Merit Badge Counselor Lists Specification

Goals

1. Identify Registered Merit Badge Counselors who are registered with Troop 12 or Troop 32 Acton MA
2. Identify Troop 12 and Troop 32 Unit Leaders who are not registered as Merit Badge Counselors
3. Identify Troop 12 and Troop 32 Merit Badge Counselors for all Merit Badge.
4. Generate separate webpages for the lists identified in the above three goals that can be incorporated into an existing website.
   a. Generate WordPress-compatible pages and HTML pages for each of the above three goals
   b. Enable the downloading of the list as CSV, PDF, and Excel files and the printing of the list on each of the generated webpages.
   c. Identify the generation date and time on each of the generated webpages.
5. Create a tool that will accept the inputs identified further below and re-generate the above webpages on demand.
   a. The inputs listed below that are links can have the provided links as default inputs.
   b. Generate clear prompts/instructions for supplying each required input.
   c. Generate clear and useful console logs to identify progress and errors, if any.

Definitions

1. Scouting America - formerly Boy Scouts of America.
2. Council - A Scouting America organization that services members in a geographic area.
3. Unit - A local organization of Scouting America members sponsored by a Chartering Organization. Unit types are Packs, Troops, Crews, Boats.
4. Troop <number> (abbreviated as T<number>) - The identifier for a Troop unit type.
5. T12 - Acton MA girls-only troop. AKA T7012 where '70' prefix denotes a girls-only troop.
6. T32 - Acton MA boys-only troop.
7. Merit Badge (abbreviated as MB) - An earned badge recognizing skills in a specific subject matter
8. Rank - A stepped advancement level in Scouting America
9. Eagle Scout - The highest rank in Scouting America
10. Eagle-required Merit Badge - one of a specific set of MBs required to earn the Eagle Scout Rank
11. Youth Member - An under aged 18 person registered with a unit
12. Registered Adult - A person aged 18+ who is registered with Scouting America.
13. YPT - Youth Protection Training. Required to remain current, that is, not expired, for all Registered Adults
14. Merit Badge Counselor - A Registered Adult who has been authorized by the local Council to instruct Scouts on one or more MBs
15. Unit Leader (aka Scouter, Leader) - An Registered Adult who is registered with a unit. Note that a Registered Adult can be registered with multiple units and multiple positions within Scouting America
16. ScoutBook - The data management system used by members of Scouting America.

Merit Badge Counselor Lists Specification

Architectural Framework
1. Create the tool in Python.
2. Enable the launching of the tool as a GUI executable that includes:
   a. Simple file selection (drag & drop)
   b. Progress indicators
   c. Built-in help/instructions
   d. Automatic output folder opening
   e. Error messages in plain English
3. Additionally provide a command-line interface (CLI) for:
   a. Batch processing multiple troop sets
   b. Automation and scripting capabilities
   c. Integration with other tools
   d. Advanced users who prefer terminal workflow
4. Distribution:
   a. Primary: Standalone executable (.exe/.app) requiring no Python installation
   b. Secondary: Python package installable via pip for developers
   c. Include sample data files for testing
5. File Organization:
   a. Create timestamped output folder (e.g., "MBC_Reports_2025-06-02_14-30")
   b. Organize by format: /html/, /csv/, /pdf/, /excel/, /wordpress/
   c. Include a summary report with statistics and validation results
   d. Auto-open output folder upon completion
6. Error Handling:
   a. Graceful handling of corrupted/incomplete PDF files
   b. CSV encoding detection (UTF-8, Windows-1252, etc.)
   c. Network timeout handling for scouting.org data
   d. Clear error messages with suggested solutions
   e. Partial processing capability (continue with available data)
7. Debug Logging:
   a. Print extracted data for each processed row in roster
   b. Print extracted data for each registered merit badge counselor
   c. Print compiled list of adult leaders and whether or not they are also a registered merit badge counselor
8. Configuration:
   a. Settings file for default URLs and preferences
   b. Output format preferences
9. Input Validation:
   a. CSV format verification (required columns: firstname, lastname, positionname, primaryemail, primaryphone)
   b. PDF content verification (contains merit badge counselor data)
   c. Web connectivity check for scouting.org access
   d. File size limits and warnings

       e.   Duplicate detection and handling
10. Progress Tracking:
       a.   Overall progress bar (0-100%)
       b.   Current step indicators ("Processing PDFs... 3/5")
       c.   TA estimates for large datasets
       d.   Cancel operation capability
       e.   Background processing option

Inputs

1. List of all merit badges.
   a. They begin after "Merit Badges A-Z" heading in
      https://www.scouting.org/skills/merit-badges/all/;
   b. Ignore the "Requirements Update" section at top of this page
2. List of Eagle-Required merit badges.
   a. See https://www.scouting.org/skills/merit-badges/eagle-required/
3. T12 Roster
   a. A CSV containing a list of T12 members including Registered Adults and Youth Members.
   b. The column headers for the relevant rows are on the line beginning with "..memberid"; ignore the previous rows
   c. Extract the values for the following column headers:
      i. First Name - column heading is firstname
      ii. Last Name - column heading is lastname
      iii. Unit Position - column heading is positionname
      iv. Email - column heading is primaryemail
      v. Phone - column heading is primaryphone
   d. Youth Members are identified by positionname column value containing "Youth Member".
   e. Registered Adults are those not identified as a Youth Member.
4. T32 Roster
   a. A CSV containing a list of T32 members including Registered Adults and Youth Members.
   b. The format of the T32 Roster matches the format of the T12 Roster.
5. List of Merit Badge Counselors
   a. This list is the search results generated by the ScoutBook system.
   b. It is formatted in multiple PDFs saved from the paginated search results of Registered Merit Badge Counselor within 5 miles of zip code 01720 (Acton MA).
   c. Extract the following data for each Merit Badge Counselor
      i. First Name
      ii. Alternate First Name - identified within parentheses
      iii. Last Name
      iv. Phone numbers
      v. Email
      vi. List of merit badges they are registered for

      d. Verify input PDFs can be textually parsed.
          i. Ensure they are not password protected.
          ii. Ensure they are not images.

Outputs

1. T12/T32 Merit Badge Counselors
   a. Cross reference the compiled List of Merit Badge Counselors with the Registered Adults in the T12 Roster and T32 Roster to identify the T12/T32 Merit Badge Counselors.
      i. Match the First Name in a roster to the First Name or Alternate First Name) in the compiled List of Merit Badge Counselors.
      ii. Match the Last Name in a roster to the Last Name in the compiled List of Merit Badge Counselors.
      iii. Disregard Youth Members.
   b. For each merit badge counselor identified in the cross reference, list the following
      i. First and Last Names
      ii. Unit Position
      iii. Registered troop(s)
      iv. All email addresses
      v. All phone numbers
      vi. List email(s), phone number(s), address(es) for each name.
   c. Ask to see "Troop 12-32 Merit Badge Counselors.pdf" for example output generated from a previous Claude chat.
2. T12/T32 Leaders not Merit Badge Counselors
   a. List the first and last names of Registered Adults in T12 and T32 who are currently not Merit Badge Counselors.
   b. Ask to see "T12-T32 Leaders not Merit Badge Counselors.pdf" for example output generated from a previous Claude chat.
      i. Note that this generated output contained an incomplete list of leaders.
      ii. That issue remained to be debugged in the prior Claude chat.
3. T12/T32 Merit Badge Counselor Coverage
   a. List all the merit badges and their T12/T32 merit badge counselors in the following order:
      i. Eagle-required merit badges with corresponding T12/T32 merit badge counselors. Sort merit badges in ascending alphabetical order.
      ii. Eagle-required merit badges without corresponding T12/T32 merit badge counselors. Sort merit badges in ascending alphabetical order.
      iii. Non-Eagle-required merit badges with corresponding T12/T32 merit badge counselors. Sort merit badges in ascending alphabetical order.
      iv. Non-Eagle-required merit badges without corresponding T12/T32 merit badge counselors. Sort merit badges in ascending alphabetical order.
4. Support the generation of the above three lists in the following output formats:
   a. HTML: Self-contained with embedded CSS, working download buttons
   b. PDF: Professional formatted reports with letterhead option

      c. Excel: Multi-sheet workbook with data validation and formatting
      d. CSV: UTF-8 encoded, properly escaped, Excel-compatible
      e. WordPress: Shortcode-compatible with embedded download functionality

Testing
1. Verify the total number of merit badges in "T12/T32 Merit Badge Counselor Coverage" matches the total number of merit badges in https://www.scouting.org/skills/merit-badges/all/
2. Verify the total number of Eagle-required merit badges in "T12/T32 Merit Badge Counselor Coverage" matches the total number of Eagle-required merit badges in https://www.scouting.org/skills/merit-badges/eagle-required/
3. Verify the total number of Merit Badge Counselors in "T12/T32 Merit Badge Counselors" plus the total number of adults in "T12/T32 Leaders not Merit Badge Counselors" match the total number of Registered Adults in the T12 Roster plus T32 Roster.
4. Verify the "Download CVS File" and "Print" buttons work for each generated webpage. Verify their use does not generate console errors.
5. Verify the generated webpages are without system and console errors.
6. Performance: Process 1000+ counselors within 30 seconds
7. Usability: Non-technical user can complete workflow in under 5 minutes
8. Cross-platform: Test on Windows 10/11, macOS, Linux
9. Data integrity: Verify no data loss during processing
10. Output validation: All generated files open correctly in standard applications

Developmental Order
1. Implement necessary *framework* to support CLI and GUI and all output file types features.
      a. Initially, only the essential functionality of CLI input and HTML output will be implemented in order to test data processing.
2. Essential functionality
      a. Implement CLI input only where input files can be specified.
      b. Implement HTML output file type only.
3. Cache the lists of all merit badges and Eagle-required merit badges from scouting.org,
      a. Repeated runs of the code will result with scouting.org denying access to this lists.
      b. Upon first successful retrieval of these lists, save them in data structures in code as default values to use should there be any subsequent failure to retrieve them from scouting.org.
4. Testing
      a. Test with dummy input data
          i. Verify output is correct.
      b. Test with real input data.
          i. I will manually verify the output is correct.
5. Implement GUI input after confirming CLI/HTML testing passes.
      a. Repeat above Testing step 3.

Merit Badge Counselor Lists Specification

6. Iteratively implement and repeat above Testing 3 with the following output files types:
   a. CVS
   b. PDF
   c. Excel
   d. WordPress

Notes
1. Refer to scouting.org for more information about Scouting America as needed.
2. The merit badge lists should be derived from only scouting.org as they are always current.
3. The specifications within this document supersede prior chats.
4. Request clarification where needed in this chat.
5. Future enhancements:
   a. The retrieval of rosters for specified units directly from ScoutBook.
   b. The retrieval of Merit Badge Counselors directly from ScoutBook.
   c. Batch processing for multiple units.
   d. Automatic updating of unit websites.