## matrix

set_value(int row, int col, double newVal) : void
get_value(int row, int col) const : double
operator++() : matrix &
operator++(int) : matrix &
operator--() : matrix&
operator--(int) : matrix&
operator*=(const matrix&) : matrix&
operator*=(const double&) : matrix&
calc_probability() : matrix&
vectorize()const : vector<double>
operator<<(ostream&, const matrix&) friend : ostream
operator==(const matrix&, const matrix&) friend: bool
operator!=(const matrix&, const matrix&) friend: bool
mySwap(matrix&, matrix&) : void
operator+(matrix, const matrix&) : matrix
operator-(matrix, const matrix&) : matrix
operator*(matrix, const matrix&) : matrix
operator*(const doubble&, matrix rhm) : matrix
operator*(matrix , const double&) : matrix

## utilities

TOLERANCE = 0.0001 : const double
P_FACTOR = 0.85 : const double

isEqual(double&, double&) : bool
validatePositive(const int) : void
read_matrix_file(string) : matrix
calc_transition(const matrix&) : matrix
markov(matrix&) : matrix
rank_page(matrix&) : vector<double>
report_rank(vector<double&> : void

utilities is a helper class, and it includes all helper function and take care of the process of ranking a page by a given matrix file

rank_matrix is a special 1 column matrix,and all value being set to 1.0

## rank_matrix

-ELEMENT_VALUE = 1.0 : const double

rank_matrix(int)

q_matrix is a n*n matrix, whose values are all 1/n

## q_matrix

q_matrix(int)