Code

```
#include<stdio.h>
#include<math.h>
#include<stdlib.h>

/* Defining equation to be solved.
   Change this equation to solve another problem. */
#define    f(h)    h*h*h - 9*h*h + 3.8197

/* Defining derivative of g(x).
   As you change f(x), change this function also. */
#define   g(h)   3*h*h-18*h

void main()
{
            float h0, h1, f0, f1, g0, e;
            int Relative_error;
            int step = 1, N;

    /* Inputs */
            printf("\nEnter initial guess:");
            scanf("%f", &h0);
            printf("\nEnter tolerable error:");
            scanf("%f", &e);
            printf("\nEnter maximum iteration:");
            scanf("%d", &N);
            /* Implementing Newton Raphson Method */
            do
            {
                        g0 = g(h0);
                        f0 = f(h0);
                        if(g0 == 0.0)
                        {
                                    printf("Mathematical Error.");
                                    exit(0);
                        }

                        h1 = h0 - f0/g0;

                        printf("Iteration no=%d\nh0=%f\nf(h0)=%f\nh1=%f\nf(h1)=%f\n",step,h0,f0,h1,f1);
                        h0 = h1;
                        Relative_error= (h1-h0/h1)*100;
        printf("Absolute relative approximate error calculated for this iteration =
%d%\n\n",Relative_error);

                        step = step+1;

                        if(step > N)
```

```
		{
			printf("Not Convergent.");
			exit(0);
		}

		f1 = f(h1);

	}while(fabs(f1)>e);

	printf("\nRoot is: %f", h1);
}
```

Screenshots

```
Enter initial guess:1

Enter tolerable error:0.0001
Enter maximum iteration:5
Iteration no=1
h0=1.000000
f(h0)=-4.180300
h1=0.721313
f(h1)=0.000000
Absolute relative approximate error calculated for this iteration = -27%

Iteration no=2
h0=0.721313
f(h0)=-0.487643
h1=0.678623
f(h1)=-0.487643
Absolute relative approximate error calculated for this iteration = -32%

Iteration no=3
h0=0.678623
f(h0)=-0.012536
h1=0.677466
f(h1)=-0.012536
Absolute relative approximate error calculated for this iteration = -32%


Root is: 0.677466
```

Fig 3