CA400 - Testing Document

Bróga Nua - Irish Sneakers Application

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Python Integration Testing 2

Android UI Testing 3

Sales Testing 4

User Testing 5

Environment Compatibility Testing 6

Python Integration Testing

To ensure the back-end was running smoothly and there were no errors while building the database, I performed integration testing with Python.

These tests were used to ensure that the data could be retrieved from retailers. Using BeautifulSoup module for Python, I was able to open up connections to the websites of each retailer. Providing the information was accessible, I would be able to begin web-scraping and write the information to the database.


```
def testLifeStyleSports():
   try:
       # opening up connection, grabbing the page
       uClient =
uReq("https://www.lifestylesports.com/ie/mens-trainers/?sz=72&start=0")
       page_html = uClient.read()
       uClient.close()
       print ("Connection to Life Style Sports successful.")
   except:
       print ("Connection to Life Style Sports unsuccessful.")
```

Android UI Testing

For UI testing, I used Espresso framework in Android Studio. These tests must be completed on an Android device (physical/emulator) and therefore can be quite slow. The test are very useful for ensuring the functionality and navigation of the application is correct.

These tests validate the following functionality:

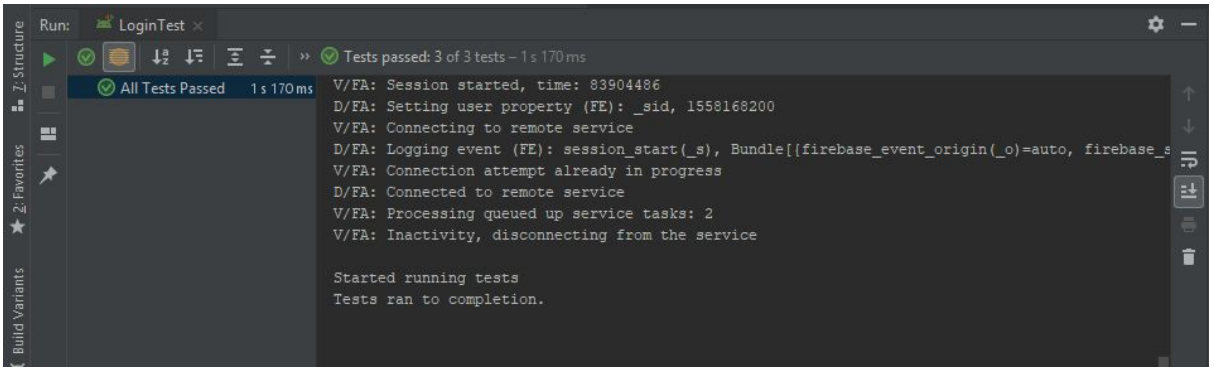
- Login
- Registration
- Profile Update
- Password Update
- Forgotten Password
- Main Activity (Catalogue & Limited Releases)

```
public class LoginTest {

   @Rule
   public final ActivityTestRule<LoginActivity> main = new
ActivityTestRule<>(LoginActivity.class);

   @Test
   public void textView(){
       onView(withId(R.id.tvPassReset)).check( matches(isDisplayed()));
       onView(withId(R.id.tvInfo)).check( matches(isDisplayed()));

   }

   @Test
   public void checkLoginActivityPage() {
       onView(withId(R.id.tvPassReset)).check( matches(withText("Forgot Password?")));
       onView(withId(R.id.tvInfo)).check( matches(withText("No. of attempts remaining:
5")));
   }

   @Test
   public void btnclickable(){
       onView(withId(R.id.loginButton)).check(matches(isEnabled()));
   }
}
```

Here is an example of one of the defined UI tests. Before the test is ran, the login activity is opened. One it is open the layout of the UI is set up. It will then test different views:

- Incorrect attempts
- Forgot Password
- Clickable Buttons
- Ensure it is the Login Screen

Below in an example of the test completion logs. Tests were all ran on my OnePlus 6 device running Android SDK 28 (9.0 Pie).



Sales Testing

One of the issues that was brought to me while developing Bróga Nua were product sales. This would affect data collection from my python scripts. This was an issue Alistair Sutherland brought to my attention in project proposals.

During April, all Irish retailers included had sales periods which allowed me to test for issues that may arise. One of the problems that occured was different product containers and information being retrieved than other periods in the year. I was able to test for two weeks during the sales which allowed me to catch any changes or issues.

Below is an example of a fix I was able to implement for Brown Thomas sales.

```
# Price Container
price_container = container.findAll("span", {"class":"product-sales-price"})
price = price_container[0].text.strip()
if ',' in price:
       price = price.replace(",","")
elif 'Now' in price:
       price = price.replace("Now €","")
elif 'from' in price:
       price = price.replace("from €","")
```

User Testing

User testing began shortly after ethical approval had been received. I completed testing with different groups of users to get as much feedback from real users as possible.

My first group for testing we're close friends that are passionate about fashion and sneakers. I wanted to have potential end users testing the product. The product they were testing was an earlier version of the application. Main feedback that I received:

- Add a product page.
- Allow product comparison.
- Make the text larger.
- Allow for product search.
- Create consistent theme (colours etc).

It was great to get some improvements off the users and proved invaluable to the development of the end product.

I conducted user testing in the DCU Computer labs with various students. They were given a set of tasks to complete within the application and upon completion fill out the questionnaire, found in the ethics document. These tasks included:

- Logging in
- Browsing the Catalogue
- Searching Product
- Trying to purchase product
- Browse Limited Releases

Following this user testing, I was able to evaluate the feedback from the questionnaire. They provided me with great feedback and gained a lot of information from what they would be looking for in the application. I was very pleased with very positive feedback.

Finally I conducted user testing with the "Sneakerhead Ireland" facebook group, looking for feedback on the application. This group is the targeted end user so their feedback would prove invaluable for the end product. One of the key takeaways was the need for an iOS application as a lot of users did not own an Android device which was something to consider for future work.

Environment Compatibility Testing

Environment testing involves testing the application to ensure it works in various real-world environments. For this project, that meant testing on numerous different Android devices, different screen sizes, different software etc.

Bróga Nua is designed to work on Android devices with a min SDK version of 15. No devices below this version will be supported and the application will not function correctly. I wanted to target as many devices as possible that is why I targeted this minimum SDK version.

The device that I ran the majority of testing on is the OnePlus 6 running SDK 28 - 9.0 Pie. Along with this I performed device testing using an emulator for the Google Pixel and Pixel 2. I was able to perform testing on my friends physical devices too, which included the OnePlus 5 and Samsung Galaxy S8. I wanted to ensure that the application was running smoothly across a range of devices.