Runic Insights

Created By: Arek FIelding, Joshua Fernandes
Earleking (NA) and **Vexrax** (NA)
Category: **Education**
Link: https://runicinsight.herokuapp.com/

Our Project

The goal of this project was for players to be able to improve their runes setup and also learn when and why they they should take runes. To do this two pages were created. The first was the Summoner Page where a summoner's match history is displayed, and a rune setup is recommended to them. These recommended runes are done dynamically drawing from a database of high elo games. The second part of our project is the Runic Insights page. This is a static page containing the 5 trees. Click on any of the tree icons and a list of the runes in that tree is shown at the bottom of the page. Each rune has its short description attached to it along with some tips on when you might want to take that rune. This tool is generally aimed at people new to the runic system and may not help those who are already familiar as there are many gameplay factors that we can't account for when recommending a rune page. However we hope that our tool helps players and that you enjoy our project as well.

Project Scope

The first thing done for our project was to scope the project out. Unfortunately due to some constraints mentioned in the challenge sections this scope had to be smaller than we had hoped for.
The scope for this project that we came up with is:

- Gather data from diamond+ games. Approx 100k games.
- Analyze a player's match history in their past 8 games.
- Based on champion we will create a recommended set of runes.
- Display this data to the user in an intuitive and good looking fashion
- Create a page which details what each rune does, as well as what it is good for and why you may want to use it

Constraints/Initial Challenges

When starting this project there were multiple challenges that were apparent from the beginning. The biggest of which was a time constraint. While the challenge is given 3 weeks both of us has exams only allowing us to start the project on the 22nd of December. Giving us a bit more than a week, we had to cut out some parts that we would have liked to include such as a more in-depth rune analysis system.

The other big challenge was that neither of us had much experience with front end web development languages like css and html. So initially when we were setting up all the pages we ran into trouble getting elements to be placed where we wanted them to be placed.

Website Design

On the Summoner Page the main feature is the game tab. Each game tab, of which there are 7, display the Summoner's champion, items, spells, KDA, and who they played with. On the right side of this tab there is a drop down arrow. This arrow reveals the Summoner Rune Page.

The Summoner Rune Page has two parts; current rune setup and recommended setup. Both of these show your primary and secondary trees. However, because of data limitations not every champion has enough data for us to satisfactorily create a recommended rune page. Should this be the case, the recommended tree shall simply be greyed out completely.

The other part of the website is the Runic Insights. On the main page for this there are the 5 runic paths. When any one of them is clicked a large array is shown at the bottom of the page with all the runes in that path. Displayed next to each of the runes there is a short description of what the rune does then a few lines under them describing their use.

How it Works

The "Runic Insights" web page is fairly straightforward, it is just flat html and css with a few lines of javascript to power the buttons.

In order for recommended runes on the Summoner Page to be generated, back end data had to be gathered. To store the data we use an mySQL database with 5 tables. 3 of these are static data, being champions, items and runes. The two dynamic tables are for the games recorded and the rune stats to be stored in. The games recorded database is just a large assortment of high elo solo queue games. Within this table various stats are stored, such as KDA, champion, runes used, as well as some more advanced stats such as gold difference at 10 minutes. The rune stats database stores the stats of any champion, rune combo. Each combination of these has a unique id, being rune id + champ id, and has its own stats such as games played, win rate, etc. The analysis engine draws upon these tables to determine the recommended rune set.

When you try to access the Summoner Page the server runs the given name into the Riot api. If it is a real summoner then it progress to the main Summoner Page and if it isn't sends it to a null summoner page. After reaching the summoner page a request is sent to the server so that the required data can be retrieved. This is done using Socket IO.

After receiving the request to generate data the server makes a request to the Riot API for the summoner's recent match history. From this game data various pieces of data are extracted; a list of the player's participant id, list of their runes in each game, and their champ played. Passing the champion played data to the analysis engine it computes the best rune tree for this.

To do this first the best keystone is found. Best here is defined as highest win-rate with over 25 games played, however in the future we would like to improve this definition of best. After finding the best keystone the primary tree is locked in and the best rune from each tier of the primary tree is selected. After selecting the primary tree the engine looks for the best rune which is not a keystone and also not in the primary tree. That rune is what determines the secondary tree. After that the second best rune in that tree that is not in the same tier as the already selected rune is chosen to complete the secondary tree.

This process is looped through for all 10 games retrieved and then returned. For the purpose of the following list the Summoner that the data is being requested for is referred to as User. Then the following parameters are passed to the website; User Profile, list of games, list of User's participant ID, list of User's runes, list of User's rune's paths, list of recommended runes, list of recommended rune paths, list of Champion Names played and a 3d array describing the complete Runes Reforged tree.

After receiving the data the website updates the game tabs with the data received as well as setting the rune trees. Here also checks to be sure there was enough data to create a set of recommended runes, and if not will leave the rune tree greyed out. This is when the user is now able to interact with the website.

Struggles

Throughout the development process we ran into multiple problems that slowed down development some were small and some were a lot bigger than others some of our highlighted problems and solutions can be found below:

- Originally the html was constructed with static width and height for each element. We realized this was a problem when we tried to view the website on smaller screens. The elements wouldn't line up the way we wanted to so we had to think of a way to work around it. We ended up using percent width measurements and minimum width measurements to dynamically set the width and height of each element.
- One of the easier problems we had to fix was changes we had to accommodate for was the difference between the riot api and the ddragon static data tool, some champions like wukong, kogmaw and chogath had different names between the riot api and the ddragon tool so we had to make small adjustments to our code to compensate for this.
- Artistic design was one of harder parts of the challenge for us. Neither of us are extremely talented with design so creating a design that was effective and polished was something we spent multiple hours on.

Conclusion

Both of us really enjoyed working on this website. It was fun spending the long nights problem solving and building the site towards a finished product. We think that this tool can help low elo players become better players by not only using better runes but by understanding why those runes are better. In the future we would like to expand the site to support searching for runes for specific champs which will include why the runes work on those champs. For recommended runes we would also like to be able to recommend certain setups against certain character archetypes such as a more defensive page against assassins. We would also like to refactor some of backend code in order to speed up runtime. We hope that you enjoyed looking through our site.

P.S. Hope you liked the penguin of the title page. TY for making that an emote.