Testing of New Changes to Bling R Us' Website: Extra Costs for Engraving

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Abstract—**This report provides a testing plan for assessing the new features available on the Bling R Us' website, concerning the extra costs for engraving. Testing the new features aims to ensure that the changes to pricing due to engraving are easy to understand and implemented correctly. First, an organizing table was created containing the names of the products, their respective prices, and engraving rules. Then, a mind map was designed to explore test cases logically and methodologically. Finally, the inconsistencies between expected and actual outputs are explored. By assessing the pricing and engraving rules in an organized and detail-oriented manner, this report seeks to effectively communicate the testing strategies and results, enabling Bling R Us to address potential issues in the future.**

I. INTRODUCTION

With the rise of e-commerce, testing pricing features has become extremely relevant to provide customers with an accurate, positive, and accessible purchasing experience. Additionally, ensuring the quality of pricing features can prevent businesses from spending resources on correcting mistakes and from losing revenue and customers due to bugs in their websites.

Considering the importance of software testing, this report seeks to provide technical support to Bling R Us by testing the pricing mechanism concerning the new engraving rules. First, a short description of how the engraving rules for each product is presented in Table 1 below, taking into account the specifications of each product and the information provided on the Store section of the website.

TABLE I
INTERPRETATION OF CHARACTERS AND ROWS' LIMITS

Product	Price	Characters and rows' limits
The Bling Ring	110	25 (small), 35 (medium), 40 (large), 40 (humongous)
The Twin	100	20 per row, two rows for free
The Signet	140	20
The Stamp	100	35
The Bling Bangle	75	100
The Fling	120	35 per row, up to three rows. Charge 25 SEK extra per row.
The Dainty	140	35
The Inside Matters	90	75
The Officer	110	20
The Puppy Collar	100	2 long rows or up to 5 shorter rows. Charge 25 SEK per row.
The Heart	90	2 rows, 15 and 10 characters each. Charge 25 SEK per row.
The Shield	75	10
The Twin Towers	140	25 characters per rod, two rods.

II. DESIGN OF THE TESTING PLAN

Based on the engraving rules and the pricing structure available in the FAQ section, different test cases were designed, as presented in Figure 1.

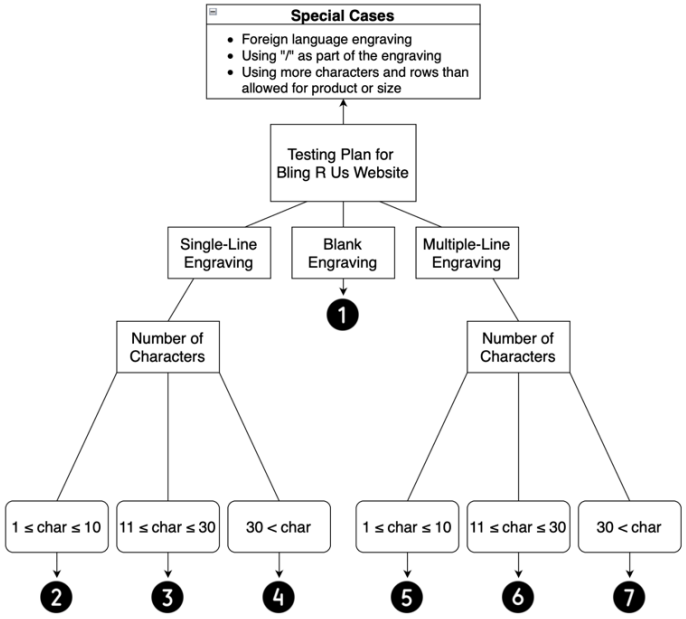

Fig. 1: Diagram of the testing plan for Bling R Us' website.

For each test case, all sizes of products were tested, along with the lower, mid, and upper limits of the characters for a certain price. For instance, for free engraving, the number of characters tested was 1, 5, and 10. Before performing all tests, it was ensured, as a baseline, that the website was not counting space as a character, which was confirmed after multiple inputs and successful expected outputs.

III. OUTCOMES OF THE DIFFERENT TEST CASES

Using the different numbers as labels for the test cases in Figure 1, the following outcomes were obtained, along with useful observations:

• 1 and 2: "Blank" engraving consisted of buying each product without adding engraving. For the single-line engraving, sequences of letters were used containing 1, 5, and 10 characters.

Additional costs for engraving were consistent with the rules for most products (no extra charges), except for *The Twin* and *The Twin Towers*. For both, a premium engraving discount of 25 SEK was mistakenly applied to the shopping cart.

• 3: Sequences of letters containing 11, 20, and 30 characters were used. 50 SEK were expected to be added in all cases. However, all products failed because this extra charge was not added. Additionally, *The Twin* and *The Twin Towers* received an inappropriate discount of 25 SEK.

• 4: Sequences of letters containing 35, 45, and 55 characters were used. It was expected that the extra charges would be 100, 150, and 200 SEK, respectively, by adhering to the engraving cost rules. All products passed this test by having the appropriate charges added to the shopping cart. However, *The Twin* and *The Twin Towers* received an inappropriate discount of 25 SEK.

• 5: Sequences of letters containing 1, 5, and 10 characters were used. It was expected that 25 SEK would be added to each extra row, after the first. All products passed, and *The Twin* and *The Twin Towers* did not have this extra charge, as specified by the rule for *The Twin* only. Although it was not specified that extra rows would not be charged for the latter, both *The Twin* and *The Twin Towers* had the same pricing mechanisms for the engraving. Other products that were advertised as fitting multiple rows, however, such as *The Fling*, *The Puppy Collar*, and *The Heart* were correctly charged the additional 25 SEK.

• 6: For sequences of letters containing 11, 20, and 30 characters, all products had an extra charge of 75 SEK, except for *The Twin* and *The Twin Towers*, which had a charge of 50 SEK (due to the applicable 25 SEK discounts). It is worth noting that, for single-line engraving, all products failed to have an extra charge of 50 SEK added. However, for multiple-line engraving, the extra charges were successfully added. After the second line, 25 SEK additional charges were successfully added to all products, including *The Twin* and *The Twin Towers*.

• 7: Sequences of letters containing 31, 40, 41, 50, and 51 characters were tested, yielding extra charges of 100, 100, 150, 150, and 200 SEK, respectively, for all products, except for *The Twin* and *The Twin Towers* due to the 25 SEK discount. For multiple lines after the second, pricing mechanism was applied consistently.

Additionally, a few special cases were tested and analyzed, and the observations are organized below:

○ Foreign language engraving was tested to confirm that the website was not failing to store the correct, desired engraving. To do so, Arabic words were used for engraving. Arabic is an ideal language for testing to ensure that the characters are not separated, since each Arabic letter is written differently, based on the position in the word. Website successfully stored the engravings, without separating the letters from each other.

○ Using "/" as part of the engraving should count as an additional line, making it impossible for someone to engrave a message like "I love Minitab! \o/". It was checked whether the website would count "/" as a character, despite being clearly used as a line separator. To do so, engraving message consisting of "RodrigoSilvaFerreiraSilva/Ferre" was tested for all products. All products (except *The Twin* and *The Twin Towers*) yielded an extra charge of 125 SEK (50+50+25), which means that "/" was considered as a line separator and that, oddly, the symbol was counted as a character engraved, despite not being physically engraved on the product.

○ Using more characters and rows than specified in Table 1 was completely possible. Despite the guidelines presented for each product, there was no actual limit of characters or rows in the text box for each product. Furthermore, some guidelines were ambiguous and/or incomplete, such as the guidelines for *The Puppy Collar*, which presented no suggestions for characters' limits. Such guidelines could lead to conflicting interpretations, leaving for the sales team to deny multiple customers' requests for engraving.

○ Using same messages for engraving, customer should only be charged once, according to the FAQ section. However, extra charges were applied for same engravings in all products.

○ Null test was performed to make sure that the customer can engrave "null", and all products and sizes passed.

IV. Further Pricing Issues

In addition to the problems with the extra costs for engraving, related issues with pricing and discounts were identified. First, the VAT tax was applied to the product without engraving and shipping costs. Depending on the local taxing authorities' regulations, it may be necessary or recommended to apply the tax to the price of the final product, after engraving and shipping costs. Moreover, the taxes were applied to the products before applicable discounts, which is not the common practice in retail. Nevertheless, the shipping charges, 10% discounts, and 5th product for free promotions were successfully applied to the shopping cart. Lastly, the shopping cart function often presented problems, not saving all products selected or emptying it before finalizing a purchase. Such problems were experienced in multiple devices using different internet connections.

V. Conclusion

This report tested the new changes to the Bling R Us website regarding the extra costs for engraving. To do so, manual testing was deployed, guided by a robust testing plan drafted in a mind map. Several concerning problems to the pricing structure were identified, such as: (*i*) inappropriate 25-SEK premium engraving discounts for *The Twin* and *The Twin Towers* in single-line engravings, (*ii*) failure to add a 50-SEK charge to single-line, 11-30 character engravings, (*iii*) *The Twin* and *The Twin Towers* having the same pricing structures despite it not being specified in the rules, (*iv*) "/" being counted simultaneously as a line separator and as a character, and (*v*) unclear or missing guidelines to characters and rows' limits as well as their respective charges.

The root causes these problems stemmed from the programming logic implemented on the website and from the unclear engraving and pricing guidelines. There were further pricing issues presented to assist the company with improving the customer experience. It is recommended that the rules are modified to become more accessible and transparent. Additionally, it is advisable that the text boxes for each product have consistent character limits that correspond to the sizes of the products. By doing so, the company can prevent customers from requesting products that cannot be fulfilled due to space limitations.

Finally, it is noteworthy that testing the shopping cart's features, functionality, and stability are crucial for this business' success. In the future, it could be relevant to perform automated testing by using a Python script (draft available on my GitHub) and Selenium web-browser automation, and other software testing frameworks and methodologies. Doing so could enable testing of all cases, allowing the business to identify potential risks and problems on the website.