//Gauss Jacobi Method

#include<stdio.h>

#include<math.h>

#define f1(x,y,z) (17-y+2\*z)/20

#define f2(x,y,z) (-18-3\*x+z)/20

#define f3(x,y,z) (25-2\*x+3\*y)/20

int main()

{ float x0=0, y0=0, z0=0, x1, y1, z1, e1, e2, e3, e;

int i=1;

printf("Enter tolerable error:\n");

scanf("%f", &e);

printf("\nCount\tx\ty\tz\n");

do

{

x1 = f1(x0,y0,z0);

y1 = f2(x0,y0,z0);

z1 = f3(x0,y0,z0);

printf("%d\t%0.4f\t%0.4f\t%0.4f\n",i, x1,y1,z1);

// Error

e1 = fabs(x0-x1);

e2 = fabs(y0-y1);

e3 = fabs(z0-z1);

i++;

x0 = x1;

y0 = y1;

z0 = z1;

}while(e1>e && e2>e && e3>e);

printf("\n Solution: x=%0.3f, y=%0.3f and z=%0.3f\n",x1,y1,z1);

return 0;

}

//Gauss Seidel Method

#include<stdio.h>

#include<math.h>

#define f1(x,y,z) (17-y+2\*z)/20

#define f2(x,y,z) (-18-3\*x+z)/20

#define f3(x,y,z) (25-2\*x+3\*y)/20

int main()

{

float x0=0, y0=0, z0=0, x1, y1, z1, e1, e2, e3, e;

int i=1;

printf("Enter tolerable error:\n");

scanf("%f", &e);

printf("\nCount\tx\ty\tz\n");

do

{

x1 = f1(x0,y0,z0);

y1 = f2(x1,y0,z0);

z1 = f3(x1,y1,z0);

printf("%d\t%0.4f\t%0.4f\t%0.4f\n",i, x1,y1,z1);

// Error

e1 = fabs(x0-x1);

e2 = fabs(y0-y1);

e3 = fabs(z0-z1);

i++;

x0 = x1;

y0 = y1;

z0 = z1;

}while(e1>e && e2>e && e3>e);

printf("\nSolution: x=%0.3f, y=%0.3f and z=%0.3f\n",x1,y1,z1);

return 0;

}