# Hack Nairaland

This project is meant to be a web scraping exercise. Please use gently to avoid overloading the nairaland servers. I'd advise you work with it at night time, when there's less traffic. It also served as an exercise for me in the understanding of html page structure. It can for you too. I have documented some of the more common structures you'll find on the site.

The major challenge in scraping the site is the multitude of `<br>` tags it contains. Every press of the `ENTER` key adds a new one and it makes it hard to actually grab the text contained therein. But thanks to `BeautifulSoup4` and the `html5lib` parser, I was able to make get meaningful content, though its not 100% okay.

Several demos of this project in action are provided in the accompanying `Hack Nairaland jupyter notebook`. You should start from there.

There's also an attempt at analyzing post titles. This is done in the accompanying `politics-analysis jupyter notebook`. You may use that as a template for your own analysis. The excel files I used in my analysis are available in the `politics-analysis/` folder.

## Functionalities

1. Export all comments made by a user to html or excel file. You may select how many pages of comments you want to grab.
2. Export all post titles from a section within a range that you specify to html or excel.
3. Get monikers of all unique commenters on a post
4. Get all commenters on a post and their comment frequency
5. Save a post permanently by exporting it to `docx` format

## Nairaland sections

The available sections and their urls are shown in the dictionary below. The format is `{section : section url}`

```
{'Nairaland / General': '/nairaland',
 'Politics': '/politics',
 'Crime': '/crime',
 'Romance': '/romance',
 'Jobs/Vacancies': '/jobs',
 'Career': '/career',
 'Business': '/business',
 'Investment': '/investment',
 'NYSC': '/nysc',
 'Education': '/education',
 'Autos': '/autos',
 'Car Talk': '/cartalk',
 'Properties': '/properties',
 'Health': '/health',
 'Travel': '/travel',
```

```
    'Family': '/family',
    'Culture': '/culture',
    'Religion': '/religion',
    'Food': '/food',
    'Diaries': '/diaries',
    'Nairaland Ads': '/ads',
    'Pets': '/pets',
    'Agriculture': '/agriculture',
    'Entertainment': '/entertainment',
    'Jokes Etc': '/jokes',
    'TV/Movies': '/tv-movies',
    'Music/Radio': '/music-radio',
    'Celebrities': '/celebs',
    'Fashion': '/fashion',
    'Events': '/events',
    'Sports': '/sports',
    'Gaming': '/gaming',
    'Forum Games': '/forum-games',
    'Literature': '/literature',
    'Science/Technology': '/science',
    'Programming': '/programming',
    'Webmasters': '/webmasters',
    'Computers': '/computers',
    'Phones': '/phones',
    'Art, Graphics & Video': '/graphics-video',
    'Technology Market': '/techmarket'}
```

## How to work with this notebook

1. Requirement: `python` and `pipenv` must be installed. You can download and install python from the official site. After installing python, you can install `pipenv` by issuing the command `pip install pipenv` inside `cmd.exe`.
2. Clone the `bitbucket` repo (`git clone https://parousiaic@bitbucket.org/parousiaic/hack-nairaland.git`)
3. Open `cmd.exe` and `cd` (i.e. navigate) into the downloaded folder
4. Issue the command `pipenv install`. Wait for the environment to be recreated.
5. Issue command `pipenv shell` to activate the environment.

## Creating the `hack-nairaland` kernel

1. Optional: Inside your virtual environment, issue the following two commands (only needed if you created the virtual environment without using the `Pipfile` that comes with this repo.)

   ```
   pipenv install jupyter

   pipenv install ipykernel
   ```

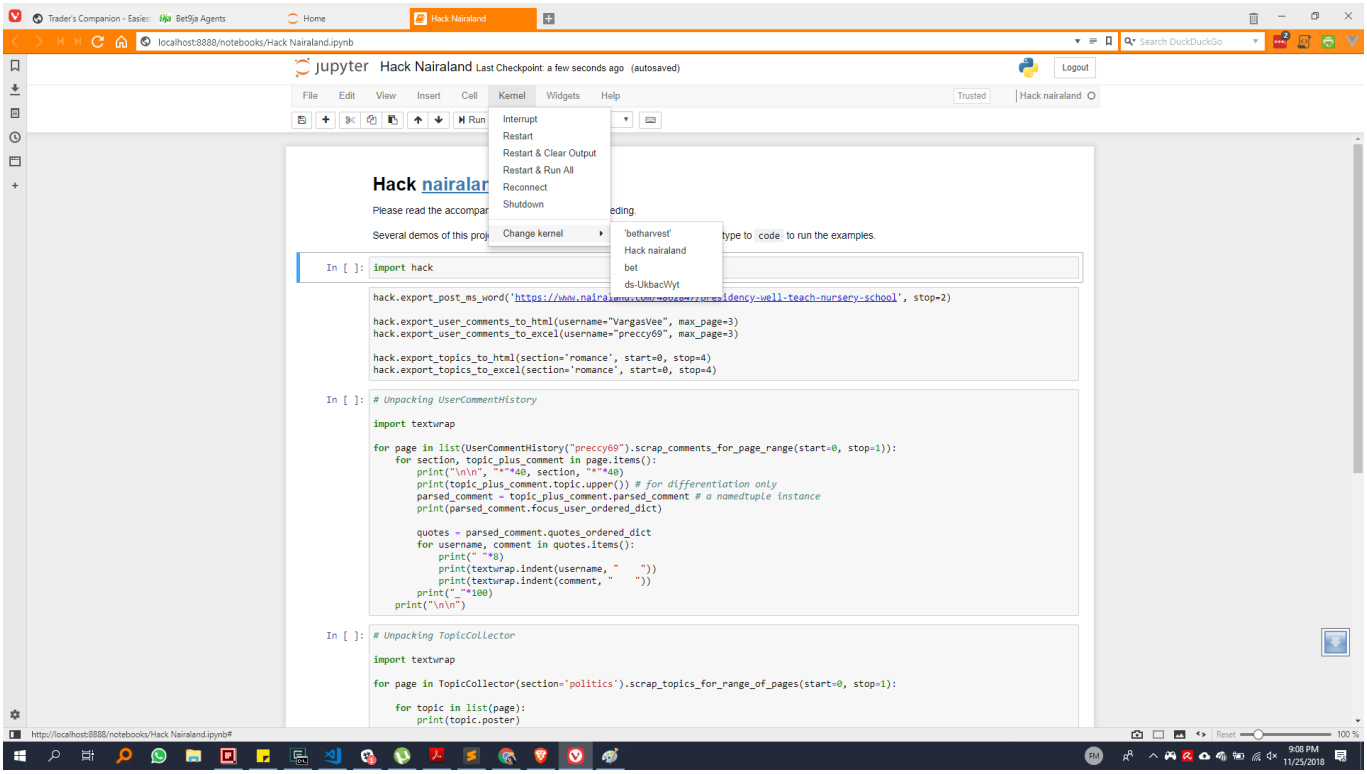
2. To create the custom `ipython` kernel, issue the following commands (This step is required)

   ```
   python -m ipykernel install --user --name other-env --display-name "Hack nairaland"
   ```

```
python -m ipykernel install --user --display-name "Hack nairaland or whatever name you like"
```

3. The `--user other-env` argument, value pair is optional. See here for explanation

4. Now when you reload your `ipython/jupyter` notebooks you should see the newly created kernel listed under kernels. You can see some kernels I've created in the screenshot below.




## Data Structure

Every function has its own data structure. They are documented here for easy understanding of the program logic.

### Functions

**`def get_left_right_of_html_br_element(br_element)`**

This function checks a single `html <br>` element and determines if it has texts before and/or after it, then it returns those texts as a `list` of `[before tag, after tag]`

**`def join_tuples(list_of_tuples)`**

**`format_comments(bs4_comment_block_object)`**

Takes a block of comment as a `BeautifulSoup4` object and formats it into proper paragraphs.

This function has a side effect of writing all comments it encounters to a file. This file can be found in `comment-blockS/` folder. It acts as a kind of log of every comment block that is encountered as you work with this project. View as raw html to see what the comment blocks look like.

**`def parse_comment_block(bs4_comment_block_object)`**

```
namedtuple('ParsedComment', ['focus_user_ordered_dict', 'quotes_ordered_dict'])

# Internal structure
('focus_user_ordered_dict', OrderedDict([('moniker', 'comment')]))

('quotes_ordered_dict', OrderedDict([('moniker', 'comment')]))
```

## Classes

### `Nairaland()`

This is the base class for all other classes defined here.

### `PostCollector()`

This class is employed in scraping a nairaland post.

### `PostCollector.scrap_comments_for_range_of_pages()`

Return type of `types.generator`. It `yield`s `OrderedDict()`s, where each has the structure shown below.

```
OrderedDict(['moniker', parse_comment_block function object])
```

**User `comment header <tr>` structure - Post view**

```
<tr>
    <td class="bold l pu">
        <a name="68136427"></a>
        <a name="msg68136427"></a>
        <a name="4539839.6"></a>
        <a href="/4539839/agu-aina-dropped-nigerias-final#68136427">Re:Topic.</a>
        by
        <a href="/moniker" class="user" title="Location: Detroit">moniker</a>
        (
        <span class="m or f">m or f</span>
        ):
        <span class="s">
            <b>00:00am</b>
        </span>
    </td>
</tr>
```

**User `comment text <tr>` structure - Post view**

```
<tr>
    <td id="pb68136427" class="l w pd">
        <div class="narrow">
            <blockquote>
                <a href="/post/68136377">
                    <b>moniker</b>
                </a>
                :
                <br>
                comment
            </blockquote>
            <br>
            <br>
            comment
        </div>
        <p class="s">
            <b id="lpt68136427">n Likes </b>
            <b id="shb68136427">n Share</b>
        </p>
    </td>
</tr>
```

**Unpacking post**

```
import textwrap

post = hack.PostCollector('https://www.nairaland.com/4862847/presidency-well-teach-nursery-school')
print(post.get_title())
for page in list(post.scrap_comments_for_range_of_pages(start=0, stop=2)):
    for moniker, parsed_comment in page.items():
        print(moniker)
        print(parsed_comment.focus_user_ordered_dict)
        for commenter, comment in parsed_comment.quotes_ordered_dict.items():
            print(textwrap.indent(commenter, "    "))
            print(textwrap.indent(comment, "    "))
        print("\n", "*"*100, "\n")
    print("+"*40, " new page ", "+"*40)
```

---

## `UserCommentHistory()`

User `comment header` `<tr>` structure - Comment history view

```
<tr>
    <td class="bold l pu">
        <a name=""></a>
        <a name=""></a>
```

```
        <a name=""></a>
        <img src="">
        <a href="/section-url">Section name</a>
        /
        <a href="/0000/title">Re: Post title</a>
        by
        <a href="/username" class="user" title="Location:location">username</a>
        (
        <span class="m or f">m or f</span>
        ):
        <span class="s">
            <b>00:00pm</b>
            On
            <b>Oct 19</b>
            ,
            <b>2017</b>
        </span>
    </td>
</tr>
```

### User comments text `<tr>` structure - Comment history view

This section has a few other elements displayed for a logged in user

```
<tr>
    <td id="" class="l w pd">
        <div class="narrow">
            <blockquote> <!-- each blockquote represents a quoted comment -->
                <a href="/post/00000000">
                    <b>Moniker</b>
                </a>
                :
                <br> <!-- there'll be as many of these as the number of enter keys
a user presses-->
                Some comment
                <img src="" alt="represents an emoticon" border="0" class="faces">
            </blockquote>
            some comment
        </div>
        <p class="s">
            <b id="lpt61581477">n Likes </b>
            <b id="shb61581477">n Share</b>
        </p>
    </td>
</tr>
```

## A supposed anomaly I found in the table

It contains nothing. Just a blank row.

```
<tr>
    <td class="l pu pd">
        <a name="68130046"></a>
    </td>
</tr>
```

Unpacking user comments history

```
import textwrap

for page in
list(UserCommentHistory("preccy69").scrap_comments_for_page_range(start=0,
stop=1)):
    for section, topic_plus_comment in page.items():
        print("\n\n", "*"*40, section, "*"*40)
        print(topic_plus_comment.topic.upper()) # for differentiation only

        parsed_comment = topic_plus_comment.parsed_comment # a namedtuple instance
        print(parsed_comment.focus_user_ordered_dict)

        quotes = parsed_comment.quotes_ordered_dict
        for username, comment in quotes.items():
            print(" "*8)
            print(textwrap.indent(username, "    "))
            print(textwrap.indent(comment, "    "))
        print("_"*100)
    print("\n\n")
```

---

# TopicCollector()

Section topics `<tr>` structure

```
<tr>
    <td id="top2792995" class="w">
        <a name="2792995"></a>
        <img src="/icons/sticky.gif">
        <b>
            <a href="/2792995/nairaland-says-no-secessionists">Topic title</a>
        </b>
        <a href="topic-full-url/1">(1)</a>
        <a href="topic-full-url/2">(2)</a>
        <a href="topic-full-url/max-page">(max-page)</a>
        <img src="/icons/new.gif">
        <b>*</b>
        <br>
        <span class="s">
            by
```

```
            <b> <!--These <b> tags occur a maximum of 7 times-->
                <a href="/username">username</a>
            </b>
            .
            <b>number of comments</b>
            posts &amp;
            <b>number of views</b>
            views.
            <b>00:00am</b>
            On
            <b>Jun 03</b> <!-- Visible for posts older than current date -->
            <b>2015</b> <!-- Visible for posts older than current year -->
            (
            <b>
                <a href="/user_moniker">user_moniker</a>
            </b>
            )
        </span>
    </td>
</tr>
```

## Unpacking Topics

```
import textwrap

for page in
TopicCollector(section='politics').scrap_topics_for_range_of_pages(start=0,
stop=1):
    for topic in list(page):
        print(topic.poster)
        print(textwrap.indent(topic.title, "    "))
        print(textwrap.indent(topic.url, "    "))
        print(textwrap.indent(topic.comments, "    "), " comments")
        print(textwrap.indent(topic.views, "    "), " views")
        print(textwrap.indent(topic.last_commenter, "    "), " commented last")
        print(textwrap.indent(topic.other_meta), "    ")
        print()
```

## Output functions

```
export_user_comments_to_html(username=None, max_page=5)

export_user_comments_to_excel(username=None, max_page=5)

export_topics_to_html(section='romance', start=0, stop=3)

export_topics_to_excel(section='romance', start=0, stop=3)
```

# Libraries used in this project

1. Openpyxl
2. Python docx

## To do

1. Fix scroll to top link
2. Grab nairaland icons from page