

Listing 1: Code

```

1 #include <stdio.h>
2 #include <math.h>
3
4 int main()
5 {
6     // Variables
7     int k = 1;
8     double t0, t1, y0, y1, f, inc;
9     printf("Enter initial value t0: ");
10    scanf("%lf", &t0);
11    printf("Enter initial result y0: ");
12    scanf("%lf", &y0);
13    int i;
14    printf("How many iterations? ");
15    scanf("%d", &i);
16    printf("Time incremented by: ");
17    scanf("%lf", &inc);
18    printf("f(t,y) = f = -2 * y0 + 2 - exp(-4*t0)\n");
19    printf("-----\n");
20    printf("      k      |      t      |      y      |      f(t,y)  \n");
21    printf("-----\n");
22    for (k = 0; k < i + 1; k++)
23    {
24        // function
25        f = -2 * y0 + 2 - exp(-4.0*t0);
26        y1 = y0 + f * inc;
27        printf(" %d      | %f      | %f      | %f      \n", k, t0, y0, f);
28        t1 = t0 + inc;
29        t0 = t1;
30        y0 = y1;
31    }
32    return 0 ;
33 }

```