Week-11 Program-01

The velocity of a car at different time instant is given as

<table>
<thead>
<tr>
<th>Time (t)</th>
<th>10</th>
<th>15</th>
<th>18</th>
<th>22</th>
<th>30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Velocity v(t)</td>
<td>22</td>
<td>26</td>
<td>35</td>
<td>48</td>
<td>68</td>
</tr>
</tbody>
</table>

A linear Lagrange interpolant is found using these data points. Write a C program to find the velocity of the car at different time instants. (Will be taken from test cases)

Sample Test Cases

<table>
<thead>
<tr>
<th>Test Case</th>
<th>Input</th>
<th>Output</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>The respective value of the variable v is: 4 1.62</td>
</tr>
<tr>
<td>2</td>
<td>5</td>
<td>The respective value of the variable v is: 5 6.42</td>
</tr>
<tr>
<td>3</td>
<td>6</td>
<td>The respective value of the variable v is: 2 8.74</td>
</tr>
</tbody>
</table>

The due date for submitting this assignment has passed.

As per our records you have not submitted this assignment.

Sample solutions (Provided by instructor)

```c
#include<stdio.h>
int main()
{
    float t[100]={10,15,18,22,30}, v[100]={22,26,35,48,68};
    float a; //Value of the t to find the respective value of v(t)
    scanf("%f", &a); // This will be taken from test cases

```
8 int i,j;
9 float b, c, k =0;
10 for(i=0; i<5; i++)
11 {
12     b=1;
13     c=1;
14     for(j=0; j<5; j++)
15         {
16             if(j!=i)
17                 {
18                     b=b*(a-t[j]);
19                     c=c*(t[i]-t[j]);
20                 }
21             k=k+((b/c)*v[i]);
22         }
23     k=k;
24 }
25 printf("The respective value of the variable v is: %.2f
", k);
26     return 0;
27 }
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