DSA Lab 3

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interpolation search algorithm

#include <stdio.h>

#include <stdlib.h>

#include <time.h>

#define MAX 10

int arr[MAX];

void create();

void display();

int interpolationSearch(int, int);

int main()

{

int item, pos;

create();

printf("Enter the item which you want to search: ");

scanf("%d", &item);

pos = interpolationSearch(item, MAX);

if (pos != -1)

{

printf("Item %d found at position %d \n", item, pos + 1);

}

else

{

printf("Item %d not found in the list \n", item);

}

return 0;

}

void create()

{

int i;

printf("Enter the elements of the array: \n");

for (i = 0; i < MAX; i++)

{

scanf("%d", &arr[i]);

}

}

void display()

{

int i;

printf("Elements of the array: \n");

for (i = 0; i < MAX; i++)

{

printf("%d ", arr[i]);

}

printf(" \n");

}

int interpolationSearch(int item, int size)

{

int low, mid, high;

low = 0;

high = size - 1;

while (low <= high)

{

mid = low + ((item - arr[low]) \* (high - low)) / (arr[high] - arr[low]);

if (item == arr[mid])

{

return mid;

}

else if (item < arr[mid])

{

high = mid - 1;

}

else

{

low = mid + 1;

}

}

return -1;

}

Output

Text

Description automatically generated