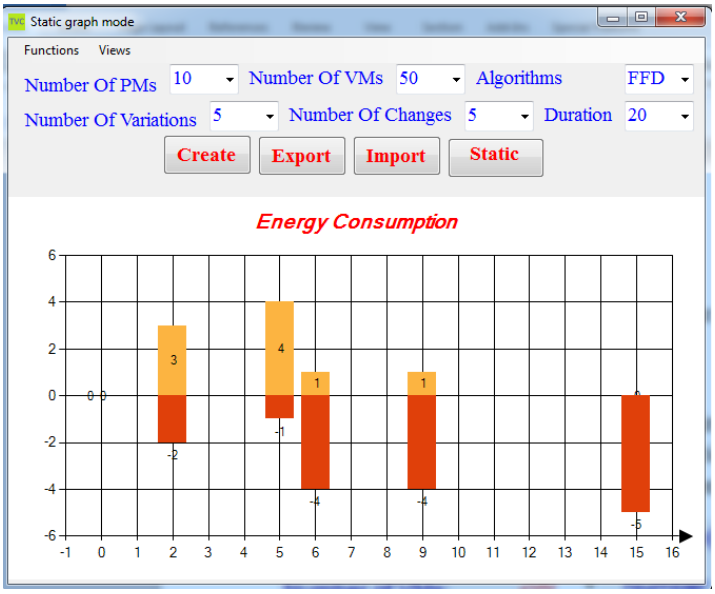
# DATA CENTRE SIMULATOR

**Author: Vu Tri Chau**

**Supervisor: Maolin Tang**

## Contents

# 1 How to use application

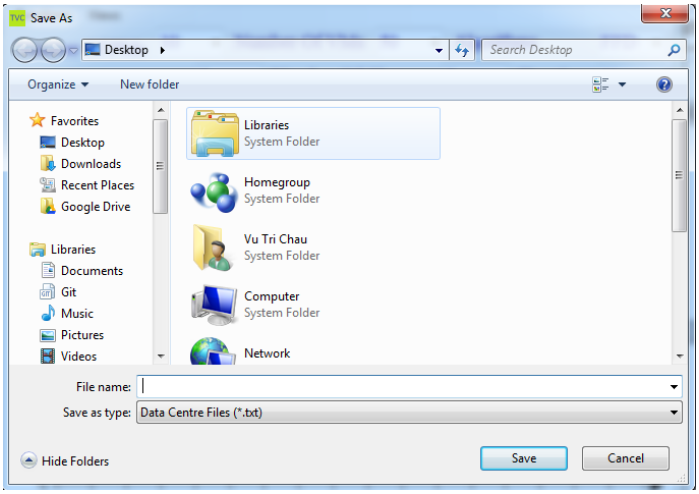



## 1.1 Create

This function is used to randomize data in which the data centre changes in time. Parameters: the number of physical machines/ virtual machines in the data centre, observation duration, number of variations in the observation duration, and number of changes for every variation (total number of virtual machines online and offline), algorithms to add a new virtual machine to the data centre (default = FFD).

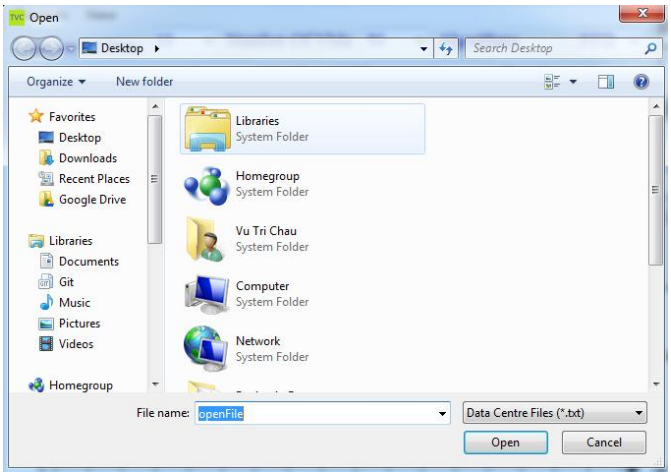
## 1.2 Export

This function is used to export the data centre configuration to a file to import it later then.



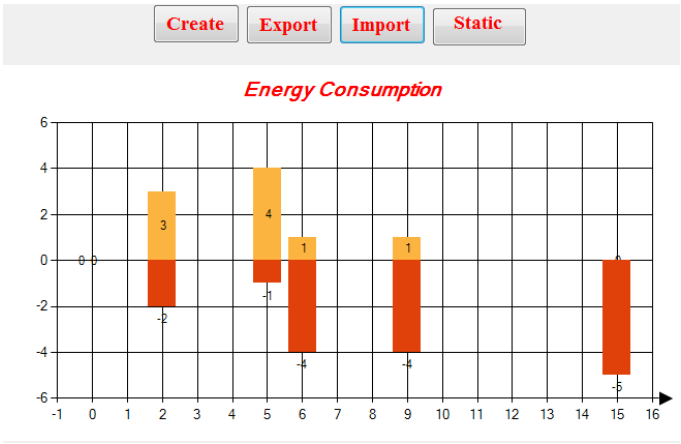
## 1.3 Import

This function is used to import the data centre configuration from a file.



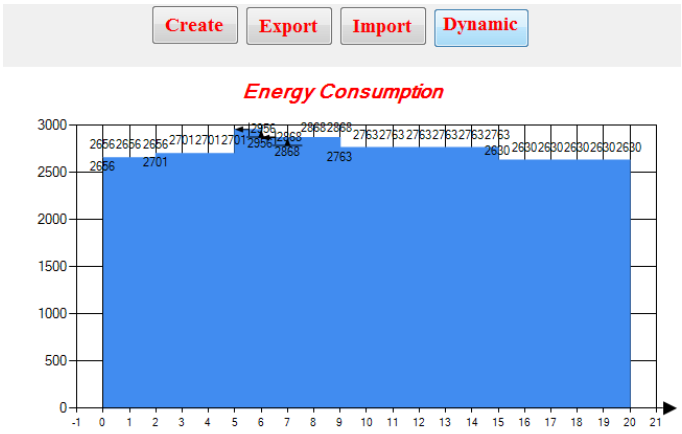

## 1.4 Static graph mode

This function is used to display the data centre configuration by static graph: how many machines online/offline at different times.



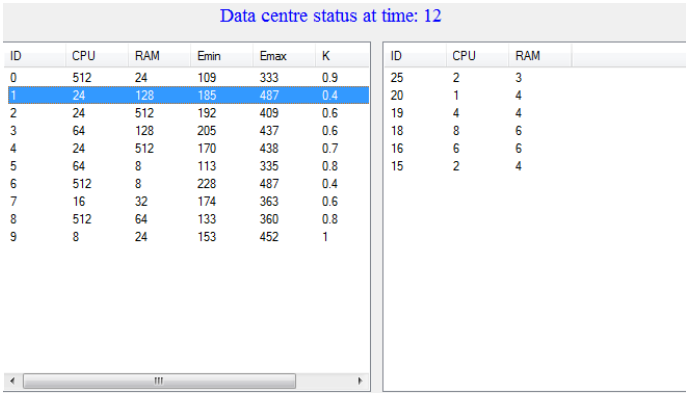

## 1.5 Dynamic graph mode

This function is used to display the data centre configuration by dynamic graph: how many machines online/offline at different times.



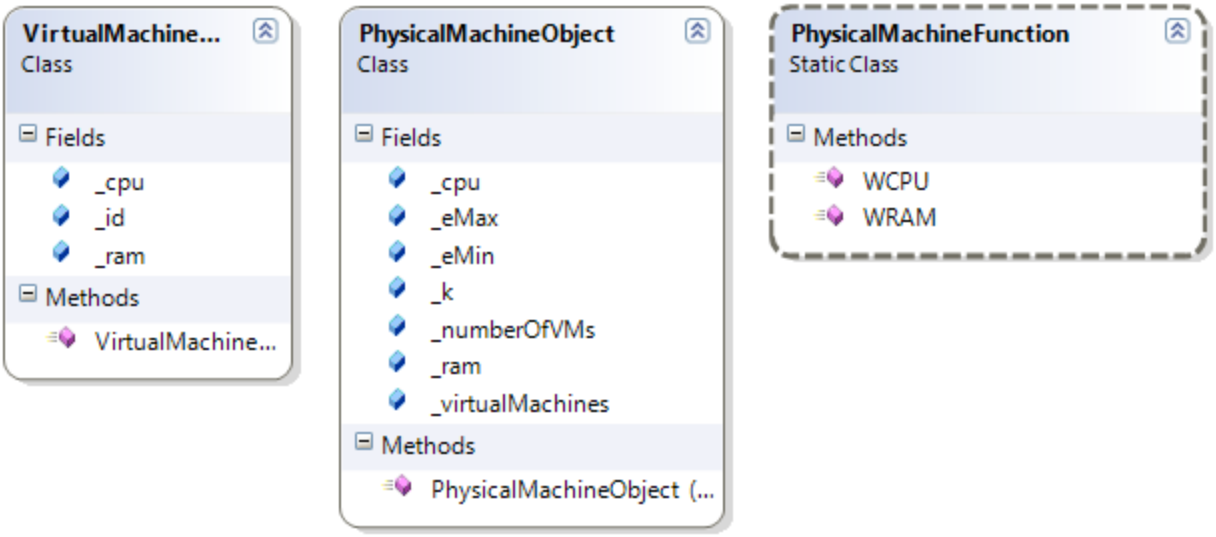

## 1.6 List view mode

This function is used to display the data centre configuration at a specific time by list view.

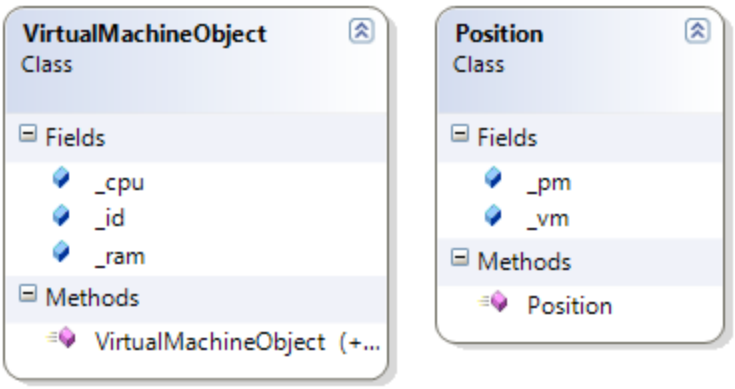



# 2 How to use thread-part code

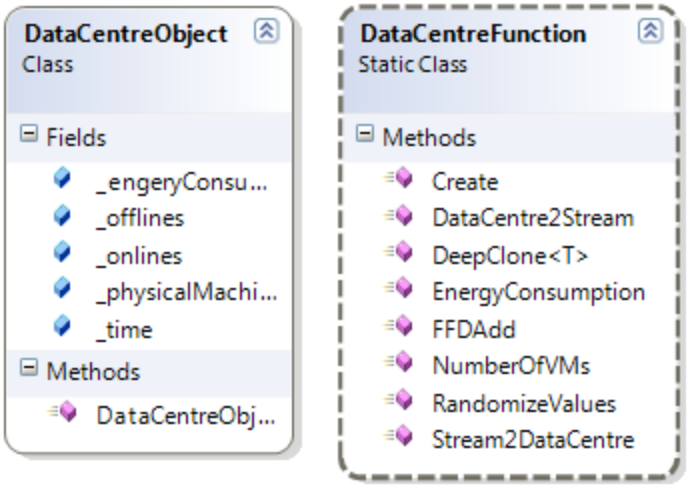
I have fixed all the bugs that I have found till this moment.




The virtual machine object class is used to define a virtual machine (id, cpu, ram).
The physical machine object class is used to define a physical machine object (cpu, ram, maximum energy, minimum energy, list of virtual machines (_virtualmachines).
The physical machine function is used to use the physical machine object to calculate total CPU/RAM on all the number of virtual machines.

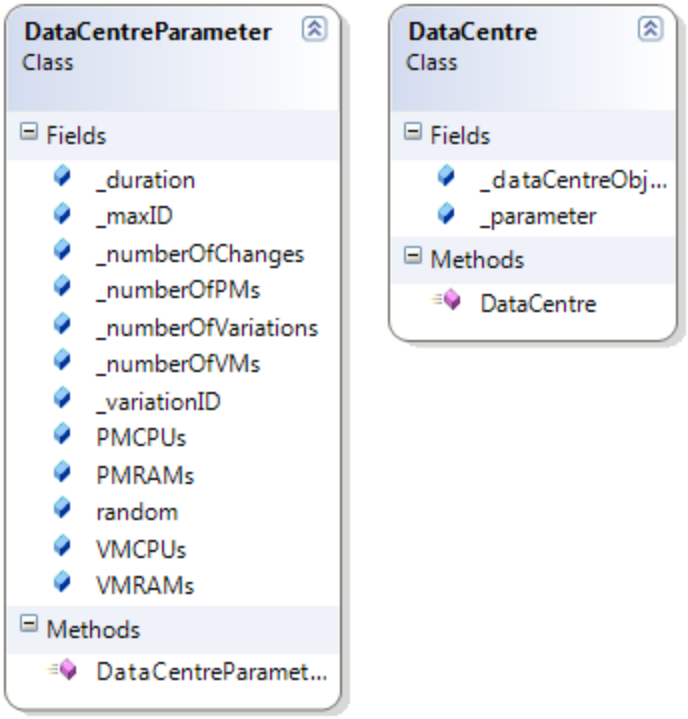



The position class is used to define the position of an offline virtual machine (index of the physical machine - pm, index of the virtual machine - vm).
The virtual machine object class is used to define of an online virtual machine.




The data centre object is defined with these attributes: energy consumption, list of offlines machines (_offlines), list of online machines (_onlines), list of physical machines (_physical machines), observation time (_time).

The data centre function class is defined to use data centre object including these following functions: Create (create a data centre), deepclone (duplicate a data centre) , energy consumption (calculate data centre energy consumption), numberofVMs (calculate number of virtual machines), randomize times in observation time (randomizevalues), datacentre2stream (export data centre configuration to a stream), stream2datacentre (import data centre from a stream).




The data centre parameter class is defined with initial parameters to create a data centre: observation duration (_duration), maximum virtual machine id (_maxID), number of physical machines/ virtual machines / variations/ changes (_numberOfPMs, _numberOfVMs, _numberOfVariations, _numberOfChanges).

## 3 How to use client-server part code

I have fixed all the bugs that I have found till this moment.