

NORTHERN UNIVERSITY OF BUSINESS AND TECHNOLOGY KHULNA



Lab Assignment

Assignment No: 01

Course Title: Artificial Intelligence Lab

Course Code: CSE 4112

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1. Given a list, you have to find an item within the list using the Linear Search Algorithm.

Programiz Python Online Compiler

Programiz PRO >

main.py

Run

Output

Clear

```
1 # Linear Search Implementation
2
3 # Step 1: Take input for the list
4 user_input = input("Enter the list elements separated by spaces: ")
5 my_list = user_input.split()
6
7
8 # Step 2: Take input for the item to search
9 item_to_find = input("Enter the item to search: ")
10
11 # Step 3: Linear Search Function
12 def linear_search(lst, target):
13     for index, item in enumerate(lst):
14         if item == target:
15             return index # Return index if found
16     return -1 # Return -1 if not found
17
18 # Step 4: Call the function and show the result
19 result = linear_search(my_list, item_to_find)
20
21 if result != -1:
22     print(f"Item '{item_to_find}' found at index {result}.")
23 else:
24     print(f"Item '{item_to_find}' not found in the list.")
25
```

Enter the list elements separated by spaces: apple banana mango orange
Enter the item to search: mango
Item 'mango' found at index 2.

=== Code Execution Successful ===

2. Given a list, you have to find an item within the list using the Linear Search Algorithm.

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Programiz PRO >

main.py

Run

Output

Clear

```
1 # Binary Search Implementation
2
3 # Step 1: Take input for the list
4 user_input = input("Enter the list elements separated by spaces (in sorted order): ")
5 my_list = user_input.split()
6
7 # Step 2: Take input for the item to search
8 item_to_find = input("Enter the item to search: ")
9
10 # Step 3: Binary Search Function
11 def binary_search(lst, target):
12     low = 0
13     high = len(lst) - 1
14
15     while low <= high:
16         mid = (low + high) // 2
17         if lst[mid] == target:
18             return mid # Item found
19         elif lst[mid] < target:
20             low = mid + 1
21         else:
22             high = mid - 1
23
24     return -1 # Item not found
25
26 # Step 4: Call the function and show the result
27 result = binary_search(my_list, item_to_find)
28
29 if result != -1:
30     print(f"Item '{item_to_find}' found at index {result}.")
31 else:
```

Enter the list elements separated by spaces (in sorted order): apple banana mango orange
Enter the item to search: mango
Item 'mango' found at index 2.

=== Code Execution Successful ===