

Danfoss Enterprise Layered Process Auditing

Project Plan

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Overview

Problem Statement

In this project, our group will design and implement a web application to simplify and centralize Danfoss' auditing process. The current process lends itself to time-consuming or incomplete audits with too many possible points of failure. Simplifying this process will allow audits to be completed quicker with more flexibility, creating a safer workplace and higher-quality work output.

Deliverables

First Semester

- Documentation of auditing process flow
- UI prototype

Second Semester

- A working web app
- A database backend to support the web app.

Specifications

Auditing system must work for both PC and iPad platforms. This allows for mobile completion on the shop floor as well as in the office. The code should be developed using Stylecop standards.

System Requirements

Project Requirements

- Ability to answer audit questions
- Automatic selection of auditors with defined rotation
 - Select from list with managers, directors, and guests in defined rotation
 - Guest can be inserted at random and does not change the rotation
- Automatic notification by e-mail to auditor of upcoming audit
- Automatic notification by e-mail if audit is not complete when due
- 'Base' audit for to use when starting audits in a cell/area
- List of questions for audit by category to select when changes to the audit are desired by a cell/area
- How and where defined for questions
 - How to determine answer to question
 - Where to look for information to answer question
- Dropdown list of responses to audit questions

- Automatic tracking of individual audit questions
 - Automatic notification when audit question competency is reached
- Automatic tracking of total audit score (chart)
- Number of 'no' responses is limited on each question
- Standard work to be audited displays the current standard work from Navigator
- (optional) Capability to save audit progress

Assessment of Proposed Solution

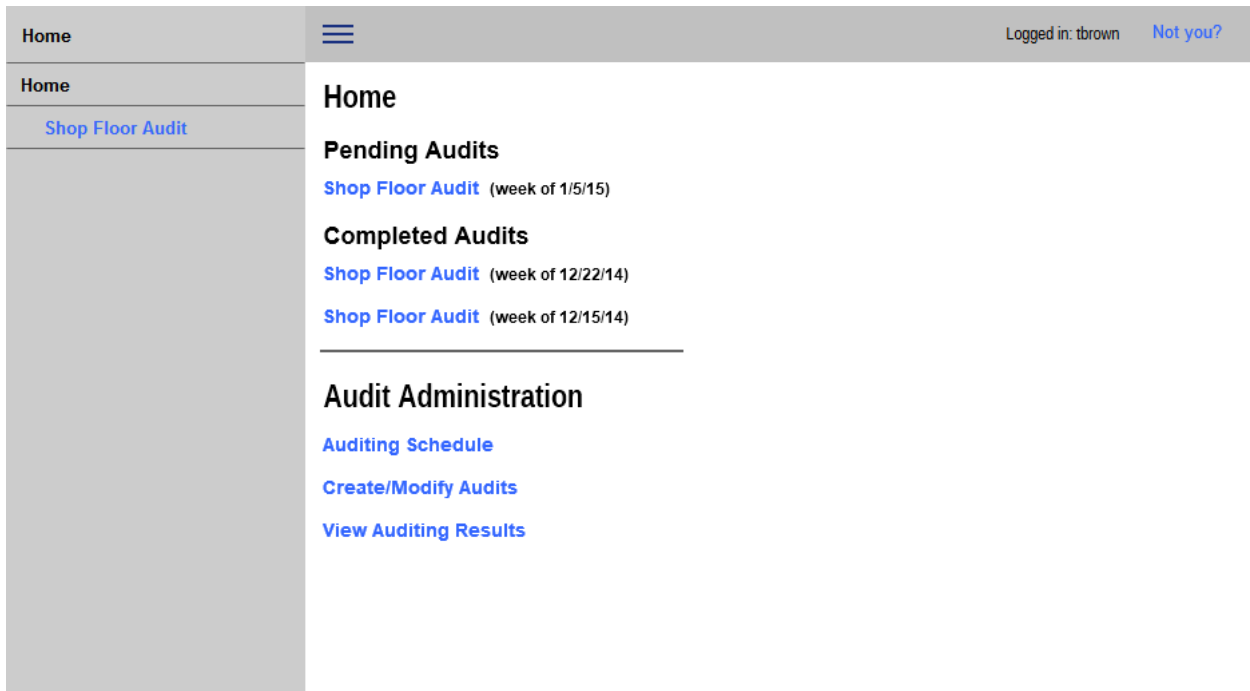
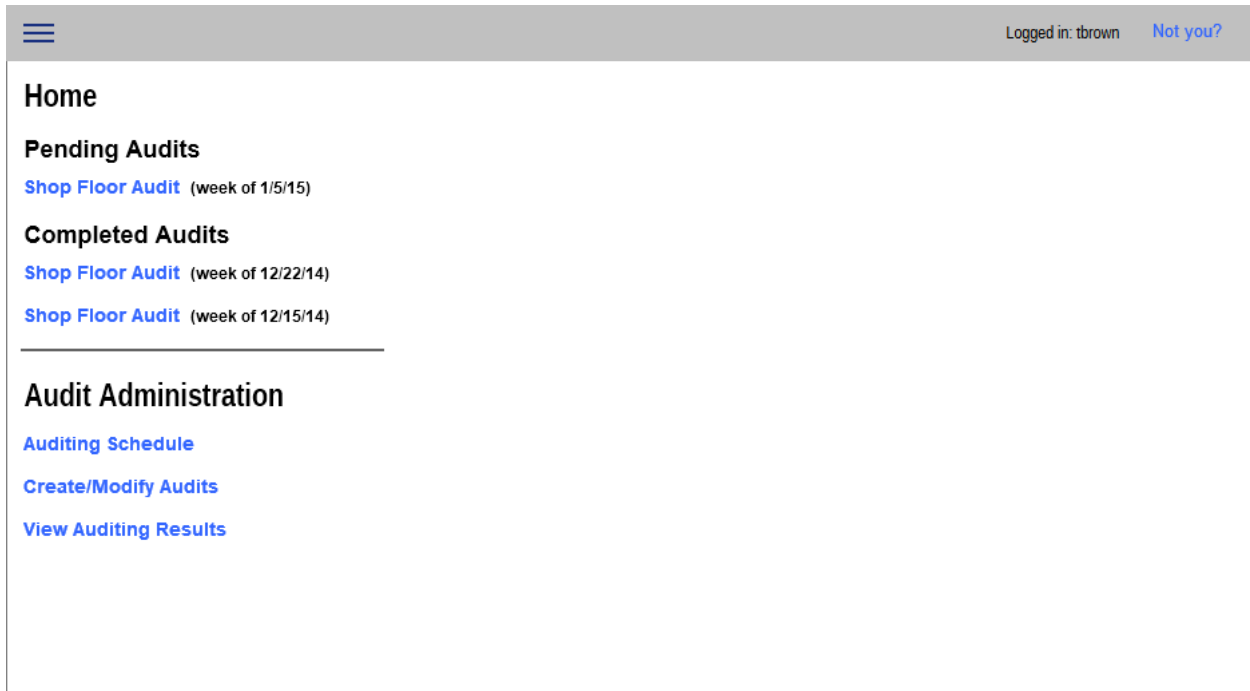
The Danfoss Auditing system will make data results easier to process and view. Before, the admin would enter in results by hand and create a graph. Completing an audit through software takes away the hassle of printing, filling it out, and then scanning it to be sent electronically.

Validation and Acceptance Test

We will validate our progress with our client by reviewing the requirements checklist they specified and have them ensure that each one works correctly. This will be done iteratively according to the schedule listed below.

Interface / System Description

UI Mockups



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Shop Floor Audit

Safety

1. Are Near Miss / Safety Alerts posted on the Safety Board?

Additional Comments

[Next](#)

?

Where to look: Check the Safety Board for Near Miss or Safety Alerts

Shop Floor Audit ☰ Logged in: tbrown [Not you?](#)

- [Home](#)
- Shop Floor Audit**
- Question 1**
- [Question 2](#)
- [Question 3](#)
- [Question 4](#)
- [Question 5](#)
- [Question 6](#)
- [Question 7](#)
- [Question 8](#)

Shop Floor Audit

Safety

1. Are Near Miss / Safety Alerts posted on the Safety Board?

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Where to look: Check the Safety Board for Near Miss or Safety Alerts

Non Functional Requirements

- Responsive design supports both desktop and tablet screen sizes
- Automatic picture based results
- Dropdown list of response to audit questions

Technical Approach

The system will provide accurate feedback of audit results after finishing an audit. This will include SSRS to process the data and represent the results in visually appealing graph. Each section of the audit process will be split up into a hierarchy and have set scores. Each question will be on its own page and clicking next will take the user to the next page and question.

Test Plan

This project will utilize unit testing during development (through [NUnit](#)), aiming for 70% code coverage. Unit tests will be supplemented by functional and implementation testing to ensure usability of common use cases.

Work Breakdown

Cost Considerations

Resource	Source	Estimated cost
Visual Studio with Microsoft SQL Server	Provided by ISU through Dreamspark	N/A
StyleCop	Open Source	N/A
Development web server	Provided by ISU	N/A
Apple iPad	Provided by Danfoss	N/A

Project Schedule

Fall 2014	August 25th	Dec 12th
Task	Start	End
Requirements gathering	Sept 1st	Sept 12th
Project Plan	Sept 22nd	Sept 29th

UI Designs	Sept 22nd	Oct 17th
-Main Design	Sept 22nd	Oct 17th
-Login Design	Sept 22nd	Oct 17th
-Admin Design	Sept 22nd	Oct 17th
-Tablet Interface	Oct 18th	Nov 10th
-Report design	Oct 18th	Nov 10th
Prototypes	Nov 10th	Dec 12th
-Full Prototype	Nov 10th	Dec 12th
--Login	Nov 10th	Nov 21st
--Admin	Nov 17th	Nov 28th
--Reporting	Nov 24th	Dec 12th
Database setup	Nov 10th	Dec 12th

Spring 2015	Jan 12th	May 1st
Task	Start	End
Functional implementation		
-Questions Implementation		
-Email notifications		
-Admin Implementation		
Migrate program to Danfoss		
User testing(?)		
Non-functional implementation(?)		

Risks

Risk	Probability of occurrence	Criticality (1-100)	Risk factor (prob * criticality)	Mitigation strategies
Essential requirements are missed	.4	80	32	Re-identify requirements with client frequently
Program doesn't interface with customer hardware	.2	90	18	Ensure development environment matches production environment
Program will need changes post release	.9	10	9	Provide thorough documentation and match clients code style (stylecop)

Market/ Literature Survey

Similar auditing systems are available for purchase from a number of other companies (such as Intelix and MKinsight). They provide more powerful functionality at the cost of complexity.

Conclusion

This web application will simplify and centralize Danfoss' auditing process. It will provide an easy to use question system and result analytics. Notifying users to complete an audit will result in higher completion rate than before. Editing current questions will be easier than the current system in place.