Add Cross-DB JSONFields to the Django Project

1. Abstract

- ### 1.1 Explanation:

Django is currently using JSONFields as a contributor feature just for postgres, it's not supported natively. In the perspective of the databases backends Django provides, JSON handlers are being supported in most of them already. So my proposal is to make sure that Django JSONFields are supported not only in Postgres but in all Databases Django work with as a Charfield for instance.

- ### 1.2 Goals:

My main goal is implement this feature in the code base, to do this effectively I take some time to figure the tests out, check what is the best approach. After that I will work in the idea checking the base examples from each database, with these concepts in place I can start implementing. I know that this task may not last the entire program but I am open to discuss about the implementation of another field such as an ArrayField or take some other issues ORM related.

- ### 1.3 Implementation:

For this task and for what I have been studying about the Django code base will require knowledge about the base class of Django fields and it's mixins, understand how Django queries from each database and how their backends will handle the JSON operators. I will make sure that the new field follows all the patterns already established by Django. Since SQLite is not supporting JSON yet and it is a must need for fast prototyping in Django, in the first steps I will make a POC field for it, there is out there some extensions to follow along with examples of how to accomplish this task. JSONField for others databases will have a multiple backend support. After this being done I will be able to determine the best approach to migrate from the contributor postgres to the new unified JSONField.

2. Schedule:

- **Research - May 27th to June 14th :**

Most of this period I will spend doing research, studying the tests fields already established in the code base, how the base class operates in all levels and how the backends interacts with each database engine, study the SQLite JSON extensions and point some good approaches they may use. Communication is one of the keys here.

- **SQLite JSONField POC - June 17th to June 28th :**

We will start our JSONField for the SQLite engine, for that I will make great use of the concepts used in the actual contrib.postgres module, making tests for each concept at the same time and documenting.

- **JSON unified field – July 1st to July 15th:**

After the concept in the SQLite is working I take the same approach to the unified field, after all the research we will handle the JSONField the same way a core Django field handles their multiple engine support, more tests and documenting here too.

- **Define path from contrib to the new core field – July 15th to 26nd July:**

For this I will follow the approach that is already in the code base, same patterns, I put one week more on this to make sure that we will have enough time to implement this well, making sure that tests coverage are good and everything is working properly.

- **Refine tests and some other ORM issue – July 26th to August 26th:**

The last four weeks I intend to refine the all the work I already did and maybe some other ORM related issue, we can try add some other field from contrib.postgres, there's a lot to do, communication here will be a key too.

3. About me

My name is Márcio Bernardes Barbosa Junior, I am 22 years old from Brazil, I am a student of the Technology College of São Paulo, timezone here is UTC+04:00. I work with Python for 1 and a half year, knowledge in C as well. I worked for 8 months in Germany as a Python Developer in a big project and now I am freelancing here in Brazil in my own little company. I've never contributed with Django itself, but this is the chance I was looking for. I did not make any fancy proposal, this is based on the suggestions ideas, I picked the one I truly know that I am capable to finish well. I can say I have a special feeling about Python and Django, these technologies gave me such huge opportunities, so this is the way I think I can do something cool for them too. I speak English/Portuguese very well, I have no problems to communicate over text or calls.

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