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September 10, 2023

Internal Project Fall 2023 Proposal

1. The benefit it may bring.

* It came up from the idea of helping the UNH students deploy their projects on a free platform when working with Django. Nowadays, with the rapid growth of technology, the world is gradually being replaced by virtual models, AI, and computers. Therefore, its data and resources are no longer stored in physical form, most of them are now stored in the cloud (virtual storage). This project/research will go deeper into how to work with the data and deploy students' projects on the cloud. The benefits of it may be for the individual themselves or in general for students.

+ For individuals, this project will help students understand more about how a database operates, its workflows, and the migration of data. Especially, this project emphasizes Django and its backend. In particular, this project will be using two cloud platforms: Azure and Firebase. Because of the difference in their database engines, this will help students learn how to handle the data’s transfer and migration. Helping students able to deploy their projects on any platform.

+ In general, this project/research will save money and optimize their expenses. For a couple of years, students used Heroku as their project’s deployment, but Heroku is no longer free. Therefore, Heroku is not an option for students now, take advantage of Azure (from Microsoft), students will get a free account when logging in under the student’s identity, as well as Firebase (from Google).

1. The result of the project.

* There are 3 learning objectives for this project: Deploy a project to Azure, deploy a project to Firebase, and get me learning database and its system.

+ Deploy a project to Azure: this project/research aims to deploy to the Azure platform, not only successfully deploying as production, but also having the project’s data to be transferred to the Azure cloud.

+ Deploy a project to Firebase: Likely deploying to Azure, deploying to the Firebase platform must be accomplished at the of the semester.

+ Learning database and its system: for this learning objective, there will not be a particular goal to achieve, but the experiences at the end of the project are something I will obtain.

1. The idea of the project.
2. Using my old project:

* This will save a lot of time so that I can focus on working on Django’s database and learning Azure and Firebase. Therefore, I don’t need to build from scratch, it is also very helpful for me because I have a couple of projects that can be used for deploying testing on the could servers.

1. Learning about Azure and its environment:

* Azure is a new platform for me, despite I have heard about Azure during academic time, I have not used Azure on my project. Therefore, learning about Azure and getting used to its services is essential and time-consuming.

1. Learning about Firebase and its environment:

* Likely Azure, Firebase is also new to me, this cloud platform is owned by Google, and it has many useful services as Azure to get to know such as Test App, Cloud Functions, …

1. Learning about Django’s database:

* Students who work on their project and just focus on developing applications, will not need to care about its database, because Django facilitates users by doing and taking care of their database, the users would just focus on the development. However, to be able to deploy the project on many platforms, I have to understand Django’s database, because the database engine is different between these platforms, they will need to be synchronized and transferred properly.

1. Set up environment:

* Not only does it save time in the end, but this is also one of the important criteria. The setting up environment work needs to be sequential and proper. One deviation will easily affect the whole project. Set up environment work such as: downloading needed packages, creating a web app and database server, and making sure its components are set up properly. Likewise, re-set up Django’s database is also required, which ensures data transferring and migration between Django and those cloud platforms conveniently and easily.

1. Deploying testing on Azure/Firebase:

* This is the testing action, I put this in because it is required to check/make sure the environment setup part was properly, and I could use the same options to deploy the real project at the end of the semester. This also saves time to avoid future bugs, and because of the difference between Azure’s environment and Firebase’s environment. Luckily, I have an old Django project that does not require a database, take advantage of this, I can test the deployment on Azure and Firebase initially without thinking about the database at this time, and just focus on setting up the environment.

1. Transfer/migrate database from Django to Azure/Firebase:

* This is the critical criterion and determines the success of the whole project. Once I get everything above, the transfer database is the next thing I need to focus on. This part will mark whether the database from Django to Azure/Firebase is successful or not. Transfer database successfully allows us to manage the data on Azure/Firebase, the project would be accessible from anywhere, and it also ensures that the data is not missing or damaged.

1. Deploy project on web applications as production:

* This is the final part of the project. When everything is guaranteed, deploy the project on Azure/Firebase as production is quite easy. Making the project published and accessible from anywhere, and is also the goal of the whole project.

1. The resources that will be needed.

* some resources will be needed for this project (because I am not quite sure what I could need eventually):

+ Azure: Cloud platform target.

+ Firebase: Cloud platform target.

+ Python: The main programming language for this project.

+ Django: The Python’s web framework.

+ Miniconda: To get the required packages, run the server and execute command lines on a virtual environment.

+ GitHub: To update the project.

1. The estimated time it is proposed to take.

* The total hour of this project is estimated to be about 150 hours. I decided to spend 10-15 hours every week on this project (roughly 3 months).

1. First two weeks (09/04 - 09/17): Get to know with Azure.

* Because Azure is new to me, getting used to Azure and reading its documentation is time-consuming. Not only that, but I also have to practice their services to have a comprehensive view of Azure and its environment. If everything is guaranteed, I can deploy a test deployment on Azure with my simple project which does not require a database.

1. Next three weeks (09/18 - 10/08): Re-organize my Django’s database.

* The project that I will use to deploy at the end of the project has a complex database, I have them done before but I have not deployed this project yet and I was only focusing on the development process since Django handled for me the database stuff. This part will require me to take a look back at its database and re-organize it. This will take time because I have to know Django’s database behaviors and set them up properly to prepare for the next step, which is the transferring step.

3. Next two weeks (10/09 – 10/22): Transfer/migrate database from Django to Azure.

- This part is the most important, so it will need the most time to accomplish because everything must be accurate and ready for synchronization. This consumption also includes encountering bugs, and errors, and solving and fixing them while transferring data. This part will check if my project is successful or not.

4. Next two weeks (10/23 – 11/05): Deploy the project on Azure.

- This is the sub-final stage of the project. When everything is guaranteed, this part will be easy to accomplish. Deploying the project and making it live to check the project successfully.

1. Next two weeks (11/06 - 11/20): Get to know with Firebase.

* This procedure will be the same as Azure, and because Firebase’s system and environment are different from Azure, it will be time-consuming to get used to with these stuffs. Like Azure, I can deploy a test deployment on Firebase with my simple project which does not require a database.

1. Next one week (11/20 – 11/27): Transfer/migrate database from Django to Firebase.

* Likewise Azure and Firebase would need the data synchronized to be transferred. Otherwise, it would conflict and cause errors.

1. Next one week (11/27 – 12/04): Deploy the project on Firebase.

* This is the final stage of this project. Deploy the project on Firebase is the second goal,

1. The concerns/difficulties.

* There are some concerns for me for this project because Azure and Firebase are two new cloud platforms that I will be using on this project. There will be some difficulties fixing/debugging while data is conflicted. As well as their components when setting up the environment, may require me to read and go through many documents to process it. Additionally, Django’s database and database generally were a thing that I did not care about much during my academic time. Getting to know the database’s behaviors and handling transferring are two things different to be accomplished.