CMSC 447
Software Test Report (STR)

Group 4 - */* No Comment*/*
Realty Map Filter

Christopher Banos   Joseph Graso

David Udwin   Xavier Harris

Hannah Kiesel   Federico Cifuentes-Urtubey

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1 Scope

1.1 Identification

This document applies to the program identified as the Realty Map Filtering (RMF) application. The version number as of May 14, 2018 is 1.0.0.

1.2 System overview

This application's purpose is to locate houses for sale across the United States (U.S.) that meet certain criteria defined by the user. These criteria include, but are not limited to, a location range, property data (e.g., market value), nearby schools, crime rates, and community types (e.g., urban, suburban, or rural). The results will be displayed on a Google Maps-style map using pins along with relevant details of the property listings.

This application will make requests to APIs from third-party solutions. We believe this will require security to prevent API results from being altered into false results. A possible method to avoid this is to use an HTTPS connection when the API is used.

As for personal information, our website will not be collecting any from the user, nor will we require a login. Therefore personal data should not be at risk.

2 Referenced documents

Software Development Plan (final version), May 9, 2018.
Software Requirements Specification (final version), May 9, 2018.

3 Overview of test results

3.1 Overall assessment of the software tested

This section shall describe the overall assessment of the RMF; remaining deficiencies, limitations, or constraints of the RMF; and impacts of such individual concerns that may impact the application.

- **Overall assessment**: The RMF successfully performs the duty it was designed for, including taking property listing search criteria defined by the user and displays them on a map.
- **Remaining constraint**: Testing revealed that the searches will not return property listings that are uncategorized, meaning that those properties in Zillow's database that are not labelled as townhomes, single family homes, or condominiums will not appear from an RMF search.
- **Impacts of the constraint**: The absence of uncategorized property listings in an RMF search does not impact the performance of the software. The developers made a tradeoff to use an html parser for Zillow queries for Requirement 4.0.1 in order to improve performance, and the testing revealed this constraint from this decision. This

will not impact the correctness of results, however, because expected search results still return in accordance to the user's criteria.

- **Proposed solution for the constraint**: Use an html parser for a different property listing website (e.g., Trulia), and either solely rely on that website in a tradeoff for an additional piece of information *or* match criteria with the Zillow searches in a tradeoff for performance.

3.2   Impact of test environment

The test environment for the developer team uses Travis CI on a Macintosh laptop with macOS High Sierra v10.13.4. Assuming the operational environment has all the required software installed, there will not be any major differences to the functionality of the RMF. One minor difference we expect is the speed of obtaining search results, which relies on the processing speed (e.g., hardware capabilities) of the local host running the application in addition to its Internet connection speed.

3.3   Recommended improvements

As of May 14, 2018, the developer team would recommend the RMF application to be graphically redesigned, cache results, and remove search criteria for school data.

In regards to being graphically redesigned, the team believes the user interface can be designed to look cleaner by using a couple of soft colors (e.g., light green and white) and allowing sufficient whitespace between search boxes while keeping sans serif text. The expected impact of graphical redesign on the software would be allowing the interface to be more interactive to the user in addition to responsive to the web browser's resolution on-screen.

Caching results would reduce delay of search queries. This would also allow a history feature to be implemented, showing listings that the user viewed previously. Saving previous searches into a database would also entail a login system to keep track of specific listings a user has viewed during their use of the RMF. The expected impact of caching results on the software is more rapid response from searches.

For removing search criteria for school-related items, we consider that some, if not most, users of the RMF could be mostly interested in finding property listings rather than information about schools. The main purpose of the RMF is to search for properties that match a user's criteria for search, which denotes that there is no major focus on schools nearby a property. Instead, a proposed search criteria that may replace this one is proximity to restaurants. The expected impact of removing search criteria for restaurant information is making the product more relevant to more users.

4   Detailed test results

This section shall be divided into the following paragraphs to describe the detailed results for each test. Note: The word "test" means a related collection of test cases.

4.1 (Project-unique identifier of a test)

This section shall identify a test by the requirement being observed during operation of the application. Each test covers a single requirement for the product. See section 5 for a list of requirements categorized by a specific component of the RMF. The following subsections describe the test results in further detail.

4.1.1 Summary of test results

This subsection shall summarize the test results. The summary shall include the completion status of each test case associated with the test. When the completion status is not "as expected," this subsection shall reference the following subsections for details.

Overall the following deviations in our development requirements caused failures in some tests:

- Zillow API doesn't support certain features and was replaced with Redfin API
- School search was replaced with a rating system
- SchoolDigger API was replaced with GreatSchools API

Below is a more detailed list of the reasoning for failed tests:

1.0 - 2.0.3: All results as expected

2.0.4: Zillow API doesn't support neighborhood search

2.0.5: All results as expected

3.0.11: Local schools replaced with rating system

4.0.1: Redfin replaced with Zillow

4.0.3: All results as expected

4.0.5: GreatSchools API used instead of SchoolDigger

4.0.6: Zillow API doesn't support proximity search

3.0: All results as expected

3.0.1: Search result table redesigned

3.0.2 - 4.0.4: All results as expected

4.0.7: SchoolDigger API not used

4.0.8: SchoolDigger API not used

5.0 - 5.1.2: All results as expected

4.1.2   Problems encountered
Not applicable in general. Refer to the notes column of each test entry within section 5.

5   Test log
This section shall present a record of the test events divided by the various aspects of the RMF application, which includes Map Display, Search Inputs, Search Results, Browser Compatibility. This test log shall include the date of the tests performed and pass or failure status of each test.

a.   Map Display

Testable requirement	Passed/Failed	Date of Test	Notes
1.0: Search bounds limited to US	Passed	May 9, 2018	
1.0.1: Location of results are shown on a digital map	Passed	April 13, 2018	
1.0.2: Map radius is scalable	Passed	April 13, 2018	
4.0: The RMF shall utilize external interfaces to determine and display search results	Passed	April 13, 2018	lxml is used to parse the html from Zillow
4.0.2: Google Maps shall be used to display the map and geographic location of search results	Passed	April 13, 2018	

b.   Search Inputs

Testable requirement	Passed/Failed	Date of Test	Notes
2.0: Available user search options shall be able to filter through use of six search criteria	Passed	May 14, 2018	Criteria are listed in this table
2.0.1: search criteria includes street address	Passed	May 9, 2018	
2.0.2: search criteria includes city, state	Passed	May 9, 2018	
2.0.3: search criteria includes zip	Passed	May 9, 2018	

code			
2.0.4: search criteria includes neighborhood	Failed	May 10, 2018	Zillow API does not allow this criteria
2.0.5: search criteria includes school	Passed	May 10, 2018	RMF uses a school rating system (1-10)
3.0.11: Search options shall include local schools	Failed	May 10, 2018	Replaced with rating system
4.0.1: Redfin shall be used to to locate real estate addresses, prices, and, features of search results	Failed	May 14, 2018	Switched with Zillow for better performance (query speed)
4.0.3: SpotCrime shall be used to gather information about local crime rates to be used as a search option	Passed	May 14, 2018	
4.0.5: SchoolDigger shall be used to gather information about school location to be used as a search option	Failed	May 14, 2018	Replaced with GreatSchools API
4.0.6: search criteria includes school proximity	Failed	May 14, 2018	Not available on Zillow API

Note: Requirement 2.0.5's search criteria is to search by school ranking on a scale from 1-10, defined by graduation rate for high schools in the local area. It will search for school rated greater than or equal to the queried value. The higher the ranking value, the higher the graduation rate for searchable high schools.

c. Search Results

Testable requirement	Passed/Failed	Date of Test	Notes
3.0: User search results shall display 26 results per page	Passed	May 14, 2018	The minimum results returned is 0; Test queries have

			not shown more than 26 results all at once
3.0.1: Details of search results shall be displayed in a multi-page side window next to the map display	Failed	May 14, 2018	Replaced as a table below the map
3.0.2: Available search results information shall be real estate to buy, rent, or just sold based on user search criteria	Passed	May 9, 2018	
3.0.3: Results shall include zip code of real estate structure	Passed	May 9, 2018	
3.0.4: Results include property listing cost	Passed	May 9, 2018	
3.0.5: Results include property type	Passed	May 9, 2018	Types include Townhouse, House, and Condo
3.0.6: Results include property square footage	Passed	May 9, 2018	
3.0.7: Results shall include house address	Passed	May 9, 2018	
3.0.8: Results details shall include lot square footage	Passed	May 9, 2018	
3.0.9: Results details shall include number of bathrooms	Passed	May 9, 2018	
3.0.10: Results details shall include number of bedrooms	Passed	May 9, 2018	
3.0.12: Results shall include local school ratings	Passed	May 9, 2018	Data provided by GreatSchools API
3.0.13: Results shall include crime	Passed	May 9, 2018	Rates are per

rates			day within the region the SpotCrime API defines
3.1: Results shall be based upon a search from user inputs	Passed	May 14, 2018	
4.0.4: SpotCrime shall be used to gather information about local crime rates to be displayed as search results	Passed	May 9, 2018	
4.0.7: SchoolDigger shall be used to gather information about school location to be displayed as search results	Failed	May 14, 2018	SchoolDigger was not used in the final product
4.0.8: SchoolDigger shall be used to gather information about school ratings to be displayed as search results	Failed	May 14, 2018	SchoolDigger was not used in the final product

d. Browser Compatibility

Testable requirement	Passed/Failed	Date of Test	Notes
5.0: The RMF shall ensure that users will not receive viruses, trojan horses or malware through the use of this application	Passed	May 14, 2018	The RMF does not install any malware and has no user tracking features
5.1.1: RMF is compatible with Windows 7 through 10	Passed	May 9, 2018	The RMF should work with hosts that have required software installed
5.1.2: RMF is compatible with Internet Explorer or Google Chrome	Passed	May 9, 2018	

6 Notes

Acronyms

API - Application Programming Interface

IDE - Integrated Development Environment

RMF - Realty Map Filter

SDP - Software Development Plan

SRS - Software Requirements Specification

STD - Software Test Description

UI - User interface