|  |  |
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|  | Audio Cataloger Project |
| Test Plan  **Project Documentation** |
| **Background** | Full set of requirements specification. |
| **Purpose** | To organize both development and testing process. |
| **Scope** | Business requirements, user requirements, detailed  specification, limitations. |
| **Audience** | Management staff, project team. |
| **File** | Audio Cataloger Requirements.docx |

Contents

[1. Project scope 3](#_Toc82514478)

[2. Main goals 3](#_Toc82514479)

[3. Requirements to be tested 3](#_Toc82514480)

[4. Requirements NOT to be tested 3](#_Toc82514481)

[5. Test strategy and approach 4](#_Toc82514482)

[5.1 General Approach 4](#_Toc82514483)

[5.2 Functional testing levels 4](#_Toc82514484)

[6. Criteria for main goals achievement 4](#_Toc82514485)

[7. Resources 5](#_Toc82514486)

[9. Roles and responsibilities 5](#_Toc82514487)

[10. Risks evaluation 5](#_Toc82514488)

[12. Metrics 6](#_Toc82514489)

# Project scope

* Develop a Catalog audio tool which list of all audio files using, and able to find duplicates and corrupted audio files.

# Main goals

* Provide the Customer with a quick and simple tool to create a list of all audio files in his possession along with duplications cross-reference.
* The resulting list should be viewable via web-browser for quick review, and editable in spreadsheet software for thorough review and processing.
* The tool should not fail (for any reason) during its working process (unlike many competing tools).

# Requirements to be tested

See referenced sections in “Audio\_Cataloger\_Requirements.pdf”:

* [UR-1](#_bookmark7)\*: Smoke test.
* [UR-2\*:](#_User_requirements) Smoke test, Critical path test.
* [UR-3\*:](#_User_requirements) Critical path test.
* [BR-1\*:](#_Business_rules) Smoke test.
* [BR-2\*:](#_Business_rules) Smoke test, Critical path test.
* [BR-3\*:](#_Business_rules) Critical path test.
* [BR-4\*:](#_Business_rules) Critical path test.
* QA-2\*: Smoke test, Critical path test
* QA-3\*: Critical path test
* L-1\*: Smoke test.

# Requirements NOT to be tested

See referenced sections in “Audio\_Cataloger\_Requirements.pdf”:

* SC-1\*: The application is a console one by design.
* SC-2\*: The application is developed with proper JRE version.
* L-2: The application is developed with proper JRE version.
* L-3: No implementation required.
* L-4: No implementation required.

# Test strategy and approach

# 5.1 General Approach

* The application should list all the audio files in web browser and spreadsheet editor. The configuration will be done once by an experienced specialist and later used by end users with only one operation available. Therefore, issues of usability, security, etc. not explored during testing

# 5.2 Functional testing levels

* Smoke test: Automated with different configuration command line parameters under Windows and Linux (optional).
* Critical path test: Executed manually.
* Extended test: Not executed as the probability of defects detection on this level is negligibly small.

Due to the team cross-functionality, a significant contribution to quality improvement can be expected from the code review combined with manual testing using the white box method. Unit-testing will not be applied due to extreme time limitations.

# Criteria for main goals achievement

* The tool should be a console one (for simplicity), support smart comparison algorithms (for good performance) and the following audio formats: see [BR-1](#_bookmark7).
* HTML (for browser) and CSV (for spreadsheet editor) output support.
* Deep testing for negative and critical situations should be implemented to ensure the application reliability.
* Acceptance criteria: 100% success of test cases on smoke test level and 90%
* success of test cases on critical path test level (see “Test cases success
* percentage” metric) if 100% of critical and major bugs are fixed (see “Overall defects
* fixed percentage” metric). Final requirements coverage by tests (see “Requirements
* coverage by tests” metric) should be at least 80%.
* Testing start criteria: new build.
* Testing pause criteria: critical path test must begin only after 100% success of testcases on the smoke test (see “Test cases success percentage”); test process may
* be paused is with at least 25% test-cases executed there is at least 50% failure rate
* (see “Stop-factor” metric).
* Testing resumption criteria: more than 50% of bugs found during the previous
* iteration is fixed (see “Ongoing defects fixed percentage” metric).
* Testing finish criteria: more than 80% planned for the current iteration test cases are
* executed (see “Test-cases execution percentage”).

# Resources

* Software: six virtual machines (three with Windows 10 Ent x64, three with Linux Ubuntu 18 LTS x64), four JAVA Storm licenses (latest version available).
* Hardware: four standard workstations (8GB RAM, i7 3GHz).
* Personnel: Two developers and Two testers (100% workload during all project time)
  + One senior developer with testing experience. Roles: team lead, senior developer.
  + One developer. Role: programmer.
  + One senior tester with JAVA knowledge. Roles: team lead, tester.
  + One tester with JAVA knowledge. Role: tester.
* Time: Three workweek (120 work hours).
* Finances: According to the approved budget.

1. Schedule

* 03.02 – requirements testing and finalizing.
* 08.02 – test-cases and scripts for automated testing creation.
* 16.02 to 19.02– main testing stage (test-cases execution, defect reports creation).
* 22.02 – testing finalization, reporting

# Roles and responsibilities

* Senior developer: Participation in requirements analysis, communication with clients, coding, unit testing and code review.
* Senior Tester: Documentation creation, test-cases execution, participation in code-review.
* Developer: Participation in requirements testing and code review.
* Tester: Test-cases execution, participation in code-review.

# Risks evaluation

* Complexity of accurate parsing of some audio formats.
* Complexity (or impossibility) to detect encoding for non-English tags in files.
* Personnel (low probability): if any team member is inaccessible, we can contact the representatives of the “Audio Cataloger” project to get a temporary replacement (the commitment from the “Audio Cataloger” PM John Smith was received).
* Time (high probability): the customer has indicated a deadline of 23.02, therefore time is a critical resource. It is recommended to do our best to complete the project by 22.02 so that one day (23.02) remains available for any unexpected issues.
* Other risks: no other specific risks have been identified.

1. Documentation

* Requirements. Responsible person – tester, deadline – 03.02.
* Test cases and defect reports. Responsible – tester, creation period – 16.02-19.20
* Test result report. Responsible person – tester, deadline – 23.02.

# Metrics

* Test cases success percentage:

𝑇 𝑆𝑃 = 𝑇𝑆𝑢𝑐𝑐𝑒𝑠𝑠 ∙ 100%, where

𝑇𝑜𝑡𝑎𝑙

𝑇

𝑇 𝑆𝑃 – percentage of successfully passed test cases,

𝑇 𝑆𝑢𝑐𝑐𝑒𝑠𝑠 – quantity of successfully passed test cases,

𝑇𝑇𝑜𝑡𝑎𝑙 – total quantity of executed test cases. Minimally acceptable borders:

* Beginning project phase: 10%.
* Main project phase: 40%.
* Final project phase: 80%.
* Overall defects fixed percentage:

𝐷𝐹𝑇𝑃 = 𝐷 𝐶𝑙𝑜𝑠𝑒𝑑 ∙ 100%, where

𝐿𝑒𝑣𝑒𝑙

𝐿𝑒𝑣𝑒𝑙

𝐷

𝐹𝑜𝑢𝑛𝑑

𝐿𝑒𝑣𝑒𝑙

𝐷𝐹𝑇𝑃 – overall defects fixation percentage by 𝐿𝑒𝑣𝑒𝑙 during all project lifetime,

𝐿𝑒𝑣𝑒𝑙

𝐷𝐶𝑙𝑜𝑠𝑒𝑑 – quantity of defects of 𝐿𝑒𝑣𝑒𝑙 fixed during all project lifetime,

𝐿𝑒𝑣𝑒𝑙

𝐷𝐹𝑜𝑢𝑛𝑑 – quantity of defects of 𝐿𝑒𝑣𝑒𝑙 found during all project lifetime.

𝐿𝑒𝑣𝑒𝑙

Minimally acceptable borders:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Defect severity | | | |
| Minor | Medium | Major | Critical |
| Project phase | Beginning | 10% | 40% | 50% | 80% |
| Main | 15% | 50% | 75% | 90% |
| Final | 20% | 60% | 100% | 100% |

* Ongoing defects fixed percentage:



𝐷𝐹𝐶𝑃 – defects fixation percentage by 𝐿𝑒𝑣𝑒𝑙 (defects found in the previous build and fixed in the current build),

𝐿𝑒𝑣𝑒𝑙

𝐷𝐶𝑙𝑜𝑠𝑒𝑑 – quantity of defects of 𝐿𝑒𝑣𝑒𝑙 fixed in the current build,

𝐿𝑒𝑣𝑒𝑙

𝐷𝐹𝑜𝑢𝑛𝑑 – quantity of defects of 𝐿𝑒𝑣𝑒𝑙 found in the previous build.

𝐿𝑒𝑣𝑒𝑙

Minimally acceptable borders:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | | Defect severity | | | |
| Minor | Medium | Major | Critical |
| Project phase | Beginning | 60% | 60% | 60% | 60% |
| Main | 65% | 70% | 85% | 90% |
| Final | 70% | 80% | 95% | 100% |

* Stop-factor:

𝑆 = {𝑌𝑒𝑠, 𝑇𝐸 ≥ 25% && 𝑇𝑆𝑃 < 50% , where

𝑁𝑜, 𝑇𝐸 < 25% || 𝑇𝑆𝑃 ≥ 50%

𝑆 – decision to pause the testing process,

𝑇𝐸 – current 𝑇𝐸 value,

𝑇 𝑆𝑃 – current 𝑇 𝑆𝑃 value.

* Test-cases execution percentage:

𝐸 𝑇𝐸𝑥𝑒𝑐𝑢𝑡𝑒𝑑

𝑇 = ∙ 100%, where

𝑇𝑃𝑙𝑎𝑛𝑛𝑒𝑑

𝑇𝐸 – test-cases execution percentage,

𝑇𝐸𝑥𝑒𝑐𝑢𝑡𝑒𝑑 – quantity of executed test-cases,

𝑇𝑃𝑙𝑎𝑛𝑛𝑒𝑑 – quantity of planned (to execution) test-cases. Levels (borders):

o Minimal: 80%.

o Desired: 95%-100%.

* Requirements coverage by tests:

𝑅𝐶 = 𝑅𝐶𝑜𝑣𝑒𝑟𝑒𝑑 ∙ 100%, where

𝑇𝑜𝑡𝑎𝑙

𝑅

𝑅𝐶 – requirements coverage by tests (percentage),

𝑅𝐶𝑜𝑣𝑒𝑟𝑒𝑑 – quantity of requirements covered with test-cases,

𝑅𝑇𝑜𝑡𝑎𝑙 – overall quantity of requirements. Minimally acceptable borders:

* Beginning project phase: 40%.
* Main project phase: 60%.
* Final project phase: 80% (90%+ recommended).