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twoPointBVPAppr.h

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#include <iostream>
#include <cmath>
#include <iomanip>
#include <vector>

using namespace std;

class TwoPointBVPAppr
{
protected:
    int numsubintervals;
    //the number of intervals in the domain

    const double *steplenghts;
    const TwoPointBVP *theproblem;
    vector <double> xcoord;
    vector <double> midcoord;
    vector <double> Deltax;
    bool guess_seed_is_present;

    void AssembleDiffusion(tridiagonal_matrix * tmat);

    void AssembleReaction(vector<double> &W,
        vector<double> &RW, vector<double> &RPW);

    vector<double> AssembleForce();

    double(*intialGuessSeed)(vector<double> &);

public:
    TwoPointBVPAppr(int N, const double *subintervallenghts, const TwoPointB
VP *prob);

    vector<double> get_xcoord();

    int get_numsubintervals();

    void set_intial_guess_seed(double(*guessSeed)(vector<double> &));

    double eval_intial_guess_seed(vector<double> &par) const;

    vector<double> Solve(int max_num_iter, double TOL);

    double find_max_error(int max_iters, double TOL);

    ~TwoPointBVPAppr();
};

```