Design application report

# Buildings

* 1. **Functionalities needing to be met**
* Need to facilitate the various types of buildings based on the needs of the citizen
  + Residential
  + Industrial
  + Commercial
  + Landmarks
* Based on each unit created, it must be supplied with the various utilities in order to make it a fully functional building unit
* All types of buildings, be it units or whole buildings should be able to be treated equally to ensure that the interaction between them and other classes are uniform.
  1. **Design pattern used (members)**
* The composite pattern was used:
  + Leaves: Residential, Industrial, Commercial, Landmarks
  + Component: Buildings
  + Composite: BuildingUnit
  + Client: Client
  1. **Explanation as to why that pattern was used**

Seeing that all buildings, despite being a whole building or a unit, would need to preform and be treated equally by other structures, the composite design pattern came to mind. This pattern highlights the tree-like structure implemented for the various types of buildings and their children and allow the user to treat both the individual objects and the composition of the objects uniformly. This will therefore allow each leaf (Residential, Industrial, Commercial, Landmarks) and every composite (BuildingUnit) to gain access to resources equally, to be created by citizens equally, to behave equally and contribute towards their function of both housing and providing a place of business, production or tourism (contributing toward citizen satisfaction) as well as contributing towards the economic development of the city themselves (roles in Government and Bank). Additionally, the BuildingIterator is a structure designed to assist the BuildingsUnit’s functionality by iterating through a list to find a specific building needed in a timely manner.