

DIT635 - Structural Testing Activity

1. Draw a control-flow graph for the following program:

```
int search(string A[], int N, string what){
    int index = 0;
    if ((N == 1) && (A[0] == what)){
        return 0;
    } else if (N == 0){
        return -1;
    } else if (N > 1){
        while(index < N){
            if (A[index] == what){
                return index;
            } else
                index++;
        }
    }
    return -1;
}
```

2. Write tests that provide statement, branch, and basic condition coverage over the code.

DIT635 - Loop Testing Activity

1. Draw the control-flow graph for the following code:

```
void Binary_search (elem key, elem* T, int size, boolean &found, int &L){
    int bott, top, mid;
    bott = 0;
    top = size-1;
    L = 0;

    if(T[L] == key){
        found = true;
    }else{
        found = false;
    }

    while (bott <=top && !found){
        mid = round((top + bott) / 2);
        if(T[mid] == key){
            found = true;
            L = mid ;
        } else{
            if (T [mid] < key ){
                bott = mid + 1;
            }else{
                top = mid-1;
            }
        }
    } // while
} //binary_search
```

2. Identify the subpaths through the loop and draw the unfolded CFG for boundary interior testing.

3. Write a test suite that achieves loop boundary coverage
(That exercises the loops:
- Zero times
- One time
- Two or more times)