Item 1

A list of tuples, list length = total number of benchmarks

Each tuple has 6 elements:

Benchmark name (string)

Benchmark path (string)

O0 (tuple): {Irinfo*, profiling info**}

O3 (tuple): {time (string), size of binary (string), a list of integer representing the pass sequence (list), Irinfo*}

Optimal solution found by GA (tuple): same as above

A list of programs, whose optimal solutions also worked here (list of ~~int~~ tuple, each contain a program id (int) and the percentage improvement on performance (float), list is in descending order based on improvement)

Item 2

A list of data types used in Irinfo ('most common data type' feature) (list of string)

Item 3

A list of all available optimisation pass (list of string)

Item 4

A list of performance metrics used in Irinfo (list of string)

* Each irinfo has a list of dictionary, each dictionary contains all the performance metrics listed in item 4, and corresponding values

** Each profiling info has a list of dictionary, each dictionary contains {loop ID, loop execution count, number of instructions executed here (excluding subloops), number of instructions executed here}, and corresponding values