K-STATE Research and Extension

Explore Your Spark!

Computer Science Project

The Kansas 4-H Computer Science project prepares youth to become Beyond Ready by exploring the technology that powers our world through hands-on learning and creative problem-solving. Members build foundational skills in programming, computational thinking, machine learning, coding, robotics, and data management while investigating hardware, software, networks, and cybersecurity. Youth explore text-based programming languages such as Python and HTML through interactive activities and real-world applications, including app development and artificial intelligence. Participants strengthen communication, teamwork, innovation, and critical thinking skills as they design technology projects, develop digital solutions, and discover career pathways in rapidly growing STEM and technology industries.

Starting Out
Beginner:

- Explore computer parts and what each part does.
- Build and use simple computer and technology tool kits.
- Take apart and put together a computer with adult help.
- Discover how computers use numbers and follow instructions.
- Learn how to solve simple computer and technology problems.
- Practice giving step-by-step instructions to make code work.

Learning More
Intermediate

- Explore how computers use operating systems.
- Experiment with coding, problem-solving, and creativity.
- Identify and learn the purpose of network hardware.
- Discover how Internet Protocol (IP) addresses help computers communicate.
- Learn and apply new coding language to create programs or digital projects.

Expanding Horizons
Advanced:

- Develop advanced coding, cybersecurity, networking, and data science skills.
- Design websites, apps, games, or automated technology systems.
- Explore artificial intelligence, cloud computing, and emerging technologies.
- Develop advanced programming skills using languages such as Python, JavaScript, Java, or C++.

Beyond Ready

Ready to Lead

Youth involved in 4-H are **two times more likely to have the goal of becoming a leader.** Through real-world experiences and the guidance of caring mentors, they develop the confidence, communication, and decision-making skills needed to lead in today's changing world.

Ready to Serve

Youth who participate in 4-H are **three times more likely to engage in community service.** Service learning provides them with purpose and connection at a time when **more than 53% of Gen Z report feeling lonely.** Through 4-H, youth are empowered to serve with compassion and make a meaningful impact.

Ready to Build

With nearly **10 million unfilled jobs and 77% of employers seeking real-world skills,** 4-H helps youth build what matters. Through hands-on projects and career exploration, youth gain adaptability, problem-solving, and workforce readiness.

Ready to Conquer

While 52% of young people feel like they're failing at life goals, 4-H youth rise with resilience. Backed by research and supported by caring adults, they learn to overcome challenges, set goals, and take charge of their future with confidence.

Building a Ready Generation in a World of Change!

Computer Science Project

Expand Your Experiences!

Healthy Living:

- Practice healthy technology habits by balancing screen time, physical activity, and personal wellness.
- Learn safe and responsible online behavior, including digital citizenship and cybersecurity awareness.
- Explore how technology and computer science support health, wellness, and accessibility in everyday life.

Science and Agriculture:

- Explore how computer science and technology are used in agriculture, engineering, and scientific research.
- Investigate artificial intelligence, automation, and precision agriculture technologies.
- Learn how coding, robotics, sensors, and data systems help solve real-world science and agricultural problems.

Community Vitality:

- Use coding and problem-solving skills to design projects that help meet community needs.
- Promote safe, responsible, and positive use of technology in schools, clubs, and communities.

Communication and the Arts:

- Develop communication skills by presenting coding projects, technology demonstrations, and digital creations.
- Use creativity and design skills to build websites, games, animations, graphics, or multimedia projects.
- Create digital presentations, videos, or interactive displays to share technology concepts with others.

Career Exploration:

- Job shadow a computer science professional.
- Explore college and trade school programs for careers as computer technicians.
- Learn what skills and certifications are needed for computer science jobs.
- Connect with technology professionals through mentorships, interviews, or workshops.
- Create a real/conceptual computer science product or service business and participate in a YEC (Youth Entrepreneurship Challenge) competition.
- Explore cybersecurity jobs in the computer science career field.

Contact Information

Kansas 4-H
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Resources & Events:

Build confidence, resilience, and real-world skills through hands-on activities.

- Contact your local Extension office.
- Club Day Presentation
- Kansas 4-H Discovery Days
- 4-H Camps and events
- County and State Fair
- Display your computer science project at a local library.

Curriculum & Resources:

- Kansas 4-H Computer Science Project
- National 4-H Curriculum
- Utah 4-H Discover 4-H Series
- Click 2 Computer Science
- Experience CS
- Khan Academy Computer Programming
- Hour of Code
- Computer Science Unplugged
- Code.org
- Ozobot Classroom
- OzoBlockly

4-H Record Keeping:

Learning to keep accurate records is a life skill.

- Setting 4-H Project Goals (4H1100)
- Kansas 4-H Record Keeping
- Complete a Computer Science Journal:
  - Project goals, plans, and reflections.
  - Coding languages, software learned.
  - Time spent coding, designing, or troubleshooting.
  - Expenses for supplies.

Project Exhibit Ideas:

- Create fun projects and games using block coding programs.
- Create a simple computer game using Scratch, Python, or another coding platform.
- Create a digital animation or storytelling project.
- Create a mobile app prototype.
- Design a coding-controlled machine.
- Create a display teaching online safety and cybersecurity practices.

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