Raspberry Pi Foundation

Annual Review

2024

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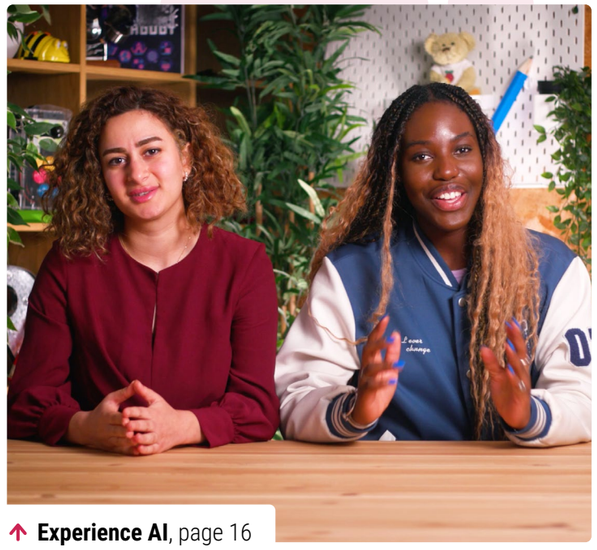

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Introduction from the Chair and Chief Executive

Sir John Lazar and Philip Colligan

Welcome to the 2024 Annual Review for the Raspberry Pi Foundation.

Our mission has never been more vital. We are living through a period of extraordinary technological change. Advances in artificial intelligence (AI), machine learning, robotics, and automation are already reshaping the way we live, work, learn, and interact — and the pace of change is accelerating all the time. While no one really knows the scale of the transformation that this wave of technological innovation will bring, we can be sure that investing in education is more important than ever.

We have made significant progress against all of our strategic priorities this year. We have supported more schools and teachers through high-quality curricula, classroom resources, and professional development. Responding to feedback from educators, we launched the Code Editor for Education, providing a free, safe tool to support the teaching and learning of programming. Working with partners in India and Kenya, we have adapted our Computing Curriculum to make it relevant and meaningful for students in those countries.

Through Experience AI, we are leading a global effort to support teachers and students to develop their AI literacy, reaching over 1 million teenagers this year alone and building a network of partners that will see millions more benefit in the years to come.

The global network of Code Clubs continues to go from strength to strength, with almost 8,000 clubs reporting as active during the year. We were particularly pleased to see more evidence of the positive impact that attending a Code Club has on young people's confidence with technology and wider life skills thanks to the independent evaluation that was published this year.

We have continued to invest in original research to deepen our understanding of the teaching and learning of computer science, including effective pedagogies and AI education. As part of our partnership with the Raspberry Pi Computing Education Research Centre at the University of Cambridge, we are investing in the next generation of research scientists through our support for PhD students.

One of the most significant milestones of the year was the successful listing of our commercial subsidiary, Raspberry Pi Ltd., on the London Stock Exchange, which has secured the next stage of growth and impact for both the Foundation and the commercial company. The listing has generated an endowment that — together with funding from our partnerships, donations, sponsorship, and educational services — enables the Foundation to advance our ambitious global strategy over the next decade. We remain a significant shareholder in the listed company and we are proud to continue to share a brand and mission to democratise access to computing.

↑ **The Foundation team at the 2024 all-staff residential**

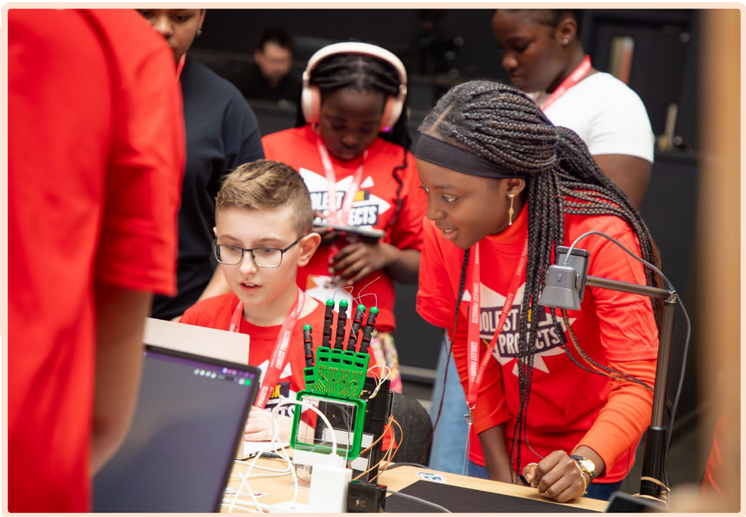
We are incredibly grateful to the Board of Trustees and wider Membership for their leadership and guidance. We would like to extend a special thanks to Dan Labbad and Jon Drori, who stepped down as trustees this year, for their exceptional contribution. We are delighted that both Dan and Jon will continue their association as Members of the Foundation.

The scale and impact of our work would not be possible without our amazing community of partners, donors, educators, volunteers, and supporters. To every teacher who brought computing to life in their classroom, every volunteer who ran a Code Club, every mentor who supported a young person to participate in Coolest Projects, and every donor who trusted us to achieve impact with their money — thank you.

Our impact in 2024

9,475

young people took part in Coolest Projects events around the world, showcasing **6,208** projects



26,386

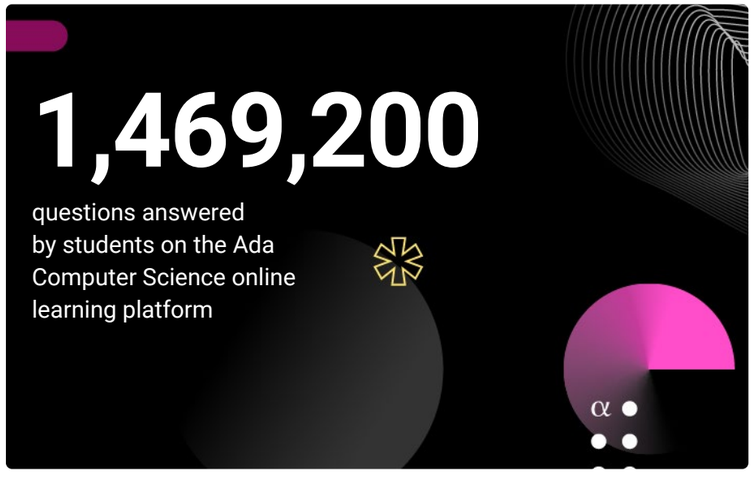
young people from 28 countries ran their code in space in the Astro Pi Challenge

Experience AI

1 million young people reached over

1,469,200

questions answered by students on the Ada Computer Science online learning platform



23,158

participants in our online courses for educators

114,797

downloads of Computing Curriculum resources worldwide

7,949

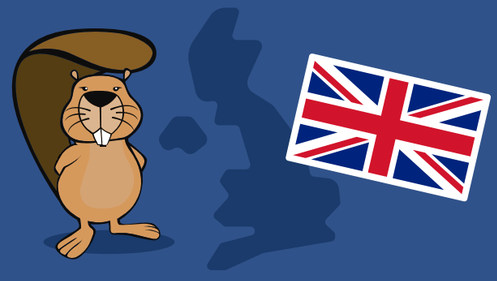
Code Clubs ran in-person sessions in **119 countries**

38,704

subscribers in **168 countries** to Hello World magazine

716

attendees from 50 countries at 10 online research seminars



467,190

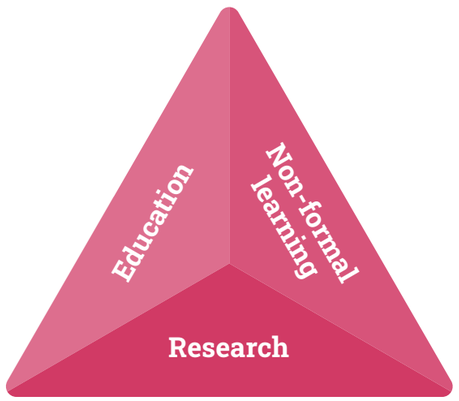
young people from the UK took part in the Bebras challenge

Our mission and goals

The mission of the Raspberry Pi Foundation is to enable young people to realise their full potential through the power of computing and digital technologies.

Our vision is that every young person develops:

- The knowledge, skills, and confidence to use computers and digital technologies effectively in their work, community, and personal life; to solve problems and to express themselves creatively
- Sufficient understanding of societal and ethical issues to be able to critically evaluate digital technologies and their applications; and to design and use technology for good
- The mindsets that enable them to confidently engage with technological change and to continue learning about new and emerging technologies



Our activities are organised around three ambitious long-term goals:

Enable every school to teach computing through classroom resources, purpose-built software tools, and professional development for teachers

Inspire millions of young people to become tech creators through a global network of coding clubs, online resources, showcases and challenges

Undertake original research to deepen our understanding of the teaching and learning of computing and use that knowledge to advance the field

You can learn more about our mission, values, and priorities in **our 2025 Strategy**. This Annual Review highlights our progress towards achieving our mission over the past year.

Education

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The Computing Curriculum

Comprehensive classroom resources for the entire computing curriculum

The Computing Curriculum provides 500 hours of classroom resources to enable schools to teach computing to students from ages 5 to 16. Organised into age-appropriate units, it covers the entire breadth of the computing curriculum including computational thinking, computer systems, data, programming, and the societal impacts of technology.

Built on a progression framework, the Computing Curriculum maps knowledge and skills through learning graphs, supporting teachers in lesson planning, delivery, and student progress tracking. The classroom resources include lesson plans, slides, worksheets, homework, and assessments, embedded with research-informed pedagogy to reduce workload and enhance teaching. The Computing Curriculum is being used by educators all over the world, and we have also adapted and localised it for India and Kenya.

IMPACT

- Our curriculum resources have been downloaded more than **3.58m** times since 2020
- **144,797** downloads of Computing Curriculum resources in 2024
- **90%** of educators reported curriculum materials were high quality

Since 2024, we have been working on an updated Computing Curriculum and lesson materials for students aged 5 to 16 in England, working with the Government's national curriculum body, Oak National Academy.

Supporting computing education in Kenya

In Kenya, we are working with the Frontiers County Development Council (FCDC), an economic bloc of 10 county governments, and Mombasa County Government in collaboration with a local NGO, Tech Kidz Africa, to support the teaching and learning of computing in schools.

We adapted and localised the Computing Curriculum for Kenya, including detailed mapping to the national Competency Based Curriculum and produced localised classroom resources. We designed and delivered training to over 450 educators using a train-the-trainer model, with 93% of educators agreeing they felt confident to teach students using the curriculum resources after the training. In collaboration with our partners, we are continuing to support educators through community WhatsApp groups, classroom observations, and feedback.

As a result, the Computing Curriculum is being actively used by an estimated 158 schools in 9 counties reaching an estimated 55,000 learners in grades 6 to 10 (ages 9 to 15).

IMPACT

- **453** teachers trained from over 150 schools
- **93%** of teachers agreed they felt confident to teach students using the resources provided
- **94%** of teachers agreed that their students had improved their knowledge of computing concepts
- **92%** of teachers agreed that their students have developed their computing skills

> **"The students have developed interest in computing lessons and are ready to participate actively during the lessons."**
>
> - Teacher

> **"The training was an eye opener for me as an educator and the knowledge I have gained will be used to teach the learners well."**
>
> - Teacher

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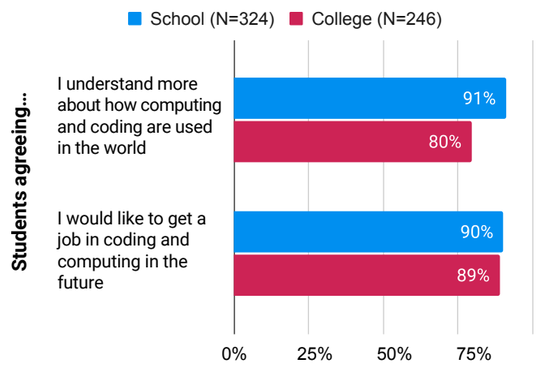
Supporting computing education in India

Odisha

Since 2023, we have been working with Panchasakha Sikhya Setu (formerly known as Mo School Abhiyan) and other local partner organisations to support the teaching of computing in the state of Odisha in India.

We developed a localised version of the Computing Curriculum, which received state education department endorsement in 2024. In collaboration with partners, we have trained thousands of teachers in over 8,000 schools across Odisha through a network of over 300 master trainers.



↑ Odisha

IMPACT

- **94%** of teachers agreed their students' digital literacy skills improved
- **89%** of educators agreed that students improved their coding knowledge and skills
- **95%** of teachers agreed the training increased their knowledge on advanced Scratch, AI, and cybersecurity
- **91%** of educators who taught grade 10 agreed that their students were aware of the IT career paths based on interests and competency

↑ Telangana

Telangana

We are working with the Telangana Social Welfare Residential Educational Institutions Society (TSWREIS), a Telangana government department, to expand access to computing education for educationally disadvantaged students. TSWREIS oversees educational institutions dedicated to providing high-quality education to under-resourced young people, particularly those from scheduled castes and tribes in rural areas.

Together, we have created two Centres of Excellence in Computing within a residential school and college. Our team of local computer science specialists have adapted and localised the Computing Curriculum, extending the content to support students up to the age of 21. We are now working with the Society to support the implementation of the Computing Curriculum across their network of 238 schools.

Across our partnerships in Odisha and Telangana, we estimate that our curriculum and teacher professional development has supported 1.2 million young people in 2024.

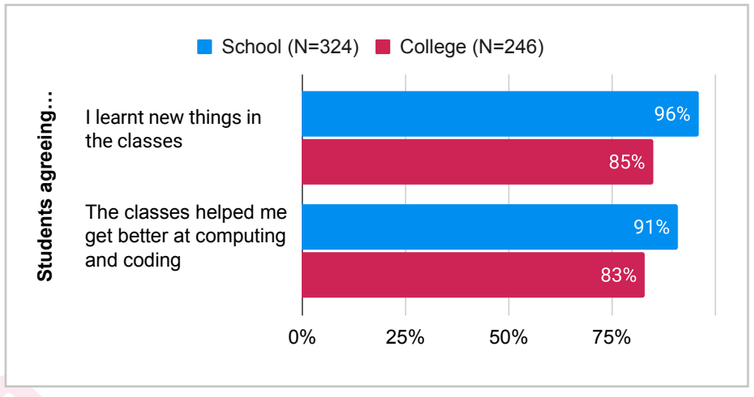
In 2024, our work in Odisha and Telangana was generously supported by the Ezrah Charitable Trust.

IMPACT

- **96%** of school students and **85%** of college students agreed that they had learnt new things in the classes
- **91%** of school students and **83%** of college students agreed that the classes helped them get better at computing and coding
- **91%** of school students and **80%** of college students agreed that they understand more about how computing and coding are used in the world
- **90%** of school students and **89%** of college students agreed they would like to get a job in coding and computing in the future

> "My students have improved their coding knowledge and skill."
>
> - Teacher

> "Students are getting so many IT skills that will be useful for them in future."
>
> - Teacher



Experience AI

Inspiring the next generation of AI leaders

Created by the Raspberry Pi Foundation in partnership with Google DeepMind, Experience AI equips teachers with everything they need to confidently deliver engaging lessons that inspire and educate young people about artificial intelligence.

As AI continues to evolve rapidly, it's essential for young people to understand its impact on their lives today and its potential role in their future. Our goal is to make AI relevant and accessible to young people from all backgrounds, with a particular focus on engaging those from backgrounds that are currently underrepresented in AI careers.

> **"The lessons took some of the 'magic' out of AI and started to give the students an understanding that AI is only as good as the data that is used to build it."**
>
> - Teacher, UK

Experience AI is a suite of free classroom resources, teacher professional development, and hands-on activities designed to help non-specialist teachers deliver AI lessons. Aimed at learners aged 11 to 14, the materials are informed by the AI education framework (SEAME) developed at the Raspberry Pi Computing Education Research Centre and are grounded in real-world contexts.

In 2024, in partnership with Google.org and Google DeepMind, we expanded our global network of Experience AI partners, working with education organisations in 22 countries to localise and translate the classroom resources and organise locally delivered professional development for teachers.

Experience AI

IMPACT

- **276,372** downloads of Experience AI lessons
- An estimated reach of over **1 million** young people
- **92%** of educators in partner countries agreed the Experience AI resources were high quality and useful to support their teaching
- **95%** of educators in partner countries agreed that the Experience AI sessions have increased their students' knowledge of AI concepts
- **90%** of young people in partner countries indicated that they better understand what AI and machine learning are

We also launched a new set of resources focused on AI safety including:

- **Your data and AI** – How data-driven AI systems handle information differently from traditional software and the implications for data privacy
- **Media literacy in the age of AI** – The rise of AI-generated content and the importance of verifying information
- **Using AI tools responsibly** – Encouraging critical thinking about AI marketing and understanding both personal and developer responsibilities

Following the launch of UNESCO's AI competency framework for students and teachers in September, we mapped the Experience AI resources to the student framework. We shared our findings with UNESCO and presented our work on Experience AI at a UNESCO event in Paris.

↑ Teacher training in Kenya

Partnership with Asociația Techsoup in Romania

Asociația Techsoup has been helping Romanian teachers introduce the Experience AI programme.

Asociația Techsoup has worked closely with computer science teachers from rural and small urban schools in Romania to test the three new AI safety resources with students. The teachers received support beforehand to familiarise themselves with the lesson plans, videos, and activity guides. Feedback from the pilot was integrated into the final version of the resources, along with recommendations for teachers using the materials. Educators highlighted that the resources address a critical and previously unmet need.

> **"For me it was a wake-up call. I was living in my bubble, in which I don't really use these tools that much. But the world we live in is no longer the world I knew...So such a lesson also helps us to learn and to discover the children in another context."**
>
> - Teacher

> **"I really liked that I found out what is behind that 'Accept all' and now I think twice before giving my data."**
>
> - Student

The UK Bebras Challenge

An annual challenge that helps schools introduce computational thinking to their students

The Bebras Challenge is a global computational thinking competition held each year in 60 countries. The Raspberry Pi Foundation runs the challenge in the UK. Through Bebras, young people develop computational and logical thinking skills by tackling engaging questions and puzzles.

Bebras questions are inspired by classic computing problems and presented in a friendly, age-appropriate way. Students take part online, with all questions marked automatically. Schools can enter students aged 6 to 18, with fun and challenging activities offered for all age groups.

> **"What I've observed is that the Bebras Challenge helps to create a sense of achievement and confidence in our students. They are encouraged to approach problems from different angles, which not only enhances their mathematical and logical reasoning but also nurtures their curiosity and resilience."**
>
> - Teacher

2024 was a record-breaking year for the Bebras challenge in the UK, with over 460,000 students taking part.

Bebras participants are also invited to take part in the Coding Challenge, which allows them to put their computational thinking skills to the test through a series of engaging programming challenges. 20,799 students completed the Coding Challenge in 2024.

IMPACT

- **467,190** participants from 1,699 schools in 2024
- **38%** of participants were girls
- **7,401,018** questions answered

> **"The UK Bebras challenge provides an engaging way for students to apply their problem-solving skills in a fun, competitive environment. It complements our coding curriculum, encouraging critical thinking and enhancing computational thinking, while also offering a valuable enrichment opportunity for students to showcase and further develop their abilities."**
>
> - Teacher

Online professional development

Free online professional development for subject knowledge and pedagogy

We offer free, high-quality online training to support educators' professional development. Our 20 courses cover computing skills and knowledge, pedagogy, and classroom practice, catering to both new and experienced teachers who want to develop their practice.

Course topics include Python, Scratch, web development, cybersecurity, networks, and AI. Each course introduces key concepts, models processes, and provides ready-to-use classroom activities, with accessible content designed for diverse learners.

> **"Thank you for providing such a comprehensive free training session."**
>
> - Participant in 'Get started with teaching computing'

In 2024, we introduced two new courses: AI literacy and an updated course for Code Club leaders. Additionally, we enhanced 16 existing courses by incorporating steps on culturally relevant pedagogy, which was generously supported by Google.org.

IMPACT

- Estimated **23,158** participants in our online courses for educators
- **90%** of educator respondents reported that our online courses were high-quality and useful for supporting young people
- **89%** of educators reported increased knowledge, skills, and confidence as a result of participating in our online courses
- Since 2016, there have been over **280,000** engagements with our online courses

> **"The course was excellent and I learned a lot. It addressed a lot of the negative stigma that is associated with AI in an educational space and I would suggest it to anyone that is interested in learning more about AI in the classroom."**
>
> - Participant in 'Teach teens computing: Understanding AI for educators

From our 'How to start a Code Club' course

Ada Computer Science

Supporting students and teachers of advanced computer science qualifications

Ada Computer Science is a free online platform designed for students and teachers of advanced computer science. Developed in partnership with the University of Cambridge and launched in March 2023, Ada Computer Science provides a comprehensive suite of learning resources alongside an extensive collection of research-informed, self-marking questions. These resources support students in deepening their understanding of computer science concepts and to prepare for exams. The platform's automation features help teachers save time, monitor student progress, and focus on addressing misconceptions.

Over the course of the year, we continued to make improvements to the product and added new content in response to user feedback. This included supporting students and teachers in Scotland. We also released a new topic on AI and made significant improvements to the user experience.

> **"...There is rarely a need for any other sources of information when planning lessons, and it's free!"**
>
> - Teacher

Working with the University of Cambridge, we launched a computer science cohort for their STEM SMART programme. This offers additional support to young people from disadvantaged backgrounds who are studying the computer science A level by providing online and in-person tutoring for students and additional support for their teachers. The program uses the Ada Computer Science platform as the basis for the tuition. In 2024, we supported 538 students through the computer science track of STEM SMART.

In 2024, Ada Computer Science was generously supported by Cognizant.

IMPACT

- **15,815** active users from 140 countries
- **1,469,200** question attempts (up from 264,994 in 2023)
- **81%** of students reported that they better understood computer science concepts after using the platform
- **93%** of teachers agreed that the resources are high quality

> **"I love Ada! The content featured is very comprehensive and detailed, and the visual guides through topics like sorts are particularly helpful to aid my understanding."**
>
> - Student

Non-formal learning

Code Club

A global movement of coding clubs where young people develop the confidence to create with digital technologies

Through Code Club, we support educators and volunteers all over the world to run free coding clubs for young people aged 9 to 16. Code Clubs take place in schools and community venues like youth clubs, libraries, and maker spaces.

Code Club is a flexible model that can be adapted to reflect context and culture to ensure that it is as meaningful as possible for young people. All Code Clubs sign up to a Charter that sets out the ethos and principles of the Code Club movement.

The Raspberry Pi Foundation supports Code Clubs by providing self-guided projects and learning experiences that help young people learn how to create with different hardware and software, tools that help club leaders manage their clubs, training and support for mentors, and systems that ensure that all Code Clubs are safe.

Over the past ten years, Code Club has inspired over 2 million young people and in 2024, we launched a fresh new look for Code Club with a new ambition to reach 10 million more young people over the next decade.

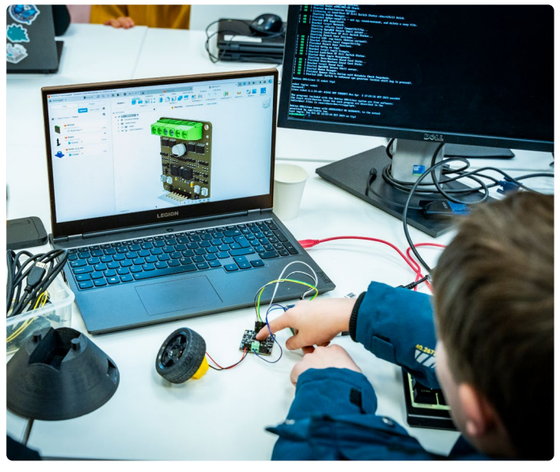
CoderDojo

CoderDojo is a network of coding clubs that started in Cork, Ireland, in 2011 and merged with the Raspberry Pi Foundation in 2017. As part of the changes we made this year, we have brought the resources and support for all coding clubs, including CoderDojo, under the Code Club website.

IMPACT

- **7,949** Code Clubs ran in-person sessions in 119 countries
- Girls represent **38%** of Code Club attendees
- **2,878** new Code Clubs verified in 2024
- **93%** of club volunteers reported that young people improved their computing and digital making skills as a result of taking part in Code Club
- **92%** of volunteers said young people are more confident to learn computing and programming as a result of joining a Code Club

In 2024, Code Club was generously supported by Allianz, Atlassian Foundation International, Amazon Future Engineer, Broadcom Foundation, Cognizant, The PA Foundation, Oracle, Redgate Software, and Riot Games.



> **"It is a happy, positive environment to be in. Students create and learn at their own pace."**
>
> - Club volunteer, UK

> **"Coding is really fun when I know what to do, but sometimes it is hard — but I always keep trying."**
>
> - Young person, UK

Independent evaluation of Code Club

In 2024, Durham University Evidence Centre for Education (DECE) conducted an independent evaluation of Code Clubs in the UK.

It found attending Code Club led to the following positive outcomes:

- Gains in coding skills, when compared to young people not attending a Code Club.
- Builds confidence and fosters an interest in coding.
- Develops life skills such as problem solving and communication.
- Promotes a sense of ownership through working on individual projects.
- Develops a sense of belonging through collaboration and celebrating achievements with other creators in the club.
- Provides an opportunity to thrive for those who experience difficulties in a formal classroom setting. This suggests Code Clubs can help educators engage a more diverse group of young people in creating with technology than formal education alone could.

The evaluation was generously supported by Atlassian Foundation International Limited.

Community story

Prabhath's mission to expand STEM participation through Code Club

Prabhath and four colleagues founded STEMUP in 2016. Their mission was to ensure equal access to STEM education, particularly for underserved communities in Sri Lanka. Partnering with Code Club, they established coding clubs to provide students with essential digital skills and hands-on learning experiences.

What started as a small initiative with a Code Club in the Colombo Public Library has since expanded into a nationwide movement, supported by over 1,500 volunteers. A key ingredient of STEMUP's success is mobilising university students as Code Club mentors, benefiting both the students they teach and the mentors themselves, who gain valuable skills.

STEMUP's impact extends deep into rural areas, where young people have limited exposure to technology. These students are now empowered to explore emerging technologies, better understand future career paths, and connect with a rapidly evolving digital world. STEMUP recently held the first Coolest Projects Sri Lanka, a showcase for the creations of young learners.

Watch Prabhath's story **here**.

Digital making projects

Millions of people use our free online resources to learn how to create with tech

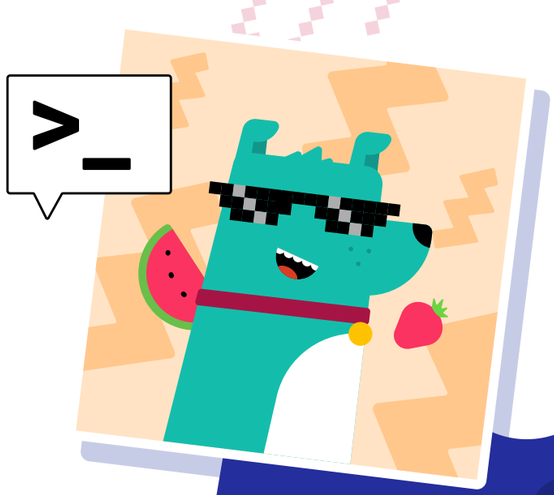
We've developed 300 free online projects that help people learn how to create with digital technologies. Designed for all skill levels, from beginners to advanced learners, our projects cover a wide range of hardware and software, including but not limited to Raspberry Pi computers and microcontrollers. The projects are used in schools, clubs, and at home, and are crafted by expert educators, incorporating the best evidence on effective learning. We translate our projects into over 30 languages with the support of an amazing community of volunteers.

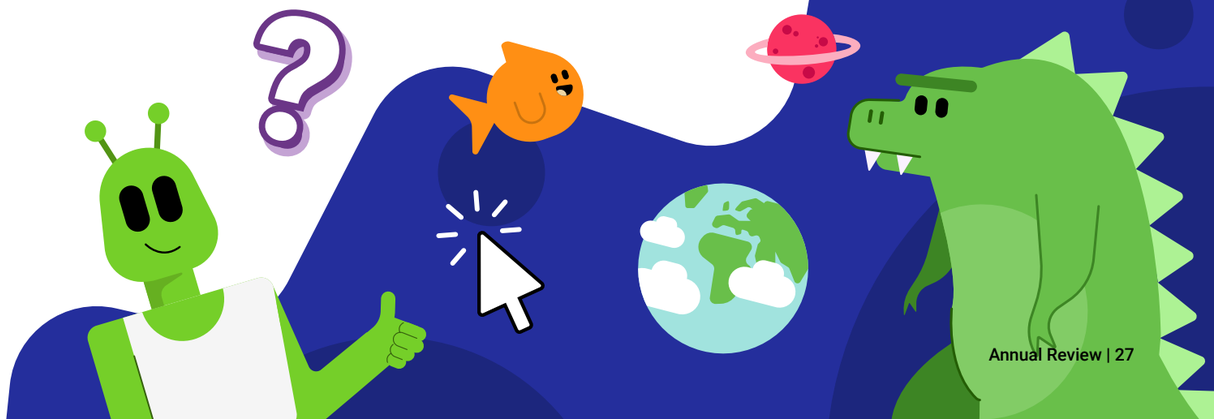
In 2024, we launched two new AI pathways featuring 15 projects, and a new collection of Code Club projects designed to introduce young creators to the exciting world of AI and machine learning (ML). These projects bring cutting-edge technology to Code Clubs in fun and engaging ways, making AI and ML more accessible for young people. The new AI pathways also included projects for installing a large language model on a Raspberry Pi. To support beginners, we developed a structured introduction to Python, making it easier to get started.

Our work to provide digital making projects was generously supported by Amazon Future Engineer, Atlassian Foundation International, and Broadcom Foundation.

IMPACT

- **1.2m** learners and **643,158** project completions
- **90,015** badges awarded
- **2,333** project pathway completions





Code Editor

A tool to make learning text-based programming more accessible

The Code Editor is an online tool designed for young people aged 9 and over to learn text-based programming in a simple, safe, and supportive environment. It provides a clear, beginner-friendly interface that follows best practices in pedagogy and age-appropriate design.

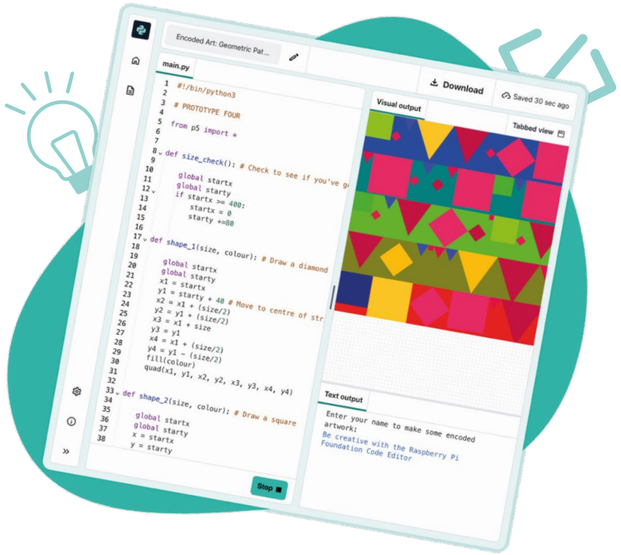
> **"I have been making use of the amazing Code Editor...my students love it and so do I. It's clean and simple and much better than any other code editor that I've used with students."**
>
> - Teacher

To ensure accessibility for the widest range of learners, the Code Editor is optimised for use on constrained devices like smartphones and in communities with limited internet connectivity. While it functions as a standalone coding environment, it is also integrated into our other learning experiences, such as Astro Pi Mission Zero and our digital making projects.

In 2024, we launched Code Editor for Education, introducing classroom management features to address the lack of an affordable tool for teaching text-based coding in schools.

Designed with educators in mind, the interface remains clean, simple, and easy to use. School owners can invite teachers, add students, organise them into classes, and quickly reset passwords when needed. Educators can create and share coding projects while viewing students' work in real time.

We prioritise safeguarding, ensuring visibility of student work at all times, minimising data capture, and incorporating key features such as the ability to report a concern.



IMPACT

- **27,600** users saved **100,902** Code Editor projects
- **444** schools have joined Code Editor for Education, with educators creating 676 classes
- **5,549** projects created by students using the Code Editor for Education

Our work on the Code Editor was generously funded by Cisco Foundation and Broadcom Foundation.

> **"Students really enjoyed using it, it's a really usable platform...We used it mainly because it's cloud based and our students worked on Chromebooks."**
>
> - Teacher

Community story

Sahibjot's Coolest Projects journey

Fourteen-year-old Sahibjot from Vivek High School in Mohali, India, took his passion for coding to the next level by participating in the Coolest Projects global online showcase. Thanks to mentorship and his involvement in Code Club, he was able to submit his own creation — a Python-based ping-pong game — to the showcase, marking an exciting milestone in his journey as a young digital creator.

> **"I learned a lot about not just representing my school and myself as an individual, but about representing my whole nation."**

Coolest Projects is a global celebration of young people and the amazing things they make with technology. It provides participants with a platform to share their innovations in an online gallery while also hosting in-person events in several countries. For Sahibjot, being part of this showcase was both thrilling and rewarding. Seeing his project receive a special mention during the global livestream was a moment of pride, one he eagerly shared with friends and family.

Inspired by this experience, Sahibjot is now looking ahead to how he can use his coding skills to make a difference.

Coolest Projects

A global showcase of creative tech projects made by young people

Coolest Coolest Projects is an online showcase designed to inspire, motivate, and celebrate young tech creators. It provides a platform for young people worldwide to share their digital creations, explore cool things made by their peers, and find inspiration to continue developing their skills.

Alongside the online showcase, in-person Coolest Projects events bring together local communities of young creators, educators, volunteers, and parents to celebrate their achievements. In 2024, in-person events took place in Belgium, Ghana, Hungary, Ireland, Malaysia, South Africa, Sri Lanka, and the UK.

Participants enter categories including Scratch, games, mobile, web, and hardware projects, with an advanced category for the most ambitious uses of technology.

Through the Coding with Commitment® award, sponsored by the Broadcom Foundation, Coolest Projects inspires participants to build projects that address social challenges ranging from healthcare to climate change, linked to the United Nations' 17 Sustainable Development Goals.

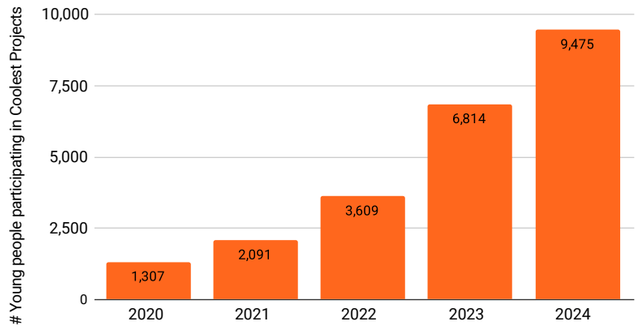
In 2024, our work on Coolest Projects was generously supported by Allianz, Amazon Future Engineer, Broadcom Foundation, EPAM Systems, Inc., Kingston Technology, Meta, GoTo, Qube Research and Technologies, and Unity Social Impact.

IMPACT

- **9,475** young people took part in Coolest Projects in 2024, showcasing **6,208** projects
- **47%** of participants identified as female
- **89%** of young people and **86%** of mentors who responded to our survey reported that they agreed or strongly agreed that taking part in the Coolest Projects online showcase increased their team's confidence in coding and making things with computers
- **91%** of young people and **87%** of mentors reported that they agreed or strongly agreed that taking part in Coolest Projects online inspired their team to continue to participate in computing and creating with technology
- **80%** of online participants told us their motivation to take part was making something they are proud of and want the world to see

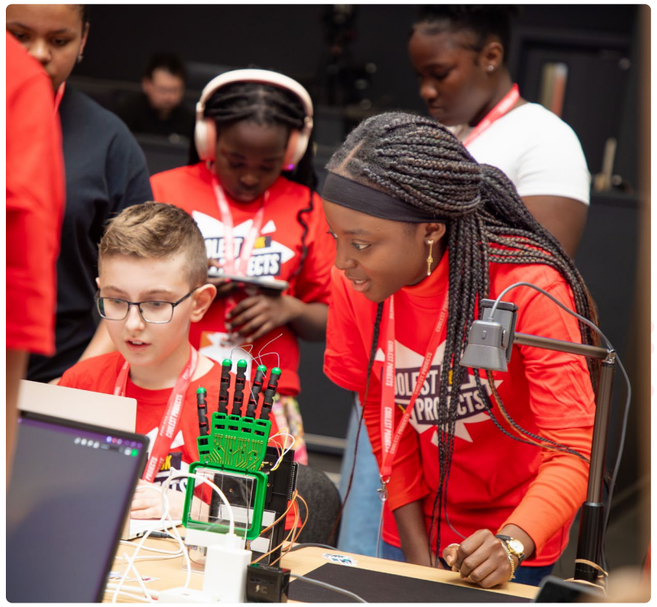
> "Our students belong to the tribal and remote geographies and this is the best motivation for us, for the team, for the students also, is that they are not feeling left behind... they are competing with the global community."
>
> - Mentor, India

 # Young people participating in Coolest Projects events by year



> "That's why I'm here – to get inspired."
>
> – Coolest Projects participant

> "The students feel very proud when they see their ideas on the internet... and when we told them people from [other] countries... can see your solution and your products."
>
> - Mentor, India



Scouts' Digital Maker Badge

Supporting Scouts to develop digital skills for life

In partnership with the UK Scout Association, we developed the Scouts' Digital Maker Staged Activity Badge, introducing digital making to young people and Scout leaders.

The early stages help Scouts explore how digital technology is used in daily life, learn to give instructions to computers, and create simple programs. In the later stages, Scouts use programming and electronic components to build projects that are suitable for Scouting activities or address real-life local and global challenges.

To support Scouts and volunteers in completing the badge, we provide engaging learning resources and hands-on projects covering all five stages.

IMPACT

- **24,172** Digital Maker badges were sold in 2024
- **163,401** badges have been sold in total since the partnership started in 2018
- Training delivered to **1,073** Scout leaders
- **295** of these leaders were from troops in areas of educational disadvantage

In 2024, we delivered training to 1,073 Scout leaders, supporting them with how to get their groups started with digital making, and with how to source computing equipment for digital making sessions.

Photo credit: Dave Bird

The European Astro Pi Challenge

Giving young people the opportunity to write computer programs that run in space

The European Astro Pi Challenge gives young people the unique opportunity to write code that runs on Astro Pi computers — two special Raspberry Pi computers aboard the International Space Station (ISS).

Run in partnership with ESA Education, the challenge inspires young people to engage with computing and space exploration. It is open to participants up to age 19 in ESA (European Space Agency) member and partner countries.

Astro Pi Mission Zero is a beginner-friendly coding activity that can be completed in just one hour. Participants use our Code Editor to write a simple program that runs on the Astro Pi computers aboard the ISS. Their programs take a sensor reading and display it to the astronauts alongside a pixel image they have designed.

In Mission Space Lab, teams of young people design and program scientific experiments to run on the ISS.

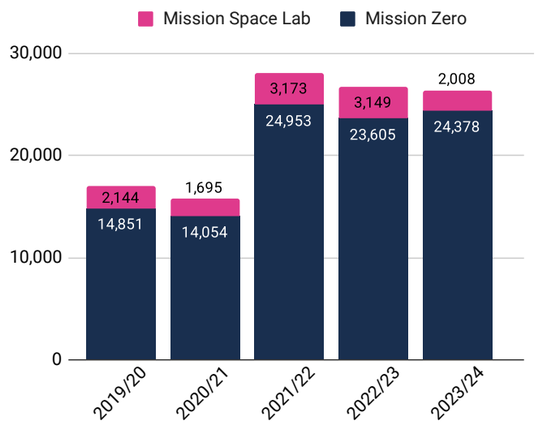
In 2024, we piloted a streamlined approach to Mission Space Lab, removing the need for physical hardware while preserving the hands-on coding experience. This allows young people to apply computing and data science skills in a real-world space environment. Based on feedback, this year young people conducted a single experiment — measuring the speed of the ISS — allowing for greater support and guidance. This new approach led to 77% of teams who submitted code achieving flight status.

IMPACT

- **26,386** young people from 28 countries took part
- **24,378** young people entered Mission Zero
- **2,008** young people took part in Mission Space Lab
- **43%** of Astro Pi participants were girls
- **87%** of Astro Pi Mission Space Lab teams reported increased skills or confidence in computing and that they were inspired to continue to learn and participate in computing experiences
- **87%** of surveyed mentors agreed that young people increased their confidence and 85% agreed that young people increased their skills in computing and digital making as a result of taking part in Mission Space Lab
- Since 2019, **114,010** young people have run their own programs on board the ISS thanks to the Astro Pi Challenge

> **"Participating in Mission Space Lab offers students a great opportunity to work with the International Space Station, to see the Earth from above, to challenge them to overcome the terrestrial limits. It's very important."**
>
> - Mission Space Lab mentor

Number of young people taking part in Astro Pi



> **"We want students to use their digital skills as superpowers to make the world a better place and this competition really aligns with that because, regardless of your race, your ethnicity, your gender, you can write some code that actually runs in space. And if you can do that, then you can make medical tech, you can solve the big problems that the adults of the world are still grappling with. So it's the opening up of opportunities."**
>
> - Mission Zero mentor

Research


Aarti Khodiara
Limehurst Academy
Daniel Devine
Digital Skills Education

Raspberry Pi Computing Education Research Centre

A joint initiative between the University of Cambridge and the Raspberry Pi Foundation

UNIVERSITY OF CAMBRIDGE

Compared to subjects like mathematics, computing is a relatively new field. While it has enduring principles and concepts, it is constantly evolving as new digital technologies emerge. However, there is still limited research on what works best in computing education, and investment in high-quality research remains insufficient.

That's why research and evidence have always been a priority for the Raspberry Pi Foundation. By conducting original research, we aim to contribute to the field of computing education. As an operating foundation working with tens of thousands of educators and millions of learners each year, we are uniquely positioned to translate research into practice and drive meaningful change.

The Raspberry Pi Computing Education Research Centre brings together expertise from the Raspberry Pi Foundation and the Department of Computer Science and Technology at the University of Cambridge to conduct rigorous original research. By working directly with teachers and educators, the Centre focuses on translating research into practice to create meaningful change in young people's lives.

Our research covers computing education — including computing, computer science, digital making, and broader digital skills — for school-aged learners in primary and secondary education, colleges, and non-formal settings. With a research team spanning both organisations, we are uniquely positioned to bridge the gap between theory and practice, ensuring that research findings have a direct impact on teaching and learning.

Some of our progress in 2024:

- We conducted 12 research studies on topics including culturally relevant pedagogy, AI in programming education, AI literacy, and data science, along with a survey of teachers in the UK and Ireland
- We submitted 20 academic papers (17 accepted) and produced 20 non-academic outputs, such as blogs and magazine articles
- We delivered 40 invited talks, keynotes, and presentations to 2,299 attendees worldwide, with our research papers cited 202 times in academic publications
- We increased engagement with our research outputs by 48%, reaching 3,452 interactions, including seminar attendees, external talks, submitted papers, citations, blogs, and articles
- We hosted 8 internal knowledge-sharing events within the Raspberry Pi Foundation, covering research on broadening participation, pedagogy, programming, and AI education
- Our computing education research seminar series provides a platform for academics and practitioners to share leading-edge research and connect educators and researchers worldwide

Computing education research seminars

Showcasing the world's leading-edge computing education research

Our computing education research seminar series provides a platform for academics and practitioners to share leading-edge research and connect educators and researchers worldwide.

Held online and free to attend, these seminars ensure broad accessibility. To extend their impact, we record each session and publish a blog post, summarising the key points.

To address the challenges educators face in the classroom, our 2024 seminar series focused on teaching programming — with or without AI. The series explored the latest research and best practices for supporting school-age learners in developing programming skills.

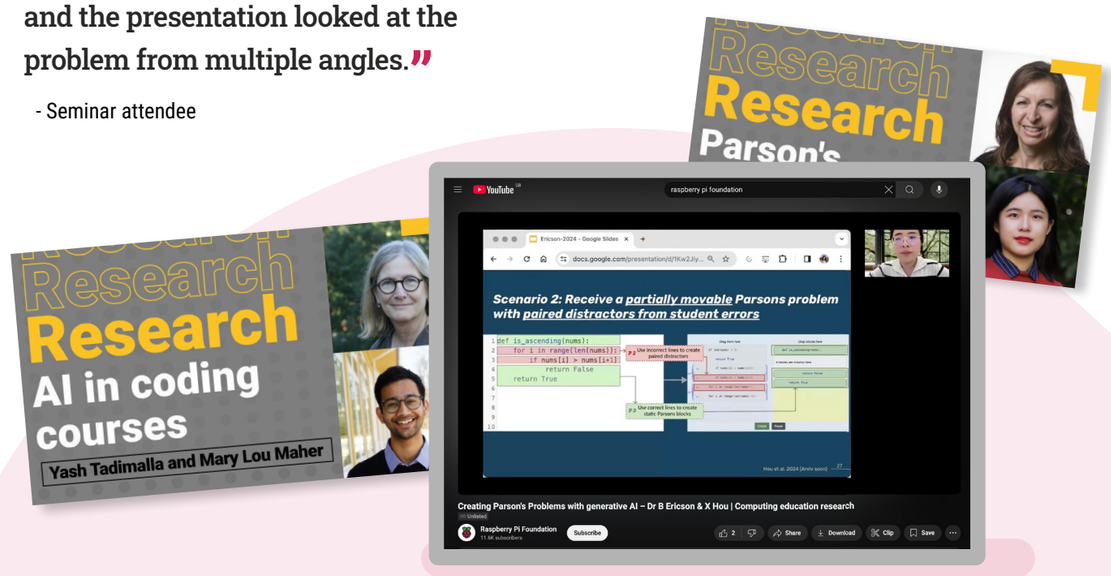
> **"The presenters had state-of-the-art results from practical use of AI and the presentation looked at the problem from multiple angles."**
>
> - Seminar attendee

IMPACT

- **10 seminars** on teaching programming – with or without AI
- **716** attendees in total
- **50** countries represented at the seminars

Researchers from the USA, Canada, Ireland, and Finland presented their work on topics such as:

- Using AI code generators with beginner programmers
- How student identities influence their interaction with AI tools
- The need to prepare all students — not just those studying computing — for an AI-driven world



Teaching programming with AI

How teachers can use AI tools to support learning

In 2024, our research focused on working with secondary school teachers in England to explore how AI tools can support programming education. Rather than a single study, this research consists of a series of studies building on successive findings.

In our first study (2023/24), we collaborated with 8 teachers who examined augmented error messages generated by a large language model (LLM) in a Python programming development environment. By analysing teachers' commentary, we used feedback literacy as a framework to explain teachers' views of how the output from AI tools might be used in education. For example, AI should help build knowledge rather than simply provide answers, and students need to be able to judge the accuracy of outputs.

Building on our first study, we are collaborating with twenty teachers to design and deliver classroom activities that introduce students to using augmented programming error messages from an LLM to help students learn to program. This second study continues into 2025, with ongoing teacher interviews to capture their experiences. Once we analyse the findings, we will expand our research to explore teacher professional development in this field and student experiences in future studies.

Within the Foundation, these insights will directly inform the development of our Code Editor and how AI-powered tools can be effectively integrated into programming lessons.

Hello World

Inspiring computing and digital making educators

Hello World is a magazine for computing teachers, featuring content created by practising educators. Published at least three times a year, it is complemented by compendiums, a monthly newsletter, blog content, and a podcast. Together, these resources help educators worldwide find inspiration, share experiences, and learn from one another.

> **"I love it! It has been super useful with getting my head around many contemporary issues in computing."**
>
> - Hello World subscriber

In 2024, we published three new editions of Hello World, covering global approaches to computing education, the impact of technology, and generative AI. Due to high demand from US-based teachers, we printed an additional 3,250 copies of the Big Book of Computing Content special issue, which were distributed at events in the USA. We also produced seven podcast episodes, including our first-ever video podcast.

IMPACT

- Hello World magazine had **38,704** unique subscribers in 168 countries by year end
- **28,000** downloads of the Hello World podcast in 136 countries by year end

Hello World was generously supported by Oracle in 2024.

> **"My most trusted resource for teaching and learning. It is my holy book in this technological spiritual journey."**
>
> - Hello World subscriber

Donors & funders

How our work is funded

Our work is part-funded through an endowment that was created through the IPO (initial public offering) of our commercial business and the Foundation remains a significant shareholder in the listed company. We combine this with funding from a wide range of individuals and organisations who share our mission.

Donors and funders

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Qube Research and Technologies

Redgate Software

Riot Games

Unity Social Impact

We would also like to thank the following organisations who support our work through in-kind or pro bono services:

Atlassian Foundation International

Google

GoTo

Microsoft

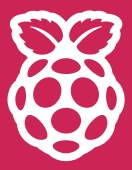
Red Sift

Slack

Zendesk

Support our work

If you or your organisation would like to make a donation towards our work, you can do so at **raspberrypi.org/donate**. If you would like to discuss how you can become a partner and support our work, please email **fundraising@raspberrypi.org** for more information.



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