



2016 REPORT

FINDINGS AND INSIGHTS

What is Geeky Girl Reality?

Why aren't there more women in Science, Technology, Engineering and Mathematics (STEM)? Geeky Girl Reality is a research project set up to understand the gender gap.



I have been one of only a few women in **large engineering classes** many times. Once I had a professor refer to me as '**the lady**' whenever he referred to my participation in the class.



- Participant #9, Age 23, South Africa



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Understanding the gender gap

In 2016 only 23% of professionals in Science, Technology, Engineering and Mathematics (STEM) were women. Twenty-seven percent of these women were likely to leave their job within the first year. ^{vi}

Our researchers are working hard to understand women's experiences in STEM, in particular:

- What influences women's decisions to enter and remain in STEM fields
- What challenges and issues they face in their study/career journeys
- What can be done to increase the number of women in STEM

This study identifies ways to bring about change and create more opportunities for women in STEM industries.



Demographics



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About the research

This report draws insights from the Geeky Girl Reality 2016 survey. We asked 15 open-ended questions exploring women's experiences within STEM, such as:

'How do you think women and men differ in their respective learning experiences?'

'Do you have a role model or mentor? Tell us about them.'

We based our questions on issues raised by women in our Geeky Girl Reality forum. **We received responses from 178 women from 16 different countries.** Their comments gave us first-hand insights into women's experiences in stereotypically 'male' industries.

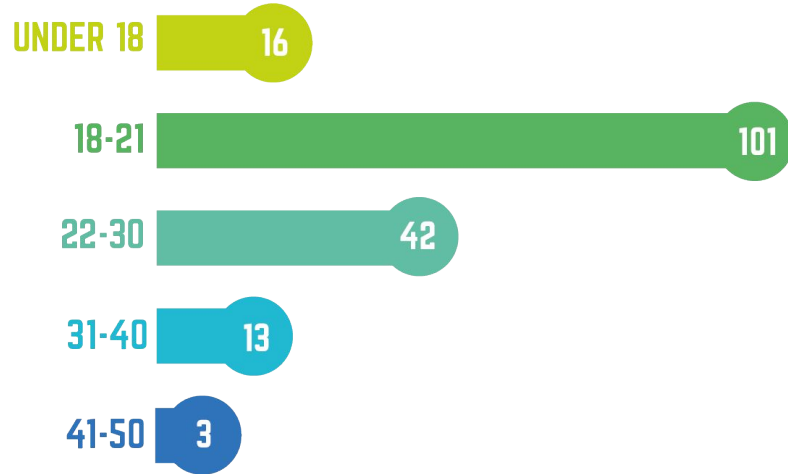


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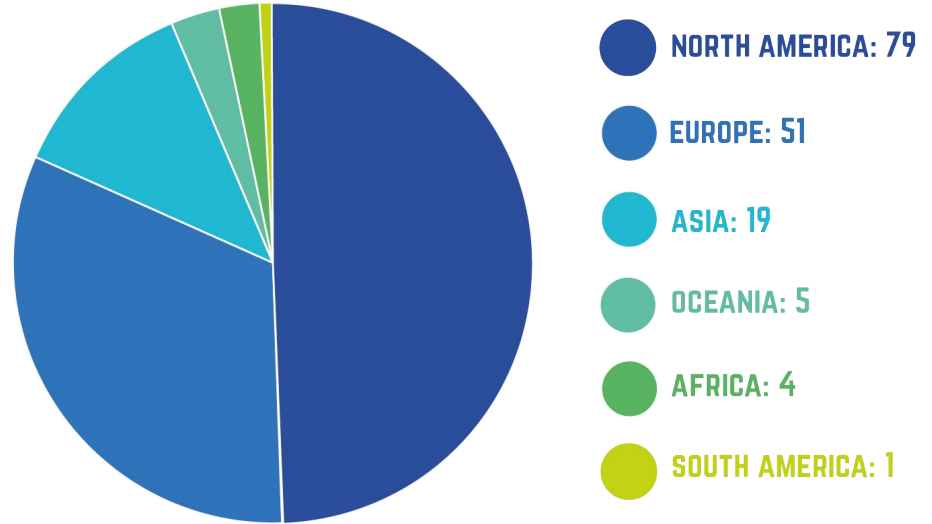


How old are they?



Geeky Girl Reality | www.geekyreality.com | 2016 survey

Where are they from?



Geeky Girl Reality | www.geekyreality.com | 2016 survey

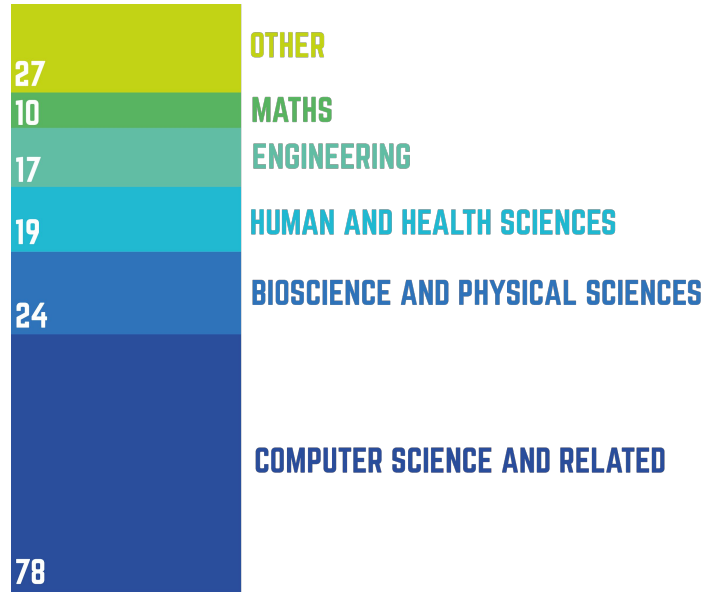


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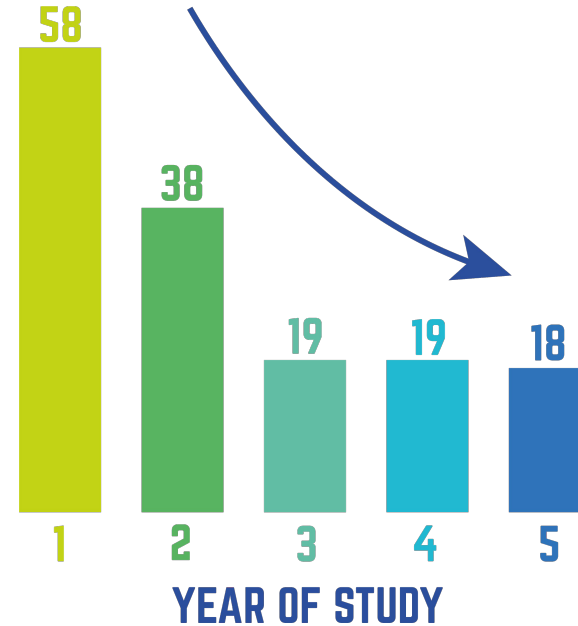


What do they study?



Geeky Girl Reality | www.geekyreality.com | 2016 survey

What year of study are they in?



Geeky Girl Reality | www.geekyreality.com | 2016 survey



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About our participants



were located
in the US

58%

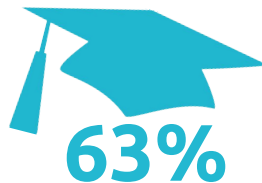


were between the ages of
18 and 21

44%



studied Computer
Science or a related
subject



were in Year 1 or 2
of their studies



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About our participants

We can draw some useful insights from survey responses, but please keep in mind the higher proportion of western women, primarily from the US, in the age range 18-21, when drawing conclusions from the survey.

Forty-four percent of participants studied Computer Science, the largest proportion, followed by 14% studying Bioscience or Physical Sciences. Most students were in their first year of university or college education.



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Needs



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What women in STEM need

What did the 2016 survey respondents say?

We need...

Female role models



Gender-free learning environments



Increased confidence



A healthy work-life balance



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Female role models

I need professional female role models:

- So I am inspired to enter the **STEM field**.
- So I don't get discouraged from pursuing a career in **STEM**.
- So I can see that success in the field is attainable for women.
- So I can see that a work-life balance in the field is achievable.

Women in the survey mentioned **faculty members, teachers, relatives and friends** as influential and inspiring mentors. Role models show that women can succeed in STEM without losing out on a family life or good work-life balance.



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Female role models

Everyone can remember an influential figure in their life. The survey data suggest that **women get more inspiration from real-life mentors**, who they know in their everyday lives, as opposed to celebrities. A real-life mentor is someone they can turn to for advice, inspiration, career guidance and support.



A girl a few years above me at university who has went on to start her own tech business straight out of university



- Participant #31, Age 23, Northern Ireland



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Female role models

Women in the survey said there was a need for more **opportunities to connect with females in STEM** fields. Things like mentorship programmes would give younger women more exposure to female role models within STEM.



More female role models being introduced to younger girls, **removing the stigma that STEM is a 'boy' thing** that is created in mainstream media and through STEM toys that are gendered.



- Participant #155, Age 18, North America



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Female role models

Participants thought that the **media could showcase successful women in the industry**. They were concerned that female scientists were under-represented or not shown in a positive light. More positive stories about women in the industry could give young women more confidence to pursue a career in STEM.



More spotlight on successful women in tech. With so many bad news about women suffering in tech, leaving tech, or failing in tech, even I am discouraged about my future and whether I'll thrive in the tech industry.



- Participant #121, Age 19, North America



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Gender-free learning environments

I need gender-free learning experiences:

- So I form a positive attitude towards science at an early age.
- So I am inspired to pursue a STEM career.
- So I have the same amount of exposure to science as males do when entering studies.
- So I do not experience peer pressure towards gender conformity in my learning environment.

Girls still experience gender stereotyping, from the toys they are given to the subjects they are encouraged to pursue. This affects expectations of what they can achieve and the support and opportunities they receive.



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Gender-free learning environments

Participants described how **men are encouraged to take an interest in STEM-related activities from an early age**, whereas women are more often pushed towards 'girly' hobbies or subjects.



Boys are encouraged to experiment, take things apart, and study engineering related fields whereas girls are supposed to be interested in the **'softer' sciences**.



- Participant #156, Age 21, North America



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Gender-free learning environments

Girls are often given dolls and stereotypically 'female' toys to play with, rather than the science-related toys given to boys. Science-related activities and games in childhood have a significant impact, **allowing girls access to the same toys and activities could be a good way to ensure they don't lose out at an early age.**



Teach young girls that can be just as good at STEM subjects as boys, and encourage parents to let their daughters play with gender-neutral, engineering-based toys (LEGO etc).



- Participant #137, Age 18, North America



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Increased confidence

I need more confidence in my abilities:

- **So that I am inspired to begin a career in STEM.**
- **So that I don't get discouraged and leave the STEM field.**
- **So that I am not afraid to make mistakes and learn from them.**

Women said they often felt less confident in their abilities compared to men. This lack of confidence could discourage them from entering a career in STEM.





Increased confidence

Women blamed their lack of confidence on gender stereotypes in education. They suggested that **young girls are often encouraged to strive for perfection** and punish themselves when they make mistakes.



I believe that in order to stake your claim in computer science companies, you must exude confidence, and be ready to lead. **Women are often discouraged at a young age from being sure of their actions**, and this lends to crippling doubt that can be exploited in a workplace.



- Participant #154, Age 16, North America



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Increased confidence

Participants said that **women could be given more confidence through motivating tech talks, chances to meet inspiring women in STEM.** Most importantly, they wanted recognition and appreciation of their work.



The best way to achieve this (getting more women in STEM) is by instilling the confidence to make a difference in the minds of young women. We can do that in so many ways! More tech summits with inspiring tech talks motivating women to codes.



- Participant #70, Age 19, India



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Work-life balance

I need good work-life balance in my STEM career:

- **So I am confident in pursuing a long-term career in the STEM field.**
- **So I can continue my studies and pursue an academic career.**
- **So I can have a family whilst working in the career I desire.**

One question focused on understanding how women saw their lives in the future. More than 30 women provided answers related to creating a family. It seems that some women see a trade-off between their STEM career ambitions and their desire to have a family.



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Work-life balance

Some women in the survey **placed a high priority on their role as mothers**. For example, some of the responses to the question '*Imagine your life in ten years. Describe it to us...*' were:

"2 kids, neat and comfortable house, married."

- Participant #49, Age 21, UK

"Not sure, still trying to figure it out. But my own family with children for sure"

- Participant #16, Age 21, Human Services student

Women need to be reassured that they can have children and still have a successful STEM career.
More female STEM role models could be a way of demonstrating this.



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Work-life balance

Women in academia were either focused on their work or worried about their work-life balance. On the other hand, women working in the private sector talked about their jobs alongside their personal aspirations. It seems that **women think it is harder to achieve a good work-life balance in academia.**



Most professors work too much and I do not aspire to do that. I **have only met a few academics that have a healthy/life balance.** I would like my mentor to be more human and less like a workaholic robot.



- Participant #84, Age 33, New Zealand



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Patterns and trends



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What about the fun stuff?

We also asked girls studying STEM subjects about what they got up to in their spare time.

For example, questions such as:

'What is your most used gadget and what do you use it for?'

'What were you into when you were younger?'

'How did you become interested in studying your subject? Were you involved in any clubs or programmes?'

What 'guilty' pleasures do you indulge in outside of your work and studies?'



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Clubs, programmes and competitions

Most women said their interest in STEM was sparked by a club or program. They mentioned examples including: 'girls who code', 'maths club', 'women in technology', 'technovation challenge', 'brain bee', along with different summer and subject camps. **'Robotics club' was the club mentioned most frequently.**

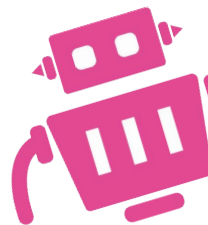
Quite a few women also mentioned entering STEM related science and math **competitions** in their younger years.



I loved entering
science competitions!



- Participant #98, Age 23, Africa



What were they into when they were younger?

Childhood activities and games might have played an important part in influencing women's choice of career. **Puzzles were particularly popular especially Sudoku**, as well as TV, video games, and competitions. Participants also mentioned outdoor activities, computers, building things, reading, writing and drawing.



Did love me a good puzzle. The elation you feel after finally finishing. Priceless!



- Participant #155, Age 18, North America



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What gadgets were trending in 2016?

Women used their phones and laptops the most out of all their devices. A smaller percentage of women mentioned using devices such as tablets, iPads, Kindles, Apple Watches and running watches.



My most used gadget is definitely my laptop. I use it for everything and take it everywhere. I play a bunch of PC games on it plus do all my school work.



- Participant #106, Age 18, North America



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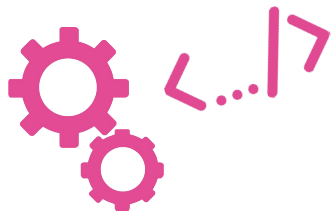
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What gadgets are trending in 2016?

Most women said that they used their computers and laptops more than other devices. They mentioned using their computers for watching TV and surfing through social media, to more STEM-related activities such as **programming, research, writing a thesis and studying**.

Women also used their phones a lot, but mainly for **personal interests, such as social media and talking to their friends**. Very few said they used them for anything to do with STEM.



I use my phone the most. I also play Zelda games on the Wii and 3DS. Sometimes I use my laptop but I now find it stressful.



- Participant #24, Age 22, United Kingdom



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What geeky girls do for fun?

We asked women what they indulged in outside of their work and studies. Popular pastimes included watching **TV series**, **reading books**, **drawing**, and **arts and crafts**.

A lot of young women mentioned being into 'art' – **they enjoy visiting art galleries, drawing, colouring and making crafts**. Some women said they drew for pleasure and weren't that talented, but were trying to improve their skills.



I just draw little cartoons, but they help get the creative juices in my brain flowing



- Participant #102, Age 21, North America



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What geeky girls do for fun?

Some women admitted to binge-watching TV shows as a guilty pleasure. **The most popular genre among responses was anime. Other popular genres included reality TV, fantasy and drama.** The most popular shows were 'Game of Thrones' and 'Keeping Up with the Kardashians'. Overall women had varying tastes and liked many different shows.



Either binge-watching RUPAUL's drag race or reading lots of corny romance novels :)



- Participant #17, Age 21, United States



What geeky girls do for fun?

Our survey confirms that **geeky girls are bookworms**. Women told us that reading was their most popular pastime. Respondents read **different genres from poetry to fantasy fiction**. They dream of having private libraries in the future and having more time to read. Most of the women said that reading was a 'guilty pleasure' they had enjoyed since childhood.



I love love love books and I'm an avid collector. One day I want my own library in my home!



- Participant #25, Age 21, United Kingdom



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Where do you see yourself in 10 years?

The final question in our survey asks young women to tell us where they see themselves in 10 years. Some **struggled to describe a future where they have a family as well as a career in STEM**, as described in the need for a healthy work and life balance. Our **favourite response** is below.



I have a PhD in Neuroscience from Sussex. I work for the NHS, live with my partner (who is either happily employed, happily a house-husband or happily in between) - with a cat. We can both drive and have an electric car. Our garden has vegetables and herbs growing. We are considering whether to adopt or to donate to children's charities, orphanages. But no one asks me when I'm having a goddamn kid because f*ck off with that. We have every video game I've ever wanted. I cosplay and go to anime and game conventions. My attire is fly af.



- Participant #24, Age 22, United Kingdom



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What's next?



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What's next?

The 2016 survey data has shown some of the challenges that women face in STEM industries. **The responses also point out some of the amazing programmes, mentors and clubs that women have found inspiring through their STEM journey so far.**

The responses demonstrate a need for change. The Geeky Girl Reality research project aims to increase awareness of opportunities for women and shed light on how everyone can work together to make the STEM industry more egalitarian.

We now know that **more female role models, gender-free learning environments, increased confidence levels and a good work-life balance are very important for women** already in the industry or looking to get into the industry.



What's next?

We hope that our work can open up a platform for women to share their experiences. We would also like to encourage companies and institutions to recognise inequalities and strive towards change.

Geeky Girl Reality is a longitudinal, independent and not-for-profit research study. We are currently analysing our 2017 data and collecting responses as part of our 2018 survey.

We are keen to learn about future trends and how women's experiences in STEM evolve over the coming years.



What can you do?

Encourage young women to continue studying STEM.

1. Establish college or university programs for **women beginning their studies** that provide a place for them to share their struggles and get advice.
2. Appoint **more women as faculty members** in STEM.
3. Increase **opportunities preparing students in high school for college and university courses.**
4. Encourage women to **become mentors for others just starting** out in STEM.
5. Create **internship, work experience or mentoring opportunities in your company that expose young women studying STEM to careers in STEM.**



What are we doing?

As a result of the initial findings from our first survey, we formed the Geeky Girl Reality community, www.geekyreality.com, **a supportive, online space for women interested in STEM and STEM careers.**

Our platform provides a space for women to discuss relevant issues and to receive guidance and support from one another. It connects approximately **2000+ young women** currently enrolled in STEM programmes from all over the world, including USA, UK, Canada, Australia, Mexico, South Africa, Nigeria, and Vietnam.

We realised that what women who took part in our survey needed the most were opportunities to gain exposure to STEM industries and meet women in STEM. That's why we launched www.STEMgigs.com, **a 'gig' board that has STEM opportunities for young women**, such as internships, scholarships, awards, competitions, summer jobs, and mentor programmes.



Who are we?

We would like to **thank the following individuals** who contributed to the **research, data analysis and writing** of the Geeky Girl Reality 2016 report:

Raiya Al-Ansari
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Graham Lee
Sabah Rahman

Catriona Budge
Andrea Lewis
Paul Sauvage

Molly Goodman
Gary Maccabe
Agne Vaiciulaityte

Ad Hoc Global Ltd is the **research sponsor** for the Geeky Girl Reality project, providing user researchers and user experience researchers to create the survey, analyse data and present findings as user needs.



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Notes & Citations

- I. The Geeky Girl Reality research work is independent and not for profit.
- II. This report is free of charge and may be distributed freely to anyone. We ask that if quoting us, you provide a clear citation and link to the project.
 - a. Any citations should refer to 'Geeky Girl Reality 2016 Report' - www.geekyreality.com
- III. Our survey is limited by only accepting responses written in English.
 - a. Spelling and grammar errors in participants' responses have been corrected for clarity and publication. For adjustment to verbatim responses, we made a concerted effort to ensure there was no altering meaning or intent.
- IV. Responses were received from the following countries: Australia, Belize, Canada, France, Gambia, Germany, Ghana, India, Italy, Netherlands, New Zealand, Nigeria, Philippines, South Africa, Spain, United Kingdom and United States.
- V. The facts of this report are believed to be correct at the time of publication but cannot be guaranteed. Please note that the findings, conclusions and recommendations that we deliver will be based on information gathered in good faith from both primary and secondary sources, whose accuracy we are not always in a position to guarantee. As such we can accept no liability whatever for actions taken based on any information that may subsequently prove to be incorrect.
- VI. 23% statistic citation is [Cruz, 2016](#)
- VII. Vector graphics by vecteezy.com, pages: 8, 11-24, and 27-33.
- VIII. Images by pexels.com, pages: 4, 10, 25 and 34. No attribution is required for the images we used in this report.
- IX. Thank you very much to universities worldwide who assisted in our survey distribution.



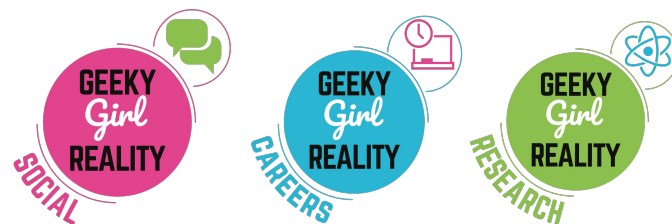
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