

## 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
```