How to Use Smart Garbage Collector User Manual

Dear user,

This manual is to show that you don’t have to be smart to use the Smart Garbage Collector but you only need to know what exactly you would like to test.

The program is made to run through command line arguments. I will introduce the different arguments in the following section and include some examples in the end of the manual.

Command line instructions:

***-h*** If you need help.

-**gz *filename.gz***If you want to analyse a trace file in a .gz format you have to type **-gz** followed by the name of the file you want to process

**-ch** If you want to display a live chart plotting the current amount of allocated memory in megabytes as a function of time just write this command

**-heuristic *concrete\_heuristic*** If you want to run the program testing one of the provided heuristics you should write the command –heuristic followed by the concrete heuristic you want to test. Concrete heuristics supported at the moment are: ***fifo*** for deallocating the first allocated objects, ***lifo*** for deallocating the last allocated objects, ***lru*** for deallocating the least recently used objects, ***mru*** for deallocating the most recently used objects, ***gc*** for normal garbage collection, i.e. look for dead objects in memory and deallocate only those identified as dead, ***r*** for random selection of objects to deallocate, ***ss*** for deallocation of objects with smallest size first, ***ls*** for deallocating objects with largest size first.

**-t *desired\_memory\_size*** If you want to specify the concrete size of the memory write the command **–t** followed by the desired size in megabytes. The default is 30 MB.

**-p *percentage\_mb\_to\_remove***If you want to specify what percentage of the memory size to deallocate once the threshold is reached, write the command **–p** followed by the desired percentage- a number from 1 to 100. The default is 20%.

**-rsm** If you want to resume writing results to an already existing file already containing some results.

**-batch *file\_to\_output\_results\_to*** If you want to test extensively all heuristics and save the results of the tests in a file for further analysis write the command **–batch** followed by the name of the file where you want to save the results.

**-et** If you want to run a single test with concrete parameters and output the results to the console write the command **–et** and after that specify the concrete parameters by choosing some of the above options. If you don’t choose any option, the test will be run with the default parameter settings, i.e. a normal garbage collection would be run.

Examples:

1. I am new to the Smart Garbage Collector and I am not sure how to use it. I type ***–h*** to see what options it offers.
2. I want to analyse a trace file called java-binarytrees\_13.trace.gz which is on my desktop in folder called traces. I need to ***write –gz C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz***
3. I want to run a single test testing a concrete heuristic, say I want to deallocated the objects that were allocated first, in other words fifo heuristic. I need to write ***–gz C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz –et –heuristic fifo***
4. I want to do the same as in point 3 but I also want to have a chart displayed. The correct set of commands is ***C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz –et –heuristic fifo -ch***
5. I want to do the same as in point 3 but I want to specify the memory size to be 50 MB and what percentage of it to deallocate once all memory is allocated and I want this percentage to be 10. The correct set of commands is ***C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz –et –heuristic fifo –t 50000 –p10***
6. I want to test all existing heuristics and keep the results in a file called results.csv for further analysis. The correct set of commands is ***C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz –batch results.csv***
7. I want to do the same as in point 6 but I know that the file results.csv already exists and contains results for some of the tests so I want to continue writing to this file from where it was stopped last time. The correct set of commands is ***C:\Users\Emi\Desktop\traces\ java-binarytrees\_13.trace.gz –batch results.csv -rsm***