Experiment 12

CODE:

```
#include <stdio.h>
#include <string.h>
#include <ctype.h>
#define SIZE 10
#define MAX_WORD_LENGTH 50

toLowerCase(char *str) {
   for (int i = 0; str[i]; i++) {
      str[i] = tolower((unsigned char)str[i]);
   }
}

int binarySearch(char *dictionary[], int size, char *target)
{
int left = 0;     int right = size - 1;

   while (left <= right) {
      int mid = left + (right - left) / 2;

            char lowerMid[MAX_WORD_LENGTH];
strcpy(lowerMid, dictionary[mid]);
toLowerCase(lowerMid);

            char lowerTarget[MAX_WORD_LENGTH];
strcpy(lowerTarget, target);
      toLowerCase(lowerTarget);

            int comparison = strcmp(lowerMid, lowerTarget);

      if (comparison == 0) {
return mid;
      }
```

```
        else if (comparison < 0) {
            left = mid + 1;
        }
else {
            right = mid - 1;
        }
    }
    return -1;
}

int main()
{
char *dictionary[SIZE] =
    {
        "Apple", "Banana", "Cherry", "Date", "Fig",
        "Grape", "Kiwi", "Mango", "Orange", "Voracious"
    };

    char target[MAX_WORD_LENGTH];
printf("This dictionary contains fruit names.\n");
printf("Enter the word to search for: ");
    scanf("%49s", target);

    int result = binarySearch(dictionary, SIZE, target);

    if (result != -1) {
        printf("The word '%s' was found at index %d.\n", target, result);
    } else {
        printf("The word '%s' was not found in the dictionary.\n",
target);
    }

    return 0;
}
```

Output:

This dictionary contains fruit names.
Enter the word to search for: APPLE
The word 'APPLE' was found at index 0.

This dictionary contains fruit names.
Enter the word to search for: Cherry
The word 'APPLE' was found at index 2.

This dictionary contains fruit names.
Enter the word to search for: KIWI
The word 'APPLE' was found at index 6.

This dictionary contains fruit names.
Enter the word to search for: Orange
The word 'APPLE' was found at index 8.

=== Code Execution Successful ===