**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:
   1. Replace text by regular expressions for both search text and file names
   2. Asynchronous processing to improve performance

**Design Challenge Activities:**

1. Develop software design
   1. Identify relevant program tasks
   2. Define software structure
      1. Parts (call graph or packages or classes)
      2. Responsibilities of each part
      3. Execution time-line (execution flow for tasks)
      4. Potential for forking execution with threads or processes (not implemented)
   3. Define error handling
   4. 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