

CS Capstone Design

Technical Demo Grading Sheet (100 pts)

TEAM: SharkBytes

Overview: The main purpose of the “Technical Demos” is to very clearly communicate the extent to which the team has identified key challenges in the project, and has proven solutions to those challenges. Grading is based on how complete/accurate the list of challenges is, , and how convincingly and completely the given demos cover the given challenges.

This template is fleshed out by the team, approved by CS mentor, and brought to demo as a grading sheet.

Risky technical challenges

Based on our requirements acquisition work and current understanding of the problem and envisioned solution, the following are the key technical challenges that we will need to overcome in implementing our solution:

Cx: Short title of the challenge. <Concise 1-3 sentence description of what exactly might be challenging here. Then *state exactly what, in principle, you’d have to show/demo in order to prove a good solution.*>

C1: Communication with Bluetooth PIT Scanner

Description:

- The application requires stable communication with the Bluetooth PIT Scanner in order to maintain the same efficiency as the clients experienced with SHOALS, however our chosen framework Flutter does not include any bluetooth libraries. The communication module would need to be written fully in native C++ and then wrapped in a Flutter Method Channel.
- In order to prove a good solution to this challenge, the demonstration should show clear communication and the extraction of a PIT unique identifier number to a Flutter UI.

C2: Automatic Backup to External Storage Devices

Description:

- In order to ensure the integrity of the data being collected, multiple external flash drives are used as backup locations during collection. These locations must be detected, and written to after every scan. This allows multiple redundant copies of the data in case of accidents or loss of hardware.
- Proof of a good solution to this challenge would entail plugging in several external drives to the computer and showing that data can be simultaneously saved to all drives, including the internal drive, after every scan.

C3: Interactive User Interface with Customizable Fields

Description:

- The researchers need a number of different fields to enter information about processed fish. These fields need to have user-customizable titles to communicate what information should be entered. Additionally, fields which are specified to accept only numerical data should alert the user if they enter alphabetical data into them.
- Proof of a good solution would include functionality showing the application can query a SQL database with the fields the user needs, and retrieve and print its structure.
- Additionally, an interactive user interface with a number of fields with different names should be rendered to the display

Challenges covered by demos:

In this section, we outline the demonstrations we have prepared, and exactly which of the challenge(s) each one of them proves a solution to.

Demonstration 1: Communication with Bluetooth PIT Scanner

Challenges addressed:

1. Establishing a reliable connection to the scanner
2. Receiving the complete data
3. Displaying data on the flutter front end

Flight Plan: Step by step overview of demo

1. User connects Windows laptop to Biomark HPR Lite scanner
2. User opens terminal program for Bluetooth demo and executes program
3. User scans demo PIT tag
4. PIT tag ID is printed to terminal
5. PIT tag ID is displayed on the Flutter front end

Evaluation:

- ✓ Convincingly demo'd each of listed challenges?
- ✓ Other evaluation comments:

Demonstration 2: Automatic Storage Backups

Challenges addressed:

1. Identification of storage devices
2. Creation of /Data directory
3. Creation of [data.db](#) files
4. Accurate information contained within database files

Flight Plan: Step by step overview of demo

1. Connect the flash drives to the computer
2. Show that they are empty (No data files, no directories)
3. Specify the backup drives to the program
4. Run the program and simulate scans
5. Re-open drive directories and show that data directories and files are now present

Evaluation:

- ✓ Convincingly demo'd each of listed challenges?
- ✓ Other evaluation comments:

Demonstration 3: User Interface with Customizable Fields and Save Button

Challenges addressed: Challenge 3, Interactive User Interface with Customizable Fields (this demo shows a basic interactive UI prototype)

Challenges:

1. Render user interface to display
2. Interact with fields through mouse and keyboard
3. Field rejects data that doesn't match constraints
4. Interactive save button

Flight Plan: Step by step overview of demo

1. Open the program
2. Program displays number of fields with titles and a single save button
3. User clicks on fields to display that they are interactive, tabbing through different fields with the tab and shift tab button
4. User enters alphabetical information in a numerical field, program should display a warning
5. User clicks non-functional save button, program prints something to say record has been saved

Evaluation:

- ✓ Convincingly demo'd each of listed challenges?
- ✓ Other evaluative comments:

Demonstration 4: Retrieve Information from SQLite Database

Challenges addressed: Challenge 3, User Interface with Customizable Fields (this demo shows how fields are customized, by referencing the structure of the SQL structure)

Challenges:

1. Application can enter information into database
2. Application can read structure (tables, attributes) of database via queries
3. Application can format and print structure

Flight Plan: Step by step overview of demo

1. In code editor, user runs Dart program
2. Dart program connects to SQLite, creates database from pre-defined schema and enters data
3. Dart then runs different function, which connects to SQLite and prints information about every table, and every attribute in each table to terminal
4. Program terminates

Evaluation:

- ✓ Convincingly demo'd each of listed challenges?
- ✓ Other evaluative comments:

Other challenges recognized by not addressed by demo:

If there were challenges you listed earlier that were *not* covered by a demo, list here. This will hopefully be a short list...but better to be clear about where you are. If you have items here, you could list (if applicable) any pending plans to reduce these risks.⁴