```
DASEngineHierarchical
               app_id : str
                detailed_prop
               detailed_prop : bool, float
               dp_queries
               dp_queries: bool
                dp_query_names
               dp_query_names : list
                dp_query_prop
               dp_query_prop : tuple
                geolevel_prop_budgets
                geolevel_prop_budgets : tuple, NoneType
               hist_shape
               hist_shape
               levels
               levels_reversed : tuple
               mechanism
               minimal_schema
               minimal_schema: tuple, bool
               postprocess_only
               queries_dict
               queries_dict
               record_cpu_stats : NoneType, bool
               record_gurobi_stats: NoneType, bool
               record_vm_stats: NoneType, bool
               reload_noisy
               save_gurobi_stats : NoneType, bool
               save_noisy
                saved_noisy_app_id
               saveloc
               saveloc
               schema
                setup
                small_cell_basepath
                small_cell_geolevels : tuple, NoneType
               small_cell_prop : float
                small_cell_query : bool
               total_budget
               total_budget : float
               use_spark
                vars_schema
                vars_schema
               checkBoundedDPPrivacyImpact()
               checkTotalBudget()
                deleteTrueData()
               freeMemLevelDict()
                freeMemNodes()
               freeMemRDD()
                getNodesAllGeolevels()
               initializeAndCheckParameters()
               loadNoisyAnswers()
               logInvCons()
               makeDPNode()
                makeDPQuery()
                makeOrLoadNoisy()
                nodeDPQueries()
                noisyAnswers()
               noisyPath()
               run()
                saveAndOrReload()
                saveNoisyAnswers()
                setPerGeolevelBudgets()
                setPerQueryBudgets()
                writeGurobiStatistics()
                                              TopdownEngine
        BottomUpEngine
geolevel_prop_budgets : NoneType
                                      combineParentAndChildren()
                                      deleteTrueData()
                                      freeMemNodes()
freeMemNodes()
                                      initializeAndCheckParameters()
initializeAndCheckParameters()
                                      noisyAnswers()
loadNoisyAnswers()
                                      optimizeWorkload()
noisyAnswers()
                                      poolLowerLevelMeasurements()
saveNoisyAnswers()
                                      setWorkload()
                                      topdown()
                              HDMMEngine
                                                           MinimalSchemaEngine
                           dp_queries: bool
                                                      budget_prop_phase1
                           mechanism
                                                      budget_prop_phase1 : float
                           queries_dict : dict
                                                      ms_add_over_margins
                           strategy_type
                                                      ms_add_over_margins
                           workload
                           workload: list
                                                      freeMemNodes()
                                                      getMinSchemaConstraints()
                           workload_queries_dict
                           workload_queries_dict
                                                      initializeAndCheckParameters()
                                                      installPhase1Constraints()
                           dict2workload()
                                                      loadNoisyAnswers()
                           findMarginalStrategy()
                                                      makeOrLoadNoisy()
                           findPIdentityStrategy()
                                                      minSchematize()
                           makeDPNode()
                                                      reduceNodesToMinimalSchema()
                           optimizeWorkload()
                                                      run()
                           setWorkload()
                                                      saveNoisyAnswers()
                           strategy2query()
                        HDMMRelativeErrorEngine
                  HEAT_MAP : str
                  RELATIVE ERROR: str
                  REL ERR BIN EDGES: list
                  REL ERR ZERO MULTIPLIER: float
                  SCATTERPLOT: str
                  Ws
                  Ws: dict
                  counts
                  counts: dict
                  errorGeolevels
                  errorGeolevels: tuple, NoneType
                  errorMode
                  errorMode
                  errorSampling
                  errorSamplingRate
                  errorType
                  errorType
                  hdmmErrorEpsilons
                  hdmmErrorEpsilons: tuple
                  hdmm rmses
                  hdmm_rmses : dict
                  maxPops
                  maxPops: dict
                  numEnginePartitions
                  numEnginePartitions: int
                  queries_dict : dict
                  strategies
                  strategies : dict
                  tenabilityOutputRoot
```

bottomUp()

run()

generateAndSaveHeatMapsData() getHdmmRmses() getHeatMapBinEdges() getMaxPops() getNodeRelativeErrorHeatMaps() getNodeRelativeErrorObs() getRelativeErrorHeatMaps() getRelativeErrorObs() initializeAndCheckParameters() optimizeWorkload()

saveTrueMagnitudeBinEdges()

tenabilityOutputRoot

workload_queries_dict

workload_queries_dict : dict

true_magnitude_bin_edges

true magnitude bin edges: dict

total_budget

workload

run()

setWorkload()

workload: dict