



LEARNING MODULES

GK-12 DISSECT at New Mexico State University

Title: Manual Binary Search

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Discipline or Area: Computer Science

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School: Centennial

Subject of class: Computer Science

Grade: 10

COVERAGE OF COMPUTATIONAL TOPICS

Algorithms

Sequence of Steps

Branching

Correctness

Efficiency

OBJECTIVES

Gain an understanding of CT terms related to implementing a search algorithm.

EQUIPMENT AND MATERIALS

Books for each group.

BACKGROUND AND REFERENCES

The module has groups of student writing an algorithm to find a page in a book.

PROCEDURE

Group students together and assign a page number for their book.

Each group of students writes down detailed instructions to find a page in the book.

After all groups are finished, swap instructions between groups and follow them.

Allow a few minutes for each group to follow the directions.

Present instructions for students to follow as in **Appendix A**.

Discuss the number of pages each method takes to find the pages of a book.

NOTES AND OBSERVATIONS

One group did come up with an algorithm similar to a binary search. Most were a variation of look at each page in order and stop when you get to your page number.

APPENDIX A

Given a specific page number to find:

Binary Search

1. Open the book to the middle.
2. If the specific page number is less than your current page number, then discard the pages to the right and turn to half way through the remaining pages on the left.
3. If the specific page number is greater than your current page number, then discard the pages to the left and turn to half way through the remaining pages on the right.
4. If the current page number is not the same as the specific page number go back to step 2 and repeat steps 2 and/or 3.
5. If the page number is the same as your page number, then you are done.