Software Engineering and Software Metrics

CS504 – Software Engineering

Brittany Lynch

With our current project, we have gone through the planning, building, and first parts of the testing the new product. Our Technical Program Managers, Software Engineers, and Software Developers worked diligently to have the product ready for testing. Now, we are in the first beta testing phase with our Quality Assurance team. There are a multitude of ways to conduct the beta testing phase such as Software Metrics. In this portion of project, we will outline how our team conducted beta testing using software metrics.

Software Metrics is “a measure of software characteristics that are quantifiable or countable” (<https://stackify.com/track-software-metrics/>). By using the software metrics approach, our Quality Assurance team can fully test and *exhaust* the software by conducting performance testing, measuring productivity, and also planning on new features and updates that would make the use of the product easier and cleaner for the users to utilize. From a business perspective, there are a plethora of software metrics. A few of the benefits are 1) an increase in ROI or return of investment, 2) identifying areas of improvement, and 3) reduce costs. Having these benefits known, can help our software company along with others be able to assess how a new product will be either beneficial or harmful to the current flow of business.

For this portion of the testing, we called on our Senior and Associate Project Managers to test out the software in a way that our customers would. We also tasked this team with filling out a spreadsheet, complete with notes, based on what they experienced while completing the various workflows that customers may use and whether the product marks all the boxes for what we are looking for in the final product or not. The goals we have set for the product is:

1. Clean UI
2. Easy accessibility for user information
3. Quick response times when users click or tap
4. Result of proper information about user look up

Graphical user interface, text, application

Description automatically generatedThe Project Managers (PMs) used both Postman and Webhook.site to gather the detail information about an item or list of items (Figure 1). The first step for the PMs was to gather API information from the Development Team (API Documentation attached). Once the PMs were able to gather that information, they began to use Postman to make a couple API calls in a way to gather information about the item a user would be searching. The PMs used the application, Postman. Postman allowed the Project Managers to take an API webpage URL such as brittanysproduct.com/api/bsoftware\_v2/orders/items/345567854 and give the result information by using the GET status.

Figure 1. Webhook.site

API is an Application Programming Interface. The API for any software middleware is the main bridge between the application or program that we have created and our inventory product. This communication allows our Sales team to monitor what a user is purchasing, the amount being purchased, the cost of the total amount of items \* purchase price, along with any other purchasing information that would be provided when they customer makes a purchase. There are multiple APIs that you can use; we decided to use the REST API for a variety of reasons. Firstly, it is made of various functions that make the communication simpler, secondly, it is stateless which allows our servers to run at a smooth pace without becoming backed up with Graphical user interface, text, application, website

Description automatically generatednumerous requests, and lastly, it exchanges communication by using HTTP which is what our website is created and written in. The REST API is also a Web API which is created specifically for web server to web browser communication. There are four functions within an API that can make up an API call: **Get, Put, Post, Delete**. The GET function gathers information from the API. For example, GET brittanysproduct.com/api/bsoftware\_v2/orders/items/345567854 will gather all the information associated with that libitem ID. The PUT function updates pieces of data. For example, PUSH brittanysproduct.com/api/bsoftware\_v2/orders/items/345567854&&345684920. This function call will push the libitem ID 345567854 and libitem ID 345684920’s information together. The POST function creates new information in the software. The last API function, DELETE. When you use the DELETE function, you can delete entries specified in the call.

Figure 2. Activity on Webhook.site

After the API documentation was read by the PMs, they moved to ensuring that the webhooks for the program was correct. In order to do so, the PMs navigated to **webhook.site**. This website will produce a known good webhook that can be copied and inserted into the program and will output the API calls as they occur across the program communication (Figure 2). This is how our PMs were able to evaluate the speed of the responses. After our Senior PMs evaluated four goals, we moved to our Associate PMs to evaluate the ease of the product and cleanliness of the UI.

For our Associate PMs to properly evaluate the cleanliness of the UI, we asked for two Android OS and two iOS users. The purpose of this step in the process is to determine where, in each OS, we can improve the style, colors, symbolling, or even rendering needed for this program to be accepted by the users from both operation systems. Both “teams” started with downloading the program onto their devices. While download time is important, we are focused on the time it takes for the program to open after being tapped, the amount of time it takes for the front page to show, and lastly, how long it takes to tap between pages and information. All their results and evaluations were recorded in the spreadsheet attached. For us to properly test and have a solid assessment of the program, we had our Associate PMs test and “exhaust” the software for a two-week period. Once the PMs had their time with the program, we went back to the Senior Software Engineers and Developers with the evaluations for them to investigate the code for any enhancements that can be made to either the source code or the executable code.

Based on the evaluation sheet, the program checked off all our goals that were set program the beta testing of the program. With this information, we can enhance the program and prepare the program for the official marketing and rollout made by our marketing and sales teams. Evaluating the software metrics of a program is an extremely important part of the software engineering process. It allows for “real-time” usage and execution so that our Engineering and Development teams can be prepared for next steps and for any potential bug reported from internal and external use.

References

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