```c
#include<stdio.h>
int main()
{
float y[10],x0,x,h,u,term,sum,d[10][10];
int n,m,i,j,r;
r=0;
x=0.20+((r+1)/100.);
printf("Enter the number of interpolating point\n");
scanf("%d",&n);
n=n-1;
printf("Enter the starting value of x\n");
scanf("%f",&x0);
printf("Enter the step size\n");
scanf("%f",&h);
printf("\nEnter the value of y\n");
for(i=0;i<=n;i++)
{
printf("Enter the value of y[%d]=",i);
scanf("%f",&y[i]);
}
for(i=0;i<=n;i++)
d[i][0]=y[i];
for(j=1;j<=n;j++)
{
for(i=0;i<=n-j;i++)
d[i][j]=d[i+1][j-1]-d[i][j-1];
}
printf("The difference table : \n");
for(i=0;i<=n;i++)
{
for(j=0;j<=n-i;j++)
printf("%12.10f ",d[i][j]);
printf("\n");
}
printf("Enter the number of column where noise level appears otherwise press 0 \n");
scanf("%d",&m);
if(m==0)
m=n;
else
m=m-2;
u=(x-x0)/h;
sum=y[0];
term=u;
for(j=1;j<=m;j++)
{
sum=sum+term*d[0][j];
term=term*(u-j)/(j+1);
}
printf("f(%0.2f)=%0.10f\n",x,sum);
return(0);
}
```

\\output\\

```
Enter the number of interpolating point
10
Enter the starting value of x
0.20
Enter the step size
0.15

Enter the value of y
Enter the value of y[0]=1.5651272616
Enter the value of y[1]=1.6062738825
Enter the value of y[2]=1.6485022329
Enter the value of y[3]=1.6918407511
Enter the value of y[4]=1.7363186230
Enter the value of y[5]=1.7819658019
Enter the value of y[6]=1.8288130283
Enter the value of y[7]=1.8768918511
Enter the value of y[8]=1.9262346485
Enter the value of y[9]=1.9768746499
The difference table :
1.5651272535 0.0411466360 0.0010817051 0.0000284910 0.0000005960 0.0000004768 -0.0000011921 0.0000026226 -0.0000050068 0.0000087023
1.6062738895 0.0422283411 0.0011101961 0.0000290871 0.0000010729 -0.0000007153 0.0000014305 -0.0000023842 0.0000036955
1.6485022306 0.0433385372 0.0011392832 0.0000301600 0.0000003576 0.0000007153 -0.0000009537 0.0000013113
1.6918407679 0.0444778204 0.0011694431 0.0000305176 0.0000010729 -0.0000002384 0.0000003576
1.7363185883 0.0456472635 0.0011999607 0.0000315905 0.0000008345 0.0000001192
1.7819658518 0.0468472242 0.0012315512 0.0000324249 0.0000009537
1.8288130760 0.0480787754 0.0012639761 0.0000333786
1.8768918514 0.0493427515 0.0012973547
1.9262346029 0.0506401062
1.9768747091
Enter the number of column where noise level appears otherwise press 0
6
f(0.21)=1.5678373575
```