Problem Set 3 Exercise #16: Find Tuple

Reference: Lecture 8 notes

Learning objectives: Searching; Algorithm design

Estimated completion time: 25 minutes

Problem statement:

Given an array of distinct integers sorted in ascending order and another integer **`key`**, check if there exist two different array elements **`x`** and **`y`** such that **`x + y = key`**.

For example, given an array {1, 2, 3, 4, 5} and **`key`** 7, 2 + 5 = 7 and 3 + 4 = 7.

Your program should contain function

```
int check_tuple(int arr[], int size, int key)
```

that takes a sorted array **`arr`** of **`size`** elements (**`size`** < 11) and a **`key`**, returns 1 if there exists at least 1 pair of integers whose sum equals **`key`**, or 0 otherwise.

Write a program **tuple.c** for the above task.

Note:

The challenge is to avoid using nested loop in **`check_tuple()`** method.

Sample run #1:

```
Enter the number of distinct elements in sorted array: 5
Enter 5 elements: 1 2 3 4 5
Enter key: 7
Exist
```

Sample run #2:

```
Enter the number of distinct elements in sorted array: 6
Enter 5 elements: 4 6 8 11 15 19
Enter key: 28
Not exist
```