Summary of C code of Regula Falsi Method:

Firstly, i have asked user inputs in order to complete the function.Then, with the given values, i have calculated Fa,Fb and Fc values. If the multiplication of Fa and Fb is equal to 0, then ,if a is equal to 0 then, a is the root of equation, else b is the root of equation.After this, c is calculated again and if Fc is equal to 0 c is the root of equation. Then,while loop begins.

Iteration will continue untill |Fc|>eps.

C code of Regula Falsi Method:

```
 /*REGULA FALSI METHOD*/

#include <stdio.h>

#include <stdlib.h>

int main()

{

   float a,b,c,eps,Fa,Fb,Fc,G,D;

   printf("\t\t\t\t\tRegula Falsi Method\n\n\n");

   printf("Equation: Gx ( x^2 - D)");

   printf("\nValue of G : ");scanf("%f", &G);

   printf("Value of D : ");scanf("%f", &D);

   printf("Equation: f(x) = ");

   printf("%.1f*x*(x^2-%.1f)", G,D);printf("\n");

   printf("Value of a : ");scanf("%f", &a);

   printf("Value of b : ");scanf("%f", &b);

   printf("Value of epsilon : ");scanf("%f", &eps);printf("\n");

   Fa = G*a*((a*a)-D);

   Fb = G*b*((b*b)-D);

   c = (b*Fa - a*Fb) / (Fa - Fb);

   Fc = G*c*((c*c)-D);
```

```
    if (Fa * Fb > 0){
        printf("The equation has not a root");
    }
    else{
        if (Fa * Fb == 0){
            if (Fa == 0){
                printf("a is root of equation\n");
            } else {
                printf("b is root of equation\n");
            }
        }
        else{
            if (Fc == 0){
                printf("c is root of equation\n");
            } else{
//purpose of fabs function is getting the absolute value
                while (fabs(Fc) > eps) {
                    if (Fc * Fa < 0){
                        b = c;
                    } else {
                        a = c;
                    }
                    c = (b*Fa - a*Fb) / (Fa - Fb);
                    printf("a = %.3f\n", a);
                    Fa = G*a*((a*a)-D);
                    printf("f(a) = %.3f\n", Fa);
```

```
            printf("b = %.3f\n", b);
            Fb = G*b*((b*b)-D);;
            printf("f(b) = %.3f\n", Fb);
            printf("c = %.3f\n", c);
            Fc = G*c*((c*c)-D);
            printf("f(c) = %.3f\n", Fc);printf("\n");
          }
          c = (b*Fa - a*Fb) / (Fa - Fb);
        }
      }
    }
    printf("Root => ");printf("%.4f\n", c);
    return 0;
}
```

```
                    Regula Falsi Method


Equation: Gx ( x^2 - D)
Value of G : 2
Value of D : 1
Equation: f(x) = 2.0*x*(x^2-1.0)
Value of a : 0.5
Value of b : 1.5
Value of epsilon : 0.06

a = 0.667
f(a) = -0.741
b = 1.500
f(b) = 3.750
c = 0.806
f(c) = -0.566

a = 0.806
f(a) = -0.566
b = 1.500
f(b) = 3.750
c = 0.920
f(c) = -0.282

a = 0.920
f(a) = -0.282
b = 1.500
f(b) = 3.750
c = 0.996
f(c) = -0.015

Root => 0.9607

Process returned 0 (0x0)   execution time : 8.482 s
Press any key to continue.
```

```
                                        Regula Falsi Method


Equation: Gx ( x^2 - D)
Value of G : 2
Value of D : 1
Equation: f(x) = 2.0*x*(x^2-1.0)
Value of a : 0.5
Value of b : 1.5
Value of epsilon : 0.04

a = 0.667
f(a) = -0.741
b = 1.500
f(b) = 3.750
c = 0.806
f(c) = -0.566

a = 0.806
f(a) = -0.566
b = 1.500
f(b) = 3.750
c = 0.920
f(c) = -0.282

a = 0.920
f(a) = -0.282
b = 1.500
f(b) = 3.750
c = 0.996
f(c) = -0.015

Root => 0.9607

Process returned 0 (0x0)   execution time : 7.885 s
Press any key to continue.
```