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#include "rk4_solver.hh"
#include <cstdlib>
#include <ctime>
#include <cstdio>
#include <iostream>
#include <math.h>
#include <omp.h>

int main(){
  double T_final = 100.0;
  double hi_step = 0.001;
  double tolerance = 0.000001;
  double J = 0.1;
  double K = 1;
  double N_intrvls = 2;

  rk4 myRk4_1(1250, hi_step, tolerance, J, K, N_intrvls, 0.7, 1);
  double t1 = omp_get_wtime();
  myRk4_1.compute_solution(T_final);
  double t2 = omp_get_wtime();
  myRk4_1.terminate();

/*
  for (double N_pwr=3.00; N_pwr<4.10; N_pwr += 0.05 ){
    int NN = (int) pow(10, N_pwr);
    rk4 myRk4_norm(NN, hi_step, tolerance, J, K, N_intrvls,0.1,0);
    double t1 = omp_get_wtime();
    myRk4_norm.compute_solution(T_final);
    double t2 = omp_get_wtime();
    myRk4_norm.terminate();
    rk4 myRk4_bh(NN, hi_step, tolerance, J, K, N_intrvls,0.1,1);
    double t3 = omp_get_wtime();
    myRk4_bh.compute_solution(T_final);
    double t4 = omp_get_wtime();
    myRk4_bh.terminate();
    printf("%d %f %f\n",NN, t2-t1, t4-t3);
  }
*/
/*
  for (double pwr=-2; pwr<-0.2; pwr+=0.02){
    double theta = pow(10,pwr);
    rk4 myRk4_1(hi_step, tolerance, J, K, N_intrvls,theta);
    double t1 = omp_get_wtime();
    myRk4_1.compute_solution(T_final);
    double t2 = omp_get_wtime();
    myRk4_1.terminate();
    rk4 myRk4_2(hi_step, tolerance, J, K, N_intrvls,theta);
    double t3 = omp_get_wtime();
    myRk4_2.compute_solution(T_final);
    double t4 = omp_get_wtime();
    myRk4_2.terminate();
    rk4 myRk4_3(hi_step, tolerance, J, K, N_intrvls,theta);
    double t5 = omp_get_wtime();
    myRk4_3.compute_solution(T_final);
    double t6 = omp_get_wtime();
    myRk4_3.terminate();
    rk4 myRk4_4(hi_step, tolerance, J, K, N_intrvls,theta);
    double t7 = omp_get_wtime();
    myRk4_4.compute_solution(T_final);
    double t8 = omp_get_wtime();
    myRk4_4.terminate();
    rk4 myRk4_5(hi_step, tolerance, J, K, N_intrvls,theta);
    double t9 = omp_get_wtime();
    myRk4_5.compute_solution(T_final);
    double t10 = omp_get_wtime();
    myRk4_5.terminate();
    printf("%f %f %f %f %f %f\n",theta,t2-t1,t4-t3,t6-t5,t8-t7,t10-t9);
  }
*/
  printf("Total Computation Time: %f\n", t2-t1);
  return 0;
}
```