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1: // C - Program for calculation of sin(x).
2:
3: #include <stdio.h>
4: #include <math.h>
5:
6: //Function for factorial.
7: int fac(int n)
8: {
9:     if (n==0){
10:         return 1;
11:     }
12:     else{
13:         return n*fac(n-1);
14:     }
15: }
16:
17: //Expansion of sin(x)
18:
19: int main(){
20:     //Variables and their initialization.
21:     float d, x, sum = 0.0; int n,i;
22:
23:     //Inputs
24:     printf("Enter the value of x in degree : ");
25:     scanf("%f", &d);
26:     printf("Enter the no. of terms : ");
27:     scanf("%d", &n);
28:
29:     //degree to radian conversion.
30:     x = (3.14*d)/180;
31:
32:     //Calculation using for loop.
33:     for (i=0; i<=n; i++){
34:         sum += (pow(-1, i)*pow(x, 2*i+1))/fac(2*i+1);
35:     }
36:
37:     //Output
38:     printf("Value of sin(%f) using above defined program = %f\n", d,
sum);
39:     printf("Value of sin(%f) using pre-defined function = %f", d,
sin(x));
40: }
41:

```