ready to share a taxi with others if possible, thus sharing the cost of the ride. In this case the user is required to specify the destination of all rides which he/she wants to

share with others. If others are willing to start a shared ride from the same zone going in the same direction, then the system arranges the route for the taxi driver, defines the fee for all persons sharing the taxi and informs the passengers and the taxi driver.