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Fostering pre-university student participation in OSGeo through the Google Code-in competition

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OSGeo

- Founded as a non-profit organization in 2006
- The number of open source software projects under its umbrella is steadily growing
- OSGeo's vision is to empower everyone, from pre-university students to professionals, with open source geospatial applications, tools and resources
- To further OSGeo's commitment to open education, the GeoForAll initiative was established in 2011
- At present, GeoForAll consists of 125 labs, mainly based at universities and research center world-wide.

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Google initiatives

- Google has two programmes to introduce pre-university and university students to open source, namely:
  - Google Summer of Code (GSoC) and
  - Google Code-in (GCI), respectively.

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Google Summer of Code

- GSoC was first established by Google in 2005 and has grown ever since.
- GSoC is an online, international program targeted to university students, that aims at fostering their participation in open source software communities.
- Mentoring organizations select students that will be developing software applications during 12 weeks and receiving support and feedback from mentors within the software community.
- Successful students are paid stipends by Google.
- The program aims at identifying and bringing new developers into open source software communities, as well as exposing students to real world software development.
- OSGeo is a veteran organization having participated in GSoC and having graduated 190 (at 2018) students from all over the world every year since 2007.

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Google Summer of Code duplicate of previous slide?

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Google Code-in

- In 2017, OSGeo decided to participate in Google Code-in (GCI) for the first time.
- GCI is an annual online competition aimed at introducing pre-university students (13-17 years) to open source projects, development and communities, through short 3-5 hour tasks.
- As opposed to GSoC, in GCI students are not selected by the organizations, but freely pick up tasks from one or more mentoring organizations and complete them.
- Students qualify for different prizes (i.e. certificate, t-shirts, hoodies and the grand prize of visiting Google's main headquarters in San Francisco) depending on the number of tasks they complete.
- During GCI, participating organizations have a unique opportunity to interact with pre-university students and to encourage them to become part of their respective organizations.

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Google Code-in in 2017

- 3,555 participating students from 78 countries completing 16,468 tasks with a record of 25 open source participating organizations.
- This was a record number of students and it represented a 265% increase in participation as compared to 2016.
- Unsurprisingly, almost half (47.8%) of the students are from India and a quarter (25.4%) from the USA.
- The southern hemisphere is under represented, probably due to GCI taking place during the summer vacation in most of these countries.
- For 91% of the students, the 2017 edition was their first time competing in GCI.
- However, disappointingly only 17% of participants were girls.
- On average, most of the students were between 15-17 years old. Two thirds of the students completed three or more tasks and they earned a t-shirt.

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Google Code-in

- The task description also includes the mentor(s) responsible, the type of task (i.e. coding, documentation, training, outreach, research, quality assurance and user interface), links to relevant information, maximum amount of time the task can take to be completed (e.g. 3 to 7 days) and the number of instances available.
- The number of instances available for each task represents the number of times a certain task can be claimed by students.
- For their nature, some of the tasks can only have 1 instance (for example, a bug fix, once it is fixed, doesn't require another student working on it), whereas some other tasks can entail multiple instances (for example, designing a t-shirt for a code sprint event).
- Students can then select tasks from the organization's list, however, they can only claim and work on one task at a time.
- Only when the task has been approved by the mentor or abandoned, the student can claim another task.

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Google Code-in

- Once a task is submitted for review, the mentor(s) review the work submitted and can either approve it or request more work, providing comments to improve the submission.
- Mentors have 36 hours to review a submitted task, but they are encouraged to provide feedback to students within 12 hours, because a delay in providing feedback can impair the student's performance in the competition.
- Students win prizes based on the number of tasks completed and the quality of their submissions.

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Google Code-in: Sample task

- **Title:** QGIS: Write a basic tutorial for creating a map that can be used to train school learners
- **Description:** For this task, you need to write a tutorial (step-by-step instructions) that can be used by school learners to get started with QGIS to design their first map. You use any open data (e.g. from your cities open data portal or the World Bank portal) for this tutorial. Add a bit of a story to the tutorial to capture the attention of the user. Submit the document as a PDF.
- **Categories:** Documentation & Training, Outreach & Research

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Google Code-in: Sample task

- **Title:** gvSIG: Install Tests add-on on gvSIG BATOVí.
- **Description:** The student will have to install the Tests add-on on gvSIG BATOVí. He or she will have to make a screenshot showing gvSIG Batoví without the add-on and follow-up screenshots of each of the steps needed to complete the installation, complete a simple testing report ODT template that will be provided and export it to PDF.
- **Categories:** Quality Assurance

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Google Code-in: Sample task

- **Title:** GRASS GIS: Compile source code
- **Description:** Compile the source code of GRASS GIS in your operating system following the instructions at https://grasswiki.osgeo.org/wiki/Compile_and_Install
  Compilation is usually simpler and better documented for Linux OS. If you use Windows and you get trouble please ask on GRASS GIS developer mailing list http://lists.osgeo.org/mailman/listinfo/grass-dev
  Result: Upload the log file called '*config_log.txt*' and an image with your name written in the terminal when you success in compilation. To create '*config_log.txt*' you need to redirect stdout and stderr to a file ([Unix doc] (http://www.tldp.org/LDP/abs/html/io-redirection.html))
- **Categories:** Coding

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Method

- Overview of OSGeo GCI involvement
- Analyses of student submissions
- Feedback from mentors
- Lessons learned

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Overview of OSGeo's participation in GCI

- Students completed 649 OSGeo tasks
- OSGeo had 20 volunteers (16 mentors and 4 admins)
- OSGeo projects involved: FOSS4G, GeoServer, GeoTools, GRASS GIS, gvSIG, MapServer, OpenLayers, OSGeoLive, pgRouting, PostGIS, and QGIS
- Students communicated through Google dashboard, and IRC channel #osgeo-gsoc
- A lot of effort by mentors answering questions (sometimes upto 4 or 6 hours per day)
- majority of the students were from India (49%) followed by the United States (24%), Poland (7%), Singapore (4%) and 18 other countries

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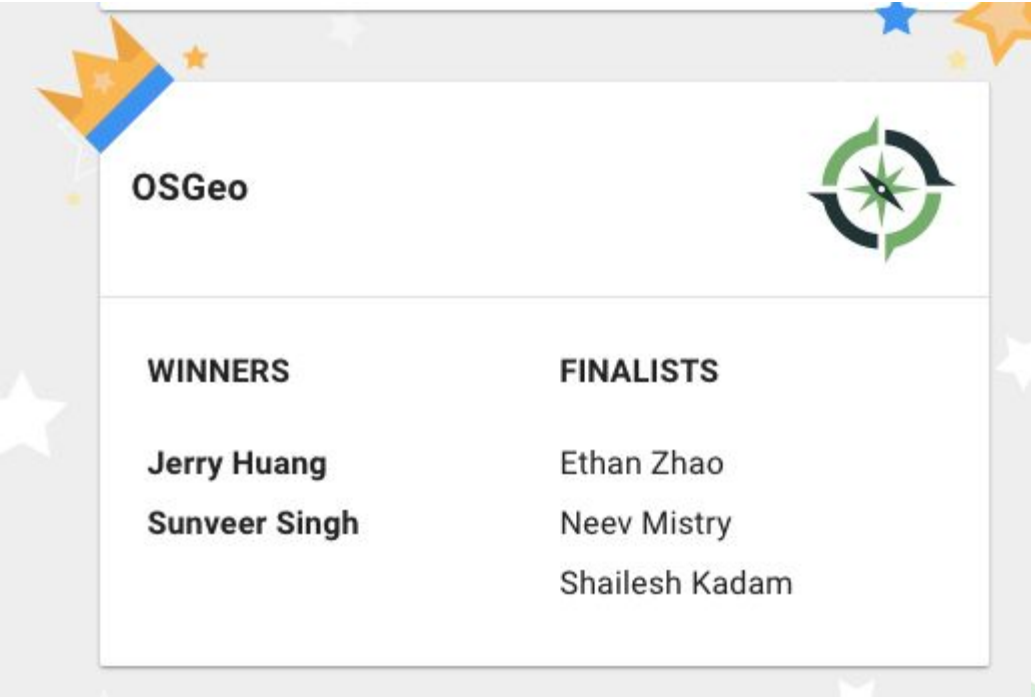
Overview of OSGeo's participation in GCI



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Mentor feedback and experience

- First experience by OSGeo, so a lot of unknowns
- Majority of tasks completed by students were for outreach (blogs, logos, etc)
- Some code was contributed (GRASS GIS modules improved)
- Some OSGeo mentors spent 30 hours a week answering student questions
- A few cases of plagiarism

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Lessons learned

- A lot of requests from unknown mentors
- Kids are shy to ask for help and will just ‘abandon task’
- Tips for preventing cheating (asking for screenshots with student name at commandline etc)
- Specific syntax for uploading tasks
- Be aware of time demands

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GCI Summit

- June 25-28 Googleplex, Mountain View
- Winning students, and mentors

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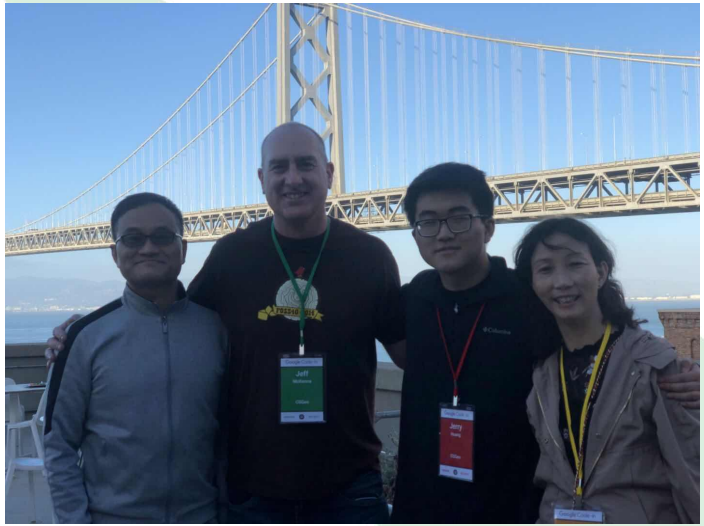
GCI Summit



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Conclusions

- Important to introduce kids to the Open Source community
    - Next step Google Summer of Code
- OSGeo mentors must be thanked for such an effort to help these kids
- We learned a lot with our first Code-in experience
- Please share the word about this contest locally to young students
- It’s fun!

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