Time Complexity of JS Assignments

Assignment # 01 (Age Calculator App) :

Let's break down the functionalities of the Age Calculator App.

1. Getting days, months and years from user - it will take constant time so time complexity will be O (1)
2. In the next step, all the values are validated - it will also take constant time as well. So the time complexity up to now is O (1).
3. After that, it will calculate the difference between dates, showing user's years, months and days. In this step, only mathematical calculations are involved and no loops are used. So the time complexity of this step is also O (1).

By combining all of the above time complexities, the overall time complexity of this app is O (1).

Assignment # 02 (Notifications App) :

Let's breakdown the functionalities of the Notifications App:

1. First of all, all the unread messages, which is an array let's assume of size *n* is fetched and stored in a variable. The time complexity of this step is O (1).
2. On button click, there will be a loop that will run over all the unread messages and toggle their styles. The time complexity for this step will be O (n) as the size of unread messages can vary.

By combining all the above time complexities, the overall time complexity of this app is O (n) .

Assignment # 03 (Rating Component) :

Let's breakdown the functionalities of Rating Component:

1. In the first step, there is a loop over all the rating buttons to assign the event listener to them. Let's suppose the size of the ratings array is *n*, so the time complexity of this step is O (n).
2. However, in the same step, the styles of all the elements have to be reverted to normal, so there is a function which is also taking O (n) time in the same function call.
3. On the submit button, the error message or the success screen is shown depending on the input. The time complexity for this step is O (1).

As there is a nested loop one function, the time complexity of this app is O (n^2).

Assignment # 04 (Tip Calculator App) :

Let's breakdown all the functionalities of Tip Calculator App:

1. First of all, the user enters the bill amount. The time complexity for this step is O (1).
2. Then, the user has to choose a tip amount. It can be a custom amount, or by selecting a predefined amount. If the user selects a predefined amount, there is a loop over the buttons which adds the event listener to all the buttons, and it has a function in it which removes the active styles from all the buttons. So this step can have time complexity of O (n) to O (n^2).
3. Then, the user enters the number of persons, which also has a time complexity of O (1) .
4. As all the fields are completed, bill and tip amount per person is automatically calculated. All the mathematical calculations take O (1) time.

So, the overall time complexity of this app is O (n^2).

Assignment # 05 (JS Practical Project (Part 1 & 2)) :

Let's breakdown all the functionalities for JS Practical Project:

1. The only javascript functionality is toggling the sidebar on mobile screens, which takes O (1) time, as on button clicks, only a couple of classes are toggled.

So, the overall time complexity of this app is O (1).