Features of Group 22's Hacker News program:

- Search bar
    - scrolls the text across correctly to represent the text being entered
    - Has a text cursor that blinks when the user has clicked on the search bar, and stays solid while the user is typing.
    - If the user presses DEL, then the entire search bar is emptied
    - If the user enters "user:" followed by a user name, then all the posts by that user are found
    - If the user enters "date:", then all the stories posted on that date are displayed
    - Search bar will only search for stories and will immediately return to the story screen, but can be accessed and used on any screen.
- Home Button – returns the user to the latest stories page, same as when the user first opens the program.
    - Does this by searching a blank string, which returns all the stories and immediately sorts them by time.
- Sort By: Drop down on screen that allows the user the sort the current stories on screen by
        - Latest
        - Oldest
        - Most Comments
        - Least Comments
        - Most Liked
        - Least Liked
    - This widget also appears on the top-level comment screen, where the user can sort the comments on Screen by
        - Latest
        - Oldest
    - Note that the Sort By button on comment screen does not allow the user to sort by any other query other than latest or oldest, because comments in the JSON do not have the relevant data. These options still appear on screen, but do nothing.
- Time: Current time appears on screen at all time, in the same block on screen as the Sort By/Theme button
- Theme – Drop down on screen, lets the user choose from 5 options of color themes. As these use static colors that are used throughout the program, then these themes will remain the same on every screen, until the user changes the theme again. Theme can be changed on any page, throughout the program.
- Footer: A footer is on screen at all times on the story page. This will display the Next Page button, Previous Page button, and Page Number on screen. If there is not a next page of results, then the next page button does not appear on screen and will not accept a user's click. If the user in on page 1, then the last page button will not appear on screen and it will not accept a user's click. Footer will not appear on comment or subcomment page.
- Scroll Bar: each screen has a unique scroll bar, that represents the size of the content on a given screen. Moving the scroll bar moves each widget up and down, using the ratio of the position of the scroll bar to the bar, and the ratio of the y pos of a given story/comment to the height of the total content. The entire list of stories will never completely scroll off screen,
- Back Button – only appears when user has entered a comment or subcomment screen. Returns the user to the previous screen. The scroll bar will return to the top of the new

screen, and the scroll bar will also only represent the content on the new screen, not the old screen.

- URL: clicking on a url will open the URL in your default browser.
- Comments: When you click a story, all the top level comments will appear on screen in a list, with a scroll bar to represent the total amount of top-level comments. You will not see any subcomments on this page. The height of the comment is adjusted while the comment widget is made to represent the height of the text contained in the comment (You may notice that for a few comment, the text still goes out of bounds. This is because the user on HackerNews that wrote this comment used a lot of whitespace/odd paragraph formatting, and I have no way to account for this).
- Subcomments: Using the recursive function getCommentDescendants and getImmediateDescendants, any comment widget arraylist is created, where all the subcomments are indented correctly to properly show which comment they are directly responding to. Below is a demonstration in the HackerNews Story "I dropped out of grad school today". The top image is our program, the bottom is the actual HackerNews site (https://news.ycombinator.com/item?id=227). The vertical lines in our program make it clearer which comment they are responding to: