

**NewtonDividedDiffInterpolation.c**

```
1 #include<stdio.h>
2
3 int main() {
4     float x, ax[50], y[50], a[50], p, v;
5     int n, j, i;
6     printf("Enter number of data points: ");
7     scanf("%d", &n);
8     printf("Enter value to be interpolated: ");
9     scanf("%f", &x);
10    for (i = 0; i < n; i++) {
11        printf("x[%d] = ", i);
12        scanf("%f", &ax[i]);
13        printf("y[%d] = ", i);
14        scanf("%f", &y[i]);
15        a[i] = y[i];
16    }
17    for (i = 0; i < n; i++) {
18        for (j = n - 1; j > i; j--) {
19            a[j] = (a[j] - a[j - 1]) / (ax[j] - ax[j - 1 - i]);
20        }
21    }
22    v = 0;
23    for (i = 0; i < n; i++) {
24        p = 1;
25        for (j = 0; j < i; j++) {
26            p = p * (x - ax[j]);
27        }
28        v = v + a[i] * p;
29    }
30    printf("Interpolated value: %f\n", v);
31    return 0;
32}
33
```