Lab 2

Q.1. Ans:

```
int[] arrays(int n) {
    int[] arr = new int[n];
    for (int i = 0; i < n; i++) {
        arr[i] = 1;
    }
    for (int i = 0; i < n; ++i) {
        for (int j = i; j < n; ++j) {
            arr[i] += arr[j] + i + j;
        }
    }
    return arr;
}
```

loop1

loop2

For loop1, the asymptotic notation for running time is $O(n)$.

And for loop2, the variable i runs upto n and the variable j runs as

0 to n times when $i = 0 \Rightarrow n$

1 to n times when $i = 1 \Rightarrow (n-1)$

⋮

$\log n$

$\therefore$ for loop2, running time is $O(n \log n)$.

$\therefore$ for Overall program, $O(n) + O(n \log n)$

$\simeq O(n \log n)$.