Coursework Report

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Introduction

The aim of this project was to create a web app for an online directory about a subject of my choice. This report is to demonstrate my understanding of Python and the micro-framework Flask.

For my project I decided to create a Scottish Wildlife web app. This web app is about wild animals that live in Scotland. These animals can be found in several habitats and the web app provides information about these animals and their habitats for locals and tourists. This is the main feature of the web app. This can be achieved by clicking on any one of the links in the navigation bar at the top of the page, for example the reptile's link will take the user to the reptile's page where they can read information about them and their habitats.

Figure 1 index page

Design

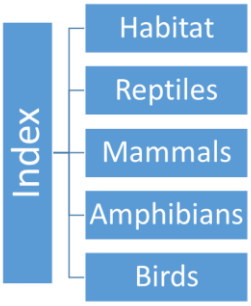

Figure 2 navigation map

The previous image is an image of the navigation system used in the web app. I have structured it this way because I find it is the easiest way to navigate through a webpage. The layout is consistent throughout the web app, giving it a professional look and making the navigation simple and easy it easy for the user. The web app is structured keeping the user in mind. The layout, look and structure is laid out to be consistent and to make the users experience easy and less frustrating.
Coming to the choice of colours of the web app.

I decided to use the colours black and green. The reason I chose these colours is because green is a colour known to be associated with wildlife and black is a simple colour against the contrast of the chosen green. The reason why I decided not to use too many colours is because the purpose of my web app is to provide information, having too many bright colours could be distracting and disengage the user. Another reason why I chose green as a background colour is because it also provides a good contrast against black text.

Enhancements

Due the lack of time and limited experience I was restricted to what I could create. If I had the necessary time and skills I would add a feature to the habitats section that would not only show a description of the habitats but would also show pictures of the animals that live within that habitat.
Due the time restriction I wasn't able to mention every single wild animal that resides in Scotland. If I had more time I would create a database that every wild animal that resides in the whole of Britain and have the web app sectioned off by category of countries, then relevant sub categories. A cool feature that could be added to this is a map that pin points each animal species location, and upon click a small introduction video plays of the animal in its habitat.
Another useful feature I would add is a forum where users could interact with each other and hold discussions about the wildlife.

If I had more time to work on this project I would have created a search bar where users would be able to search and view their desired content and the search bar would give suggestions to what information is available.

Another feature I would add would be an admin panel, where the admin would be able to log in the web app and add, modify or delete content. This feature would most likely be database driven for the login system and the admin panel.

Due to the lack of time I was unable to structure the URL hierarchy in my desired way. I would have created a main animal's page and added sub categories for species of animals. The sub categories pages information will be fetched from the Json file and would display relevant information.

With regards to coding, the json file I created holds all the data of the animals listed on the web app that can be fetched and displayed on the relevant pages. However, I feel I could have done a better and more efficient job in coding by reducing the amount of times needed to type out each route. It would have be better if I had reduced the function to load the json file on all the routes.

Figure 3 this is the routes.py file which holds all the routes

Critical Evaluation

The main aim of the web app is to provide users with information. This is done by using a simple and easy way of navigation throughout the web app. This feature is the main feature of the product as it's the main area that users will mostly engage with. I feel this navigation system works well and gives the user minimum to no frustration by keeping everything simple and easy to understand.

Another feature that makes the users life easy is the navigation highlight feature. The link the user visits in the navigation bar highlights and changes to a darker colour giving the user feedback that his/her interaction has been processed and they are on their desired page. This also serves as a reminder to the user as to which page they are currently browsing.

During the development of the product I created an error handling system. This system informs the user if he/she somehow ends up tampering with the URL. If this happens the web app opens a new page informing the user of an error and displays an option to return to the previous page they last visited, for example, if the users last visited page was Google.com, upon button click they will be redirected back to the Google homepage.

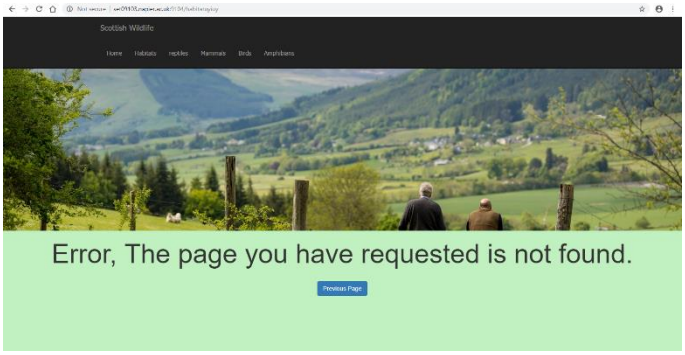

Figure 4 showing the error page

```
@app.errorhandler(404)
def not_found_error(error):
        return render_template('404.html'), 404
"routes.py" 51L, 1583C
```

Figure 5 showing the error handling code

```
return render_template('habitat.html', active='habitat')
```

Figure 6 this is the code in the routes.py file to enable the link to become active when clicked.

```
<li class="{% if active=='index' %} active{%endif%}" ><a href="{{url_for('index')}}">Home</a></li>
<li class="{% if active=='habitat' %} active{%endif%}"><a href="{{url_for('habitat')}}">Habitats</a></li>
<li class="{% if active=='reptiles' %} active{%endif%}"><a href="{{url_for('reptiles')}}">reptiles</a></li>
<li class="{% if active=='mammals' %} active{%endif%}"><a href="{{url_for('mammals')}}">Mammals</a></li>
<li class="{% if active=='birds' %} active{%endif%}"><a href="{{url_for('birds')}}">Birds</a></li>
<li class="{% if active=='amphibian' %} active{%endif%}"><a href="{{url_for('amphibian')}}">Amphibians</a></li>
```

Figure 7 this is the code in the layout.html base template that enables the user to see the webpage that they are on. This code and the code in figure 3 work together to make the selected link active.

A feature of the web app that I feel doesn't work as well as I expected is the modals that hold information and upon click open up and display this information. I feel as there is not much information in each modal, perhaps they were unnecessary. I would've been better to just have a small section in each habitats section that displays the relevant information. The modals is still a good idea and can work well, if I had more information to display.

Another feature that doesn't work that well and could be improved is the web apps responsiveness when viewing on other devices. The home page and habitats page are fully responsive but, unfortunately the other four animal pages are only responsive to a certain extent. I feel it would be beneficial if the entire web app displayed correctly on all devices big and small. Due to the time restriction I was unable to do this

Personal Evaluation

This was my first time working on this type of project. Creating, designing and using tools such as the Linux command line, Git, flask micro-framework, the programming language Python and the use of Json were all new to me and I had no previous experience or knowledge on how to use any of these systems. I am proud of myself for learning how to use all these new tools as they will be of great use for future projects.

While working on the project I had to use any time I had to educate myself on how to effectively use these systems to achieve my goal, for example getting used to the working environment where I had to create the web app (Linux Ubuntu). At the beginning it was really difficult and frustrating working alone and not being able to understand anything, but with persistence, and continuingly studying books, online resources and watching and working through video tutorials I managed to get a good grip on how to use these tools. Eventually I reached a point where I had the knowledge I needed to achieve my goal.

I feel I performed well on this project. At first, I was upset thinking I was thrown in the deep end and left, but now I see how it benefitted me. It gave me the opportunity to do things on my own without calling for help from others. I feel really proud of myself and feel I learnt a great deal more from this experience than just knowing how to use these tools.

References

The content such as animal and habitat information was sourced from the following two webpages: https://www.nature.scot/plants-animals-and-fungi/amphibians-and-reptileshttps://scottishwildlifetrust.org.uk/species/common-frog/

All images used are sourced from Google Images: https://images.google.com/

The Bootstrap framework used to create the website: https://getbootstrap.com/

Learning Resources:
https://www.codecademy.com/
https://www.openvim.com/
https://www.youtube.com/playlist?list=PL6gx4Cwl9DGDi9F_slcQK7knjtO8TUvUs (flask videos)
https://stackoverflow.com
https://www.w3schools.com