

# Design Challenge – TextFinder

## The design problem:

Textfinder searches a directory subtree seeking files that contain a specified string.

## Text Finder Specification:

1. Identify all files in a directory subtree that match a pattern and contain a specified text.
2. Specify root path, one or more file patterns (\*.h, \*.cpp, \*.cs, ...), and search text on command line
3. Display file name and path without duplication of path name, e.g., organized by directory
4. Interesting extensions:
  - a. Replace text by regular expressions for both search text and file names
  - b. Asynchronous processing to improve performance

## Design Challenge Activities:

1. Develop software design
  - a. Identify relevant program tasks
  - b. Define software structure
    - i. Parts (call graph or packages or classes)
    - ii. Responsibilities of each part
    - iii. Execution time-line (execution flow for tasks)
    - iv. Potential for forking execution with threads or processes (not implemented)
  - c. Define error handling
  - d. Define tests
2. Implement prototype TextFinder
3. Present design

## Design Challenge Scoring:

1. Overall Presentation (25%):

Brevity, clarity, completeness (ordered from most to least important) of presentation
2. Structure (25%):

Essential parts named and responsibilities described (very briefly)
3. Work flow (20%):

Sequencing of activities, potential for forking threads or processes
4. Testing (15%):

Errors handled, test descriptions (brief)
5. Prototype (10%):

Demonstrate workflow or critical processing – does not need to be complete implementation  
Language choice up to team. No penalty for choosing simple one with modest performance, e.g., python
6. Presentation of Extensions (5%):

Attempt to implement extensions in prototype not expected.

## Design Challenge Events (Friday, 13 November 2020):

1. Design challenge begins 24 hours before Codeathon starts.
2. Zoom Q&A session at 12:00 Noon – answer questions about requirements and scoring, no answers about the answers
3. Zoom Q&A session at 4:00 pm.
4. Zoom team presentations starting at 5:00pm.
5. Results posted by 10:00 am, first day of Codeathon

Reference: <https://jimfawcett.github.io/Design.html>