Last Resort Recovery

From lost, to found. The simple missing laptop recovery tool.

David Jelley, Jr

Cameron Morris

Benjamin Cao

91.462 GUI Programming II

Professor Heines

February 4, 2014

Table of Contents

Project Goal

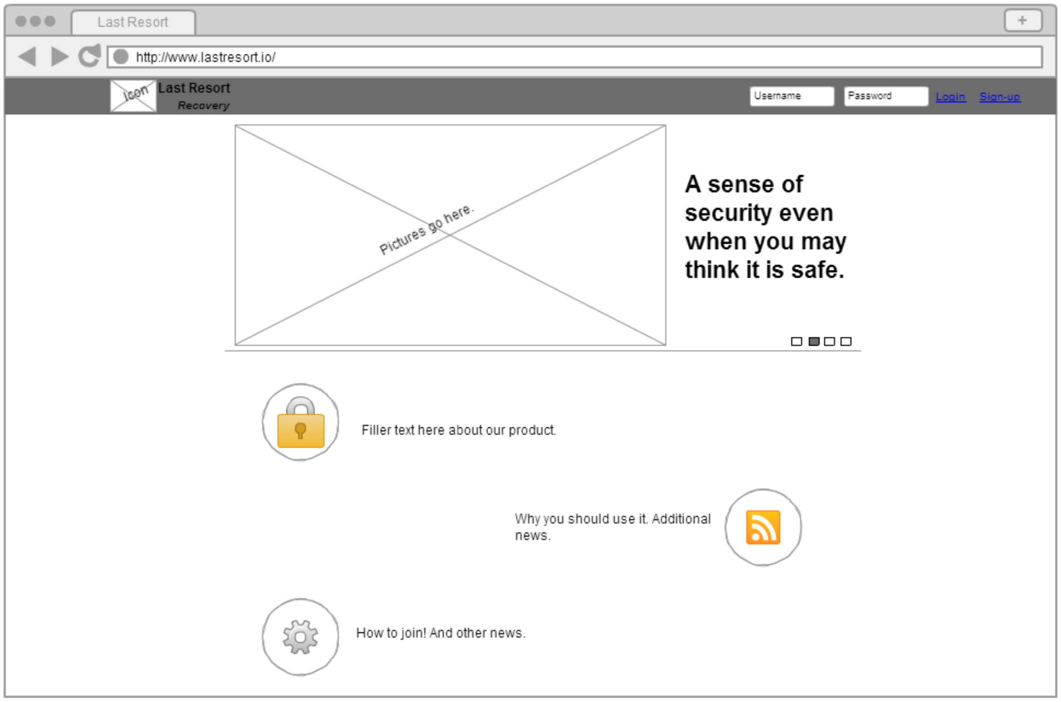
Our project assists in finding and recovering your lost or stolen laptop. You can add or remove devices through our web page as well as mark any of them as lost or stolen. It will then assist you by providing information that may lead to its recovery.

Program Features

Last Resort Recovery (LRR) will use the cooperation of a web based interface and an agent which will obtain information from the client device. Using a secure log in the user will be able to simply and securely track a missing or stolen laptop. Last Resort will provide human-readable information gathered from the laptop itself and display it to the user with the hope that it can be used to locate and retrieve the laptop. Users will also be able to add multiple devices to their account and manage them individually. If the user marks a device as stolen or missing it will inform the agent on the device to immediately send all pertinent system information to the web server.

Website

Our website starts at the public page. This is where we need to grab the attention of our user and give them a clear informative page to explore our product. To achieve this goal, we will implement a minimal style web page that appears border-less and has a directed flow down the page. Short bursts of information accompanied by small images and white-space will be ideal. This style will attempt to accommodate mobile and tablet usage before implementing a dedicated mobile web page.



A sense of security even when you may think it is safe.

Filler text here about our product.

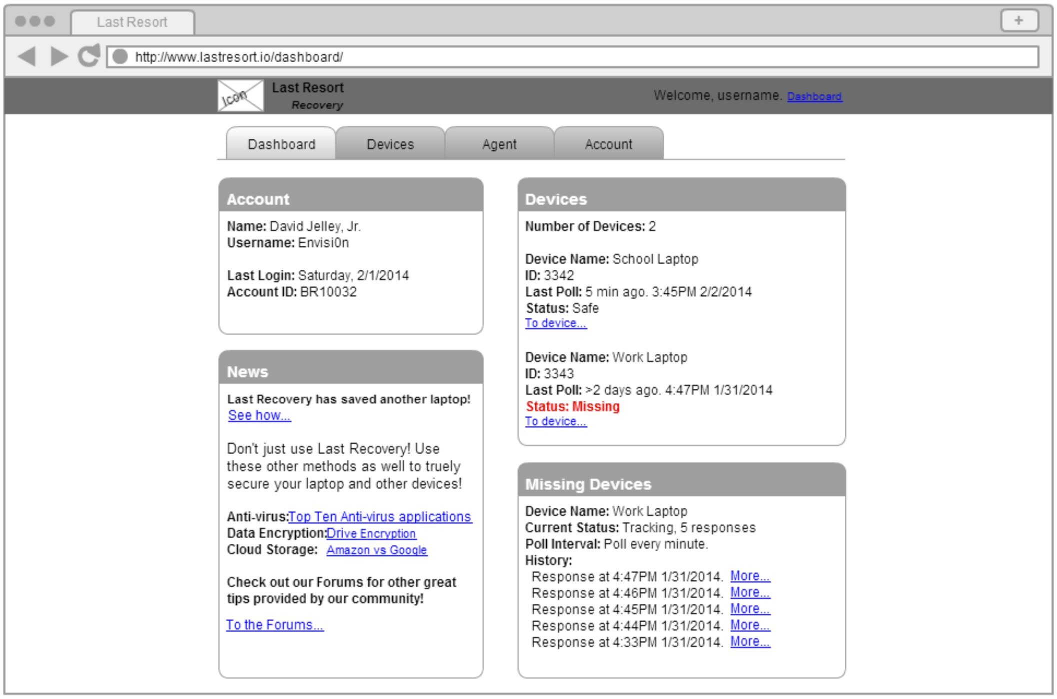
Why you should use it. Additional news.

How to join! And other news.

Public Page

We will use a static service bar to be ready to accept a log in or for the user to sign-up for an account. At the top of the page will be a slide show with a few eye catchers to draw the user's attention to the center of the page. Staggering the pieces of information, as shown above, will guide the user into the flow of the web page. Drawing from the style of many social media outlets, this downward flow will keep the user interested without making them work too hard. When a user selects "Sign-up", a form will pop up and request the standard sign-up information. Once they have created an account, they will be sent to their account's dashboard. If the user already has an account and chooses to log in with their username and password, they will be redirected to the dashboard as well.

Once the user creates an account through the site, they will be presented with the dashboard containing quick and relevant information about their devices, account, and any news/security updates. The dashboard will group related information and display them accordingly. At the top of the dashboard will be tabs that direct you to additional pages that will contain more detailed information. These pages include the devices page, account page, and agent install page. On the devices page you will have a listing of your current devices


Last Resort
+
http://www.lastresort.io/dashboard/
Icon
Last Resort
Recovery
Welcome, username. Dashboard
Dashboard
Devices
Agent
Account

Account

Name: David Jelley, Jr.
Username: Envisi0n

Last Login: Saturday, 2/1/2014
Account ID: BR10032

News

Last Recovery has saved another laptop!
See how...

Don't just use Last Recovery! Use these other methods as well to truely secure your laptop and other devices!

Anti-virus: Top Ten Anti-virus applications
Data Encryption: Drive Encryption
Cloud Storage: Amazon vs Google

Check out our Forums for other great tips provided by our community!

To the Forums...

Devices

Number of Devices: 2

Device Name: School Laptop
ID: 3342
Last Poll: 5 min ago. 3:45PM 2/2/2014
Status: Safe
To device...

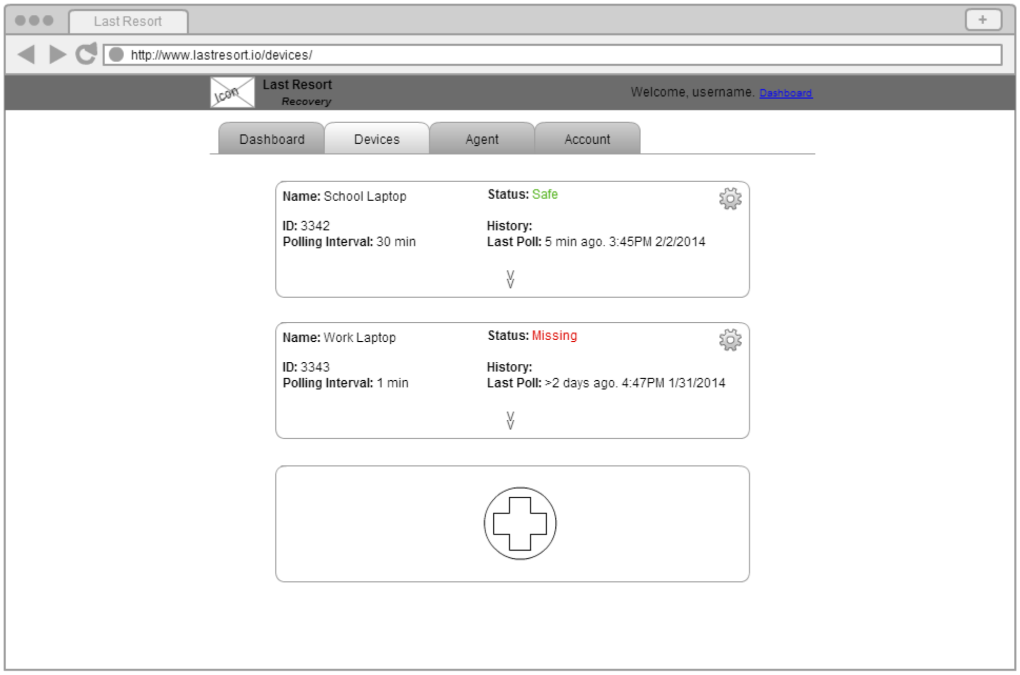
Device Name: Work Laptop
ID: 3343
Last Poll: >2 days ago. 4:47PM 1/31/2014
Status: Missing
To device...

Missing Devices

Device Name: Work Laptop
Current Status: Tracking, 5 responses
Poll Interval: Poll every minute.
History:
Response at 4:47PM 1/31/2014. More...
Response at 4:46PM 1/31/2014. More...
Response at 4:45PM 1/31/2014. More...
Response at 4:44PM 1/31/2014. More...
Response at 4:33PM 1/31/2014. More...

Dashboard Page

and be able to add, delete, or modify a device. We intend for this page to be formatted in a way that it does not portray a table full of information. To do this we plan on creating a box for each device which gives you the most important information and then you have the ability to expand each box for the more detailed information previously hidden. The account page will be of the standard design. It will grant you the ability to make changes to your account such as a password reset or account deletion as well as modifying your personal information. The agent page will be a step by step guide to installing the agent on your laptop.



Name: School Laptop
Status: Safe
ID: 3342
Polling Interval: 30 min
History:
Last Poll: 5 min ago. 3:45PM 2/2/2014

Name: Work Laptop
Status: Missing
ID: 3343
Polling Interval: 1 min
History:
Last Poll: >2 days ago. 4:47PM 1/31/2014

Devices Page

Agent

The agent will be designed to be “set it and forget it”. The user when first adding a new device to their account will be prompted to download and install a lightweight application which runs in the background. Once installed, the application will prompt the user to log in with their account details they registered on the website. After logging in, the application will inform the user that the device has been registered.

Software Components

Since this project is using a client side agent we will have two separate groups of software components that will be required. Our primary concern was how much time it would require to develop a client side agent. Understanding this we developed a working model of the agent and have tested to see if any additional features would be feasible. At this time we have a working command-line based agent that runs on Linux based systems. It uses the libCURL library to make HTTP requests to retrieve device statuses from the website database and to submit data reports upon request. Data will be collected using various system calls to obtain information such as IP address and WiFi connections. The agent will then package it in a way that can be easily submitted through an HTML form using the libCURL functions. We intend to develop a UI for the agent so the user will have an easier time adding the device to their account. To develop this UI we intend to use the Qt UI library.

The web page will use PHP to interact with a database where the information for the user accounts, devices, and reports retrieved from clients will be stored. We plan to use MySQL as it has well documented PHP resources and it is readily available on weblab.cs.uml.edu. We will have to write a few backend routines which handle user log in and device report submission, which will interact directly with the database. Our project will have graphical flare which can be difficult to implement with JavaScript alone. We intend to use the jQuery UI library to create the tabs, dialog boxes, and pop up windows. These widgets are available readily and can be customized for our needs. AJAX will need to be used to minimize page refreshes and streamline the user’s interaction with the web page. This will allow us to process the user’s requests and render results without refreshing the web page. This should achieve the “streamline” experience we are working towards.

Intended Audience

Last Resort Recovery is intended for the college student with a working knowledge of Linux. It is common for a student to be transporting their laptop all over campus and it can easily be misplaced, forgotten or even stolen. Due to the restrictions of the current agent our product is limited to supporting only Linux based systems. Our target audience could easily expand to encompass Windows users if we were able to develop an agent that supported the Windows API.

Issues To Be Addressed

After our feasibility testing, the list of potential issues has grown quite large. We have cut back on our original plan and should emphasize that not all of the previously mentioned features are expected in the first release.

Our primary concern is still surrounding the agent. Linking the agent with the web account may prove to be an obstacle. We need to make sure we can link the device to your account once the agent is installed. A work around would be to manually enter the device ID. This is a terrible work around and relies on the user, something that should never happen.

Security is another issue we may need to work with. The information we are sending can be a possible security risk in itself. And we will obviously need to encrypt the password the user will use at log in. We plan to use HTTPS to attempt to secure the information we send and we will also be using PHP's encrypt function for the password. After some research we discovered that using PHP to encrypt passwords has become an accepted standard in web development. A work around for the security of the information we send could be to encrypt it as well. This would increase the overhead of the application though.

Development Time Line

Date	Goal(s)	Responsibility
Feb 4	*Project Management* Determine methods of communication. Setup GitHub repository.	All
Feb 8	*Public Page* The basic design of the public page should be complete and ready to integrate with the login process.	Jelley
Feb 8	*Database Created* Tables will be created with the required fields. Primarily the users table.	Morris
Feb 11	*Login Process and Registration Process* The PHP required to process user login and registration.	Cao
Feb 15	*Non-Public Web Page Template* This includes the dashboard, account, and devices pages. These do not yet need to link into the database.	All
Feb 18	*Backend Development* Link the dashboard, account, and devices pages into the database. Essentially, populate content of pages.	All
Feb 22	*Agent on the Web* Add the agent page and properly connect the agent to the web page account.	Morris
Feb 25	*Finish Version 1 Testing* At this point we should have a working product and have already begun testing. It may not be flashy, but it should work in its current state. All backend completed. Ready for polish.	All
March 8	*Public Page and Login Polish* The public page should be in a polished state. Popup window for registration complete. Login process completely polished.	Jelley Cao
March 8	*Agent Polish* Either develop a UI using Qt or have the agent dynamically created so the user does not have to interact with the agent besides installing it.	Morris

March 25	*Continue with Site Polish* Using jQuery UI and AJAX streamline the user's experience and make the dashboard, agent, account, and the devices pages polished.	Assigned Per Page
April 3	*Beta Project and Usability Testing* We will continue with feature development depending on the outcome of the previous goals. As well as begin thoroughly testing our site for flaws.	All
April 10	*Beta Review, Start Final Development* At this point we should have our reviews back and can continue fixing bugs and other errors. All additional features will stop as we polish the project for its completion date. All other additional development will also come to a stop.	All
May 1	*Project Completion*	All

Release Functionality Requirements

At this point we should have a fully functioning laptop tracker. The agent will be able to be installed and communicate with your account on the website. The log in process should also be complete with error checking. And your data should populate on the page once you log in.

Time Permitting Features

With time permitting it would be great to develop a Windows agent that uses the Windows API so we can add Microsoft support. This would broaden our audience by supporting a larger pool of users. We were also looking into adding customization to the agent via the web page. This would allow the user to change the rate of polling or what information the agent is allowed to gather.

Once we have agent customization we could implement a calendar into the website to schedule specific agent polling or specific times to retrieve information.

Influential Long Term Goals

At release, our project will simply gather information about the current location of your laptop. After doing some research into laptop tracking we found another project that is quite similar to our ideas. It is far more developed and has many features we wished to implement, yet knew we would not be able to complete. “Prey” is another tracking agent that has the ability to get GPS locations as well as initiating a lock down on your system if it is stolen. Implementing features such as screen capture or webcam capture would be incredibly useful in the recovery of your device and during our feasibility testing appear to be quite simple to implement. Seeing all the features we wish we could add we decided to try it ourselves. The one thing we did not really like was the way it presented this information to the user and how the user was expected to interact with the web page. Our focus is to develop a product that is easy to use, but remains effective.

Sources

jQuery UI: This JavaScript library gives great utility to developing web Uis.

http://jqueryui.com/

libCURL: This C library helps with using HTTP to send data to the database/

http://curl.haxx.se/libcurl/

Prey Project: An example of what our project intends to do. This is a much more developed version, and the website itself is nothing like we intend ours to be. Still a great example of our goal.

http://preyproject.com/

Qt Project: This is a C++ cross platform portable GUI library.

http://qt-project.org/