

Hi,

Thank you for your interest in the Software Development Internship at DataGrokr.

DataGrokr provides solutions to our global clients in the fields of Cloud enablement, IT Automation (Devops), data management and Big Data Analytics. We work on several different technologies and we have to adapt very quickly to our client demand. Learning agility and ability to deal with new technologies on the fly is a must-have requirement to succeed at DataGrokr. If you are wedded to a technology, DataGrokr is not the right place for you.

As such, our selection process is geared to identify candidates who'll enjoy this type of work and thrive in this environment. As a part of our selection process, we ask interested candidates to complete a technical assignment. The details for the technical assignment are provided in the attached document. The document contains detailed instructions on what you need to do as well as well as the deliverables expected.

Your submissions are due to us by end of day March 23<sup>rd</sup>. Based on your submissions, we will shortlist some candidates and schedule F2F/Skype/Hangout interviews in the following week. We hope to start our internship in April (and May for those can't start in April).

Please also note that our internships span multiple technologies – we cannot guarantee that you'd work on your favourite technology but we can guarantee that you'll learn something new. If you are picky about what you want to work in, we suggest you don't apply and save everyone time.

If you decide to participate in the technical assessment, please send a mail to [help-me-help-you@datagrokr.com](mailto:help-me-help-you@datagrokr.com) for letting us know that you are going to be making a submission. This will help us keep track of number of interested candidates and we can open up our internship to others, if we don't meet our target number of candidates.

Good luck and we hope you enjoy the assignment and learn something new in the process irrespective of the outcome of your internship.

**Note to candidates available only for 2 months:** We are going to give a greater consideration for candidates who are available for 6 months and who could potentially accept full-time offers thereafter. Having said that, we have taken summer interns in the past years and if we believe you can add value to us, you will be considered.

DataGrokr Team.

## Assessment for Software Engineer Internship at DataGrokr

Congratulations on making it to the assignment. Good luck!

### What you need to do:

The technical assessment requires you to bring up a REST API that takes in name of the country as an input and returns the name of the capital of a country.

We have provided you the different steps for the exercise along with resources that will be helpful for you. You are free to use any reference material but you should be able to explain in your own words any code or configuration that you use.

The exercise does require you to have a personal computer/ laptop and you should be able to install the necessary software on it.

We want the REST API to be developed using Python Flask/Flask-Restful framework. The API can be hosted on any Linux VM on your favorite cloud provider or on your laptop. We have provided instructions for hosting it on your laptop using Vagrant (assuming you a Windows laptop) but where you host is up to you. If you have ubuntu/linux laptop, you can directly host on your laptop.

### Instructions:

1. Installing environment on a Window laptop (Optional):
  - a. Install Virtual Box
    - i. Use the website : <https://www.virtualbox.org/wiki/Downloads>
  - b. Install Vagrant
    - i. Overview of vagrant is available @ <https://www.vagrantup.com/docs>.
    - ii. You can explore the 'getting started' tab for more info on installation and usage with virtual box
  - c. Bring up a VM with Linux OS (Centos) with the help of Vagrant
    - i. Use any vagrant linux box (ubuntu or centos)
    - ii. The VM doesn't need more than 1GB RAM and any computer/ laptop that is couple of years old should be able to handle it.
  - d. Make the following configurations on the Linux VM:
    - i. The system should be able to communicate with the internet
    - ii. Create a OS user id / password.
    - iii. Provide sudo access to the user id. Use this user id to perform the rest of the tasks.
2. Install Python and flask / flask-restful packages.
  - a. Use yum package manager for Centos and apt-get for Ubuntu (Make sure all the necessary packages are already present before you install the flask package)
  - b. Here are some links to know more about REST APIs:
    - i. <https://dzone.com/articles/an-introduction-to-restful-apis>
    - ii. <http://www.restapitutorial.com/>
  - c. Here are some links to learn more about flask and flask-RESTful:
    - i. <http://flask.pocoo.org/docs/0.12/>
    - ii. <https://flask-restful.readthedocs.io/en/latest/>
3. Develop the REST API using Flask or Flask-RESTful framework.

- a. There are tons of tutorials online on using Flask to build a REST API. Here are a few examples:
  - i. <https://medium.com/python-pandemonium/build-simple-restful-api-with-python-and-flask-part-1-fae9ff66a706>
  - ii. <https://blog.miguelgrinberg.com/post/designing-a-restful-api-using-flask-restful>
- b. The data for the country and the capital is present in the Appendix. Use this data as the source data for the REST API. Feel free to store it in any form that you need.
- c. You only need to implement the GET HTTP method. Feel free to your own resource names.
- d. The API should do some basic error handling. Example: Invalid country name.
4. There are many ways of hosting a Flask API using different HTTP server. We prefer the Gunicorn WSGI HTTP server. Here are some links about Gunicorn and hosting a flask app using Gunicorn.
  - i. <http://gunicorn.org/#quickstart>
  - ii. <https://www.digitalocean.com/community/tutorials/how-to-serve-flask-applications-with-gunicorn-and-nginx-on-ubuntu-14-04>
5. Once your API is working as expected, create a ngrok HTTP share to create a URL that you can share with us.
  - a. To know more about it go through: <https://ngrok.com/>

**Sample Output to return:**

1. The API call should return the country and the capital in a JSON format.
2. If we give invalid country name, it should return an appropriate message.

**Deliverables:**

1. Create a document or power point presentation describing your experience. We are not looking for fancy words or good looking PPTs but we do want to get visibility into your train of thought.
  - a. The steps you executed, your sources and how you went about the exercise.
  - b. Your learnings
  - c. Which part did you find challenging and which part was fun
  - d. Any suggestions for us to improve the exercise
  - e. Use screen shots as and when necessary to show the results.
2. Please note that this document is our primary way of screening you for the F2F interview.
3. Your final submission should be sent to [help-me-help-you@datagrokr.com](mailto:help-me-help-you@datagrokr.com). It should consist of:
  - a. The above described document
  - b. Your python code.
  - c. The URL link for us to test
4. If you have any questions during the assignment, send your questions to [help-me-help-you@datagrokr.com](mailto:help-me-help-you@datagrokr.com).

## **Appendix – Countries and Capitals**

Afghanistan,Kabul  
Albania,Tirana  
Andorra,Andorra la Vella  
Angola,Luanda  
Antigua and Barbuda,St. John's  
Argentina,Buenos Aires  
Armenia,Yerevan  
Australia,Canberra  
Austria,Vienna  
Azerbaijan,Baku  
Bahamas,Nassau  
Bahrain,Manama  
Bangladesh,Dhaka  
Barbados,Bridgetown  
Belarus,Minsk  
Belgium,Brussels  
Belize,Belmopan  
Benin,Porto Novo, Cotonou  
Bhutan,Thimphu  
Bolivia,La Paz and Sucre  
Bosnia and Herzegovina,Sarajevo  
Botswana,Gaborone  
Brazil,Brasília  
Brunei,Bandar Seri Begawan  
Bulgaria,Sofia  
Burkina Faso,Ouagadougou  
Burundi,Bujumbura  
Cambodia,Phnom Penh  
Cameroon,Yaoundé  
Canada,Ottawa  
Cape Verde,Praia  
Cayman Islands,George Town  
Central African Republic,Bangui  
Chad,N'Djamena  
Chile,Santiago  
China,Beijing  
Colombia,Bogotá  
Comoros,Moroni  
Costa Rica,San José  
Côte d'Ivoire,Yamoussoukro  
Croatia,Zagreb  
Cuba,Havana  
Cyprus,Nicosia  
Czech Republic,Prague  
Democratic Republic of the Congo,Kinshasa  
Denmark,Copenhagen  
Djibouti,Djibouti

Dominica,Roseau  
Dominican Republic,Santo Domingo  
East Timor,Dili  
Ecuador,Quito  
Egypt,Cairo  
El Salvador,San Salvador  
Equatorial Guinea,Malabo  
Eritrea,Asmara  
Estonia,Tallinn  
Ethiopia,Addis Ababa  
Fiji,Suva  
Finland,Helsinki  
France,Paris  
French Guiana,Cayenne  
Gabon,Libreville  
Georgia,Tbilisi  
Germany,Berlin  
Ghana,Accra  
Greece,Athens  
Grenada,St George's  
Guatemala,Guatemala  
Guinea,Conakry  
Guinea-Bissau,  
Guyana,Georgetown  
Haiti,Port-au-Prince  
Honduras,Tegucigalpa  
Hungary,Budapest  
Iceland,Reykjavik  
India,New Delhi  
Indonesia,Jakarta  
Iran,Tehran  
Iraq,Baghdad  
Israel,Jerusalem  
Italy,Rome  
Jamaica,Kingston, Jamaica  
Japan,Tokyo  
Jordan,Amman  
Kazakhstan,Astana  
Kenya,Nairobi  
Kiribati,South Tarawa  
Kuwait,Kuwait  
Kyrgyzstan,Bishkek  
Laos,Vientiane  
Latvia,Riga  
Lebanon,Beirut  
Lesotho,Maseru  
Liberia,Monrovia  
Libya,Tripoli  
Liechtenstein,Vaduz

Lithuania,Vilnius  
Luxembourg,Luxembourg City  
Madagascar,Antananarivo  
Malawi,Lilongwe  
Malaysia,Kuala Lumpur  
Maldives,Malé  
Mali,Bamako  
Malta,Valletta  
Marshall Islands,Majuro  
Mauritania,Nouakchott  
Mauritius,Port Louis  
Mexico,Mexico City  
Micronesia,Palikir  
Moldova,Chisinau  
Monaco,Monaco  
Mongolia,Ulaanbaatar  
Montenegro,Podgorica  
Morocco,Rabat  
Mozambique,Maputo  
Myanmar,Naypyidaw  
Namibia,Windhoek  
Nauru,Yaren  
Nepal,Kathmandu  
Netherlands ,Amsterdam  
New Zealand,Wellington  
Nicaragua,Managua  
Niger,Niamey  
Nigeria,Abuja  
North Korea,Pyongyang  
Norway,Oslo  
Oman,Muscat  
Pakistan,Islamabad  
Palau,Koror  
Palestine,Jerusalem  
Panama,Panama City  
Papua New Guinea,Port Moresby  
Paraguay,Asuncion  
Peru,Lima  
Philippines,Manila  
Poland,Warsaw  
Portugal,Lisbon  
Puerto Rico,San Juan  
Qatar,Doha  
Republic of Ireland,Dublin  
Republic of Macedonia,Skopje  
Republic of the Congo,Brazzaville  
Romania,Bucharest  
Russia,Moscow  
Russia,Moscow

Rwanda,Kigali  
Saint Kitts and Nevis,Basseterre  
Saint Lucia,Castries  
Saint Vincent and the Grenadines,Kingstown  
Samoa,Apia  
San Marino,San Marino  
São Tomé and Príncipe,São Tomé  
Saudi Arabia,Riyadh  
Senegal,Dakar  
Serbia,Belgrade  
Seychelles,Victoria, Seychelles  
Sierra Leone,Freetown  
Singapore,Singapore  
Slovakia,Bratislava  
Slovenia,Ljubljana  
Solomon Islands,Honiara  
Somalia,Mogadishu  
South Africa,Pretoria  
South Korea,Seoul  
South Sudan,Juba  
Spain,Madrid  
Sri Lanka,Sri Jayawardenapura Kotte and Colombo now  
Sudan,Khartoum  
Suriname,Paramaribo  
Swaziland,Mbabane  
Sweden,Stockholm  
Switzerland,Bern  
Syria,Damascus  
Taiwan,Taipei  
Taiwan,Taipei  
Tajikistan,Dushanbe  
Tanzania,Dar es Salaam, Dodoma  
Thailand,Bangkok  
The Gambia,Banjul  
Togo,Lome  
Tonga,Nuku'alofa  
Trinidad and Tobago,Port of Spain  
Tunisia,Tunis  
Turkey,Ankara  
Turkey,Ankara  
Turkmenistan,Asgabat  
Turks and Caicos,Cockburn Town  
Tuvalu,Funafuti  
Uganda,Kampala  
Ukraine,Kyiv or Kiev  
United Arab Emirates,Abu Dhabi  
United Kingdom,London  
United States,Washington DC  
Uruguay,Montevideo

Uzbekistan,Tashkent  
Vanuatu,Port Vila  
Vatican City,Vatican City  
Venezuela,Caracas  
Vietnam,Hanoi  
Western Sahara,La'youn  
Yemen,Sana'a  
Zambia,Lusaka  
Zimbabwe,Harare