

Ans 1. What is the time, and space complexity of the following code snippet.

```
int a = 0, b = 0;
for (i = 0; i < N; i++) {
    a = a + i;
}
for (j = 0; j < M; j++) {
    b = b + j;
}
```

Answer Time complexity $O(N+M)$.

Space complexity constant or $O(1)$.

Ans 2. What is the time complexity of the following code snippet.

```
int a = 0;
for (i = 0; i < N; i++) {
    for (j = N; j > i; j--) {
        a = a + i + j;
    }
}
```

Answer Time complexity $O(N*N)$.

Ans 3. What is the time complexity of the following code snippet.

```
int i, j, k = 0;
for (i = n / 2; i <= n; i++) {
    for (j = 2; j <= n; j = j * 2) {
        k = k + n / 2;
    }
}
```

Answer Time complexity $O(n \log n)$.

Ans 4. What is the time complexity of the following code snippet.

```
int a = 0, i = N;
```

```
while (i > 0) {
```

```
    a += i;
```

```
    i /= 2;
```

```
}
```

Answer Time complexity $O(\log N)$.

Ans 5. What will be the time complexity of the following code snippet.

```
for(int i=0;i<n;i++){
```

```
    i*=k
```

```
}
```

Answer Time complexity $O(\log kn)$.