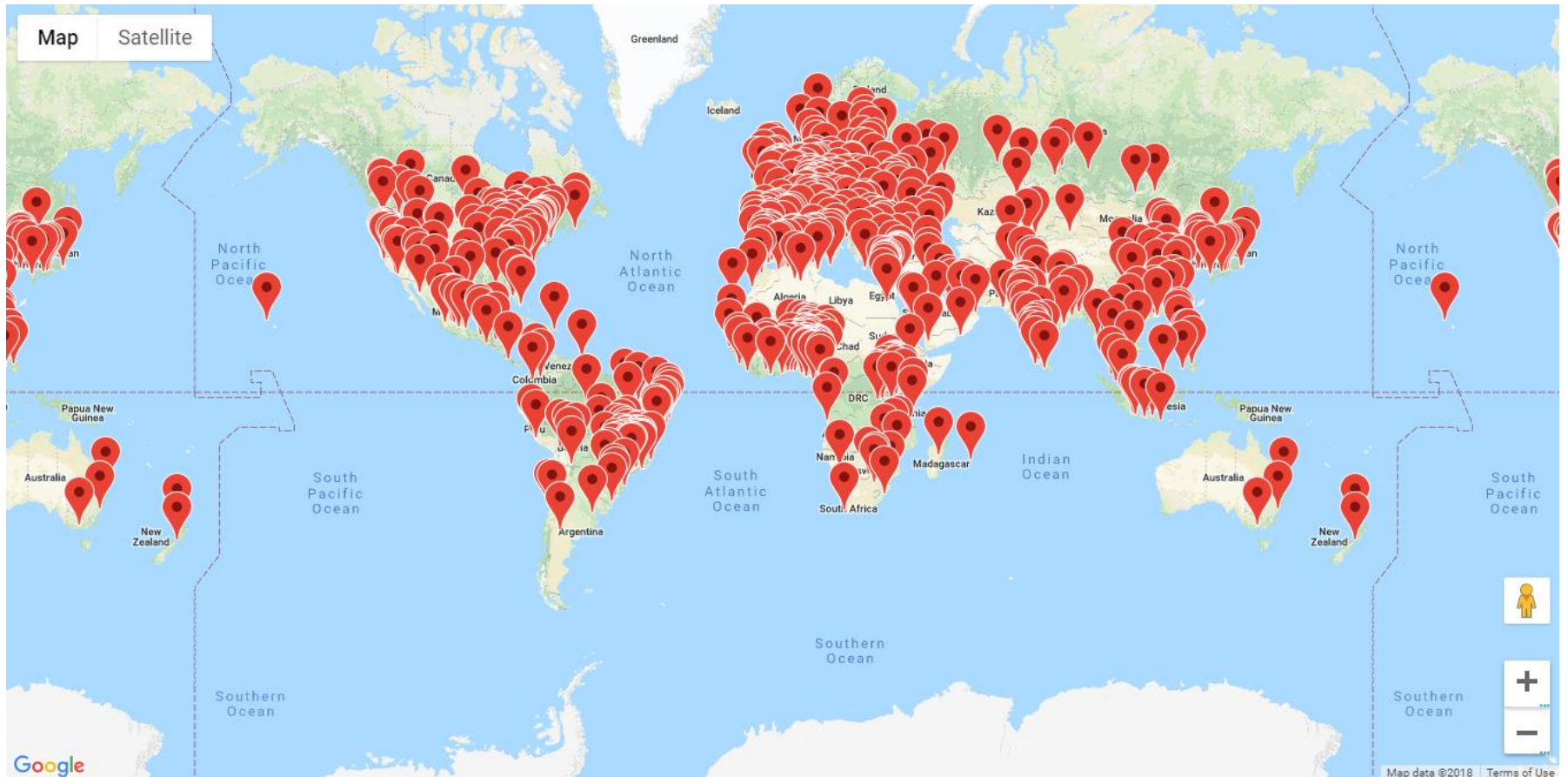# Hash Code

Road 2 Hashcode 2019

Palermo, 8 novembre 2018
Dipartimento Matematica e Informatica

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782 GDG nel mondo

https://developers.google.com

Attività svolte

- Fondato nel gennaio 2010
- Più di 100 eventi
- Più di 1.000 membri
- Alcuni temi trattati: Flutter, Actions, ML, Things, Firebase, Android, Digital Startup, Sicurezza, OpenData, Linux, Marketing, Social Networks, Ecommerce, Smart Cities, Python…

https://sites.google.com/site/palermogtug/

https://edu.google.com/students/index.html

https://hashcode.withgoogle.com/

Sfide passate 1/3

City Plan

Hash Code 2018, Final Round

The population of the world is growing and becoming increasingly concentrated in cities. According to the World Bank, global urbanization (the percentage of the world's population that lives in cities) crossed 50% in 2008 and reached 54% in 2016 . The growth of urban areas creates interesting architectural challenges. How can city planners make efficient use of urban space? How should residential needs be balanced with access to public utilities, such as schools and parks?

Self-driving rides

Hash Code 2018, Online Qualification Round

Millions of people commute by car every day; for example, to school or to their workplace. Self-driving vehicles are an exciting development for transportation. They aim to make traveling by car safer and more available while also saving commuters time. In this competition problem, we'll be looking at how a fleet of self-driving vehicles can efficiently get commuters to their destinations in a simulated city.

Router placement

Hash Code 2017, Final Round

Who doesn't love wireless Internet? Millions of people rely on it for productivity and fun in countless cafes, railway stations and public areas of all sorts. For many institutions, ensuring wireless Internet access is now almost as important a feature of building facilities as the access to water and electricity. Typically, buildings are connected to the Internet using a fiber backbone. In order to provide wireless Internet access, wireless routers are placed around the building and connected using fiber cables to the backbone. The larger and more complex the building, the harder it is to pick router locations and decide how to lay down the connecting cables.

Sfide passate 2/3

Streaming videos

Hash Code 2017, Online Qualification Round

Have you ever wondered what happens behind the scenes when you watch a **YouTube** video? As more and more people watch online videos (and as the size of these videos increases), it is critical that video-serving infrastructure is optimized to handle requests reliably and quickly. This typically involves putting in place cache servers, which store copies of popular videos. When a user request for a particular video arrives, it can be handled by a cache server close to the user, rather than by a remote data center thousands of kilometers away. Given a description of cache servers, network endpoints and videos, along with predicted requests for individual videos, decide which videos to put in which cache server in order to minimize the average waiting time for all requests.

Satellites

Hash Code 2016, Final Round

A satellite equipped with a high-resolution camera can be an excellent source of geo imagery. While harder to deploy than a plane or a Street View car, a satellite — once launched — provides a continuous stream of fresh data. **Terra Bella** is a division within Google that deploys and manages high-resolution imaging satellites in order to capture rapidly-updated imagery and analyze them for commercial customers. With a growing constellation of satellites and a constant need for fresh imagery, distributing the work between the satellites is a major challenge. Given a set of imaging satellites and a list of image collections ordered by customers, schedule satellite operations so that the total value of delivered image collections is as high as possible.

Delivery

Hash Code 2016, Online Qualification Round

The Internet has profoundly changed the way we buy things, but the online shopping of today is likely not the end of that change; after each purchase we still need to wait multiple days for physical goods to be carried to our doorstep. Given a fleet of drones, a list of customer orders and availability of the individual products in warehouses, schedule the drone operations so that the orders are completed as soon as possible.

Sfide passate 3/3

Loon
Hash Code 2015, Final Round
Project Loon aims to bring universal Internet access using a fleet of high altitude balloons equipped with LTE transmitters. Circulating around the world, Loon balloons deliver Internet access in areas that lack conventional means of Internet connectivity. Given the wind data at different altitudes, plan altitude adjustments for a fleet of balloons to provide Internet coverage to select locations.

Optimize a data center
Hash Code 2015, Online Qualification Round
For over ten years, Google has been building data centers of its own design, deploying thousands of machines in locations around the globe. In each of these of locations, batteries of servers are at work around the clock, running services we use every day, from Google Search and YouTube to the Judge System of Hash Code. Given a schema of a data center and a list of available servers, your task is to optimize the layout of the data center to maximize its availability.

Street View routing
Hash Code 2014, Final Round
The Street View imagery available in Google Maps is captured using specialized vehicles called Street View cars. These cars carry multiple cameras capturing pictures as the car moves around a city. Capturing the imagery of a city poses an optimization problem: the fleet of cars is available for a limited amount of time and we want to cover as much of the city streets as possible.

Analisi di un caso: "Delivery"
Hash Code 2016, Online Qualification Round

- Given a fleet of drones, a list of customer orders and availability of the individual products in warehouses, schedule the drone operations so that the orders are completed as soon as possible.

- Input File Format

- Output File Format

- Scoring

Programma degli allenamenti

Date da confermare:

- Un test a dicembre(12)/gennaio (16,23,30)
- Un test a febbraio (13,20,27)

Gruppo Telegram

https://t.me/GDG_Palermo