

1)

```
int old_sum(int n) {
    int total = 0, i;
    for (i = 0; i <= n; ++i) {
        total += i;
    }
    return total;
}

int sum(int n) {
    return (n*(n+1))/2;
}

int main() {
    printf("n = ");
    int n;
    scanf("%d", &n);
    printf("old_sum(%d) = %d\n", n, old_sum(n));
    printf("sum(%d) = %d\n", n, sum(n));
    return 0;
}
```

Is there exist any difference between two functions (int old_sum(int n), int sum(int n)) . If exist then tell me the cases where they are different? (Mind that differences are only in terms of functionality not in terms of complexity)

2)

```
#include <stdio.h>

int old_max2(int n, const int a[n]) {
    int max_index = 0, i;
    for (i = 1; i < n; ++i) {
        if (a[i] > a[max_index]) {
            max_index = i;
        }
    }
}

int max2_index = -1;
for (i = 0; i < n; i++) {
    if (i != max_index) {
        if (max2_index == -1 || a[i] > a[max2_index]) {
            max2_index = i;
        }
    }
}

return max2_index;
}
```

```

int max2(int n, const int a[n]) {
    int i;
    if (n <= 1) { return -1; }

    int max_index = a[0] > a[1] ? 0 : 1;
    int max2_index = 1 - max_index;

    for (i = 2; i < n; i++) {
        if (a[i] > a[max_index]) {
            max2_index = max_index;
            max_index = i;
        } else if (a[i] > a[max2_index]) {
            max2_index = i;
        }
    }

    return max2_index;
}

int main() {
    printf("n = ");
    int n, i;
    scanf("%d", &n);
    if (n > 0) {
        int a[n];
        for (i = 0; i < n; ++i) {
            printf("a[%d] = ", i);
            scanf("%d", &a[i]);
        }
        printf("old_max2(%d, a) = %d\n", n, old_max2(n, a));
        printf("max2(%d, a) = %d\n", n, max2(n, a));
    } else {
        printf("old_max2(%d, NULL) = %d\n", n, old_max2(n, NULL));
        printf("max2(%d, NULL) = %d\n", n, max2(n, NULL));
    }

    return 0;
}

```

Is there exist any difference between two functions (int old_max2(int n, const int a[n]), int max2(int n, const int a[n])). If exist then tell me the cases where they are different? (Mind that differences are only in terms of functionality not in terms of complexity)