Assignment - 3

Question :

Show the working of Binary Search -
L1 = [5, 7, 10, 21, 30, 37, 42, 45, 53].
element = 11.

Soln :

L1=	5	7	10	21	30	37	42	45	53
index no.	[0]	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]

iteration 1

$L = 0$.

$U = len(L1) - 1 = 8$.

$mid = \dfrac{0 + 8}{2} = 4$.

compare,

$11 <= 30$.

iteration 2.

$L = 0$.

$U = mid - 1 = 4 - 1 = 3$.

$mid = \dfrac{0 + 3}{2} = 1.5 = 1$.

compare.

$11 > 7$.

iteration 3.

$$L = mid + 1 = 1 + 1 = 2$$
$$\cancel{U} = U = 3.$$
$$mid = \frac{2+3}{2} = \frac{5}{2} = 2.5 = 2$$

compare.
$$11 > 10.$$

iteration 4.

$$L = mid + 1 = 2 + 1 = 3.$$
$$U = 3.$$
$$mid = \frac{3+3}{2} = \frac{6}{2} = 3.$$

compare
$$11 \neq 21$$

return   "Search Unsuccessful"