

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 strings or processes
4. Testing (15%):

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

Demonstrate work flow 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