Que:-Suppose a man is going to a place by driving a car

along the straight road. The velocity of the car at a

time interval is given by the following table.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Time(min) | 0 | 2 | 4 | 6 | 8 | 10 | 12 |
| Velocity(km/hr) | 0 | 10 | 16 | 18 | 22 | 25 | 26 |

(A)Using C-programming of Newton Forward

interpolation, what will be the velocity of the car at

the time 3.2 minutes?

Ans:-

Newton forward

#include <stdio.h>

int main() {

int i, n, j;

float x[100], y[100], d[100][100], xn, u, yp, denm, num;

scanf("%d", &n);

printf("enter the value of x & y :");

for (i = 0; i <= n; i++) {

scanf("%f%f", &x[i], &y[i]);

}

printf("enter the value of xn: ");

scanf("%f", &xn);

int h = x[1] - x[0];

for (i = 0; i < n; i++) {

d[i][1] = y[i + 1] - y[i];

}

for (j = 2; j <= n; j++) {

for (i = 0; i <= n - j; i++) {

d[i][j] = d[i + 1][j - 1] - d[i][j - 1];

} }

u = (xn - x[0]) / h;

yp = y[0];

num = 1;

denm = 1;

for (int k = 1; k <= n; k++) {

num \*= u - k + 1;

denm \*= k;

yp += (num / denm) \* d[0][k];

}

printf("%f", yp);

return 0;}

Output

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enter the value of x & y :0 0

2 10

4 16

6 18

8 22

10 25

12 26

enter the value of xn: 3.2

14.53409

|  |  |
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