Homework 1 Approach and Timing Results
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Approach:

- text2bin: My general approach was to first break the file up line by line. Then, using strtok(), separate the values within the string. I would then convert them to the proper data type and write them to the output file. I used the end of file function to terminate the loop.
- bin2text: My approach to this program was to read the bits to break up the file. Since I know that the data is in a 2-2-1-8 byte pattern, I can use this information to easily separate the different values in the file. Once I read through one iteration of the pattern, I printed the values to a file. I used the end of file function feof() to terminate the loop.
- bin2indexed: My approach to this problem was very similar to that of problem 2. For the offset values, I added an array that initially has a size of 100 long longs. When cycling through the index file, if the index array was not big enough, the array would be reallocated with 100 more spaces for a long long. When reading the movie ratings and writing the output, I just used the item number to quickly pull out the offset for that specific movie.

Time Results

| File | Data Quantity | Real | User | System |
|---|---|---|---|---|
| text2bin | 100K | 0.39 | 0.04 | 0.00 |
| | 1 Million | 4.31 | 0.62 | 0.04 |
| bin2text | 100K | 0.60 | 0.05 | 0.00 |
| | 1 Million | 7.14 | 0.55 | 0.09 |
| bin2indexed | 100K | 0.81 | 0.05 | 0.00 |
| | 1 Million | 7.14 | 0.57 | 0.05 |

No matter the time type or the program, the 1 million set took much longer than the 100,000 data set.