

Investigate the binary search algorithm

1	def binary_search(items, target):
2	low=0
3	high=len(items)-1
4	mid=high//2
5	while target != items[mid]:
6	mid=(low+high)//2
7	if items[mid] < target:
8	low=mid+1
9	elif items[mid] > target:
10	high=mid-1
11	return items[mid], mid
12	items=[0,5,13,19,22,41,55,68,72,81,98]
13	target=33
14	print(binary_search(items, target))

1. Identify the variables	low, high, mid, target
2. What are the initial values of low, high and mid?	0, 10, 5
3. What is the // operator doing?	Integer division
4. What are the parameters to the function binary_search	Items, and target
5. How many parameters does the function binary_search take	2
6. Give the example of selection in the code	Lines 7 and 9
7. Give the example of iteration	While loop on line 5
8. Under what condition does the loop stop	When the target item has been found
9. What do you notice about the values in the items list?	They are in ascending order

10. Explain what is happening in lines 7-10	Determines which half of the list to keep by determining if the value mid value is bigger or smaller than the target value
11. Overall what is the code doing?	Halving the search area at each iteration in order to converge on the index position of the target value.

