AMPS Error Handling

Introduction

A system is rarely 100% free from errors therefore proper error handling is essential to reliable and user-friendly software. There are four categories of errors handled by the AMPS system: user errors (ideally handled in real time), logic errors, network connection/communication errors, and database errors. The overall strategy for error handling is to capture the error, note it in the log, and then present a human readable and/or meaningful error back to the requestor as appropriate.

User Errors

As users utilize the front-end system, it is inevitable that there will be errors – either from incorrect data entry or from unintended usage of the screens/flow of screens. These errors are typically identified and captured by the system at the time of the error and a user-friendly, human readable, error message is displayed to the user prompting them to correct the error. Examples of these errors include:

- Entering alphabetic characters into a numeric field
- Forgetting to select a field on a form
- Navigating to a specific link/webpage for a specific item that is no longer valid (versus using a search screen to navigate to an item)

Logic Errors

This type of error occurs when there is a processing error of data – typically user provided data and causes the system to not function as designed. An example of this error is trying to use a numeric field in a math equation that contains alphabetic characters. These errors are handled throughout the system by perform sanitation checks on the data prior to processing, checking assumptions prior to further processing (i.e. making sure a dataset has rows) and if there is a problem with on of the assumptions, the goal is to capture it prior to the system throwing an error. In the event that the system does throw a logic error, these are captured and logged, and then a cleaner version (free from sensitive data and/or system credentials to prevent malicious use of the system) of the error is displayed or communicated to the consumer of the process to indicate that something went wrong.

Network Connection / Communication Errors

Even in the most reliable networks, there is always an opportunity for network connection or communication failures. The AMPS software is designed to validate all data transmitted to ensure that it is complete – if missing data is found, then an error message is sent back to the sender to indicate that it was not successful. Most of the program segments will either try again (where it makes sense), or present an error message to the user to have them try again.

Database Errors

This type of error is typically due to referential integrity constraints that prevent erroneous data from being saved to certain tables. These errors are all handled by the API and are translated into meaningful error messages that are then sent back to the API requestor. Another common error that can occur on the database is a time out error if too much data is being requested or if a query is running too long. These errors are typically detected during performance testing and database optimizations are performed to reduce the occurrences of these errors. Logging is also utilized for database errors and any time out errors will be researched and resolved with further optimizations.