

General – Testing

Problem Statement: -

The overall goal of this activity is to get you thinking about the question:

How can you tell whether the program is operating correctly?

The setting for the activity is something you have probably worked with many times—a text editor that can display characters on the screen in many different fonts.

Your task is to determine whether text on the screen is displayed in the correct font.

Please answer these questions:

How could you determine whether the editor is displaying text in the correct typeface?

How could you determine whether the editor is displaying text in the right size?

How would you test whether the editor displays text correctly (in any font that the user specifies)?

Please describe your thinking about this problem in general and describe any specific strategies that you are considering.

General thoughts about the problem: -

At first, it seems like a never-ending testing. When I give it a second thought it makes me think about the objective of the testing which I wanted to achieve and after that we need to define the scope because it cannot be all the editors with all the fonts. The other thing which we need to define is the encoding standard which in my point of view should be UTF-8 encoding .

Testing can be performed the in following ways.

- 1) Inspect element.
- 2) Using tools / plugins
- 3) Cypress (Visual testing)
- 4) Cypress (Css properties)
- 5) Artificial Intelligence (Deep Learning)

Inspect element.

Assumption: - The editor here is web based.

In Firefox, the Page Inspector has a Fonts view: - This will also tell you if fonts were downloaded, and which style is used, such as Regular, ExtraLight, Italic, BoldItalic and all

For Chrome, go into DevTools' "Elements", go to its "Computed" tab.

How could you determine whether the editor is displaying text in the correct typeface?

-Inspect the element and verify its font-family if is as per given requirements.

How could you determine whether the editor is displaying text in the right size?

-The size of the element is should also be displayed in the font-family information

How would you test whether the editor displays text correctly (in any font that the user? specifies)?

-check the same font text in multiple modules or in our case sites of multiple jurisdictions. If the font is displayed corruptly all the sites which we have verified, then the font is corrupted. We will verify other fonts in these sites and make sure that the editor in these sites is working fine with other fonts.

Conclusions: - Not the best way I must say as it includes lots of times and manual efforts in verification.

Using tools/plugins: -

WhatFont is a Chrome extension that will tell you specifically which font in the font stack is being loaded.

How could you determine whether the editor is displaying text in the correct typeface?

-we need to select the tool and hover on the text we wanted to verify.

How could you determine whether the editor is displaying text in the right size?

-The size of the element is should also be displayed in the font-family information

How would you test whether the editor displays text correctly (in any font that the user? specifies)?

- check the same font text in multiple modules or in our case sites of multiple jurisdictions. If the font is displayed corruptly all the sites which we have verified, then the font is corrupted. We will verify other fonts in these sites and make sure that the editor in these sites is working fine with other fonts.

Conclusions: - Not the best way I must say as it includes lots of times and manual efforts in verification.

Cypress (CSS Properties): -

With Cypress we can get the css property of the font and check if it is as per mentioned requirements/ style guide.

Sample code snippet

```
cy.get('.completed').should('have.css', 'text-decoration', 'line-through')
```

```
cy.get('.completed').should('have.css', 'color', 'rgb (217,217,217)')
```

How could you determine whether the editor is displaying text in the correct typeface?

-we need to get the css properties and assert it with the required css properties

How could you determine whether the editor is displaying text in the right size?

-I am not able to think about any way where in user can think of from where we can determine that displayed text is of right size

How would you test whether the editor displays text correctly (in any font that the user specifies)?

- Run the test for multiple modules or in our case sites of multiple jurisdictions. If the font is displayed corruptly all the sites which we have verified, then the font is corrupted.

We will verify other fonts in these sites and make sure that the editor in these sites is working fine with other fonts.

Conclusions: - Better methods than above stated manual methods as it will be a automated process.

Cypress (Visual Testing)

Cypress gives a stable platform for writing plugins that can perform visual testing. Typically, such plugins take an image snapshot of the entire application under test or a specific element, and then compare the image to a previously approved baseline image. If the images are the same (within a set pixel tolerance), it is determined that the web application looks the same to the user. If there are differences, then there has been some change to the DOM layout, fonts, colours, or other visual properties that needs to be investigated.

Reference:- <https://docs.cypress.io/guides/tooling/visual-testing#Functional-vs-visual-testing>

How could you determine whether the editor is displaying text in the correct typeface?

-Get the tool/ plugin for the cypress and run the test it will compare it with the baseline image which is approved and report any deviations.

How could you determine whether the editor is displaying text in the right size?

-Get the tool/ plugin for the cypress and run the test it will compare it with the baseline image which is approved and report any deviations.

How would you test whether the editor displays text correctly (in any font that the user specifies)?

- Run the test for multiple modules or in our case sites of multiple jurisdictions. If the font is displayed corruptly all the sites which we have verified, then the font is corrupted.

We will verify other fonts in these sites and make sure that the editor in these sites is working fine with other fonts

Conclusions: - Better methods than above stated methods as it will be faster. In this method it is comparing full page with the current page.

Artificial intelligence: - It is a straightforward supervised classification problem. And the following models can be used for the identification of the Fonts: -

- Logistic regression model
- The single hidden layer model
- Multiple hidden layers model
- Deep CNN with convolutional layer and pooling layer
- Deeper CNN with 2 convolutional layers and 2 pooling layers

Reference :- <https://medium.datadriveninvestor.com/how-to-build-deep-learning-models-for-font-classification-with-tensorflow-cnn-deeper-cnn-hidden-e5a4ef716308>

How could you determine whether the editor is displaying text in the correct typeface?

-In this method, first we need to design one model (the model which can be used is mentioned above) and provide some data as training data, wherein I will train, validate and test my model. After that what ever data we want to verify we need to give it to our model and it will classify what font its has, or if the font is on correct typeface.

How could you determine whether the editor is displaying text in the right size?

-With the same method My model will determine the right size of the text.

How would you test whether the editor displays text correctly (in any font that the user specifies)?

- Provide as many data as possible (of the editor on which my model has been trained) of multiple sites/ editor to the model and it will determine if it is displayed correctly.

Conclusions: - Best methods than above stated methods as it will be faster and it will keep on learning even if there is a change in the global font files.