CODING OUTSIDE THE LINES:

Exploring Alternative Applications of Computer Science

A Hackathon Event Guide







Created by the College Board in collaboration with DoSomething Strategic





- **04** HACKATHON OVERVIEW
- **ORGANIZING THE EVENT**
- 12 PUTTING ON THE EVENT
- 20 PLUS-UPS FOR THE EVENT
- 24 CONCLUSION
- 25 APPENDIX



WHAT IS A HACKATHON?

A hackathon is an event that brings groups of people together to discover innovative solutions to a problem.

Hackathons are typically based in computer programming or technology-related activities, but the concept can be applied to any field.

At its core, a hackathon is a time-limited, often teambased event that allows its participants to think creatively and exclusively on a singular task and objective.

This Tool Kit is designed for in-person hackathons primarily but will also include specific, relevant options for virtual versions of the event. Look for the virtual icon to see suggested software, strategies, and instructions to use for a virtual version.

INTRODUCTION O1:

WELCOME TO THE TOOL KIT!

In March 2022, the College Board hosted a virtual hackathon titled "Coding Outside the Lines: Exploring Alternative Applications of Computer Science." This Tool Kit will lay out every step in the process of organizing a similar event in your classroom, school or community.

Once you get the lay of the land, you'll be able to tailor your version of the hackathon to the needs of your participants and to your specific lesson plans. The Tool Kit will help you replicate the original event in a fun and collaborative way.

DOCUMENT PREVIEW

Here's what you'll find in these pages:

- A guide to the event's theme "Coding Outside of the Lines: Exploring Alternative Applications of Computer Science"
- Prompts to use with your students
- A recommended structure
- Optional team-building activities
- Recommended hour-by-hour schedules
- Judging criteria and suggested prizes

SECTION 01: INTRODUCTION



HOW THE HACKATHON SUPPORTS LEARNING

The hackathon works to help students apply what they are learning in their AP Computer Science course and prototype solutions to real-world problems. These connections have the potential to motivate students to be more engaged in their computer science course, making them feel better prepared for the AP exam and more eager to further pursue computer science. Students who are successful on the AP exam are eligible to apply course credit to college courses. Best-case scenario: they start to consider careers in tech and beyond.

Parallel to the importance of the AP exam, the hackathon can be used to provide students with encouragement and an inclusive classroom environment that can foster a culture of belonging, which is crucially important for students whose identities tend to be underrepresented in the tech industry. With hands-on experience, teamwork, and your guidance, students will emerge with a strong sense of what they're capable of and boosted selfconfidence. That confidence can affect their academic performance in exciting ways.



Work created during the hackathon cannot be used for the "Create Performance" task component of the AP Computer Science Principles (CSP) exam. The event's purpose is to provide students with general programming practice as well as future study and engagement.

SECTION OVERVIEW

Use the Tool Kit to help you organize a hackathon and tailor the event to suit your students, delivery preferences, teaching style, and scheduling needs.

Read through the Tool Kit to get a sense of what this document does and does not include.

Motivate your students to take the AP CSP exam by offering them a fun programming experience that deepens their computer skill-set.

Create an inclusive classroom environment by using the event to provide encouragement and show all students that they belong in computer science.



SECTION 02: HACKATHON OVERVIEW

So, let's narrow things down a bit and discuss the theme for this year's event, which is "Coding Outside the Lines: Exploring Alternative Applications of Computer Science." After all, computer science can be applied to any field, from the arts to the news, politics, popular culture, and any other area of interest to vour students.

Designed to foster community, inclusiveness, and a sense of belonging, the event's theme will showcase how computer science can be vital and relevant beyond the expected world of Big Tech.

started, you can introduce to be.

them to their "Hackathon Personality" and organize them into teams. The team- feel validated and included, based approach is designed to leverage their skills, passions, and ways of thinking to tackle the exciting challenges they'll face as participants.

OBJECTIVE

It bears repeating that the goal of the hackathon is to build your students' selfconfidence; to encourage them to see themselves as candidates for advanced study and future careers in computer science; and to see their skills in programming as useful and relevant to their future path To help your students get - whatever that turns out

By creating a fun, creative space where young people you can help motivate them to move forward by taking the AP exam and, eventually, to apply what they've learned to their future careers and various aspects of life.

NEAR-PEERS

At every step, you can enlist the aid of near-peers – students who have walked in participants' shoes, taken the AP CSP course or exam, and emerged with a sense of self-confidence and direction as a result. Near-peers might be high school juniors, seniors or college students.

Consider recruiting near-peers who don't represent the typical stereotype of a programmer or software engineer so that current students, regardless of their identity (race/ethnicity, gender, nationality, ability), can visualize their future. You can tap these near-peers to serve as helpers who can help each team's work move along smoothly.

THE HACKATHON PERSONALITY QUESTIONNAIRE

When students sign up for the hackathon, they'll be given a questionnaire that will guide them towards a particular Hackathon Personality.

Based on their questionnaire responses, participants can be assigned to one of three Hackathon Personalities.

THE QUESTIONER: You're a person who has a love for always asking "Why?" and "What?" You're driven by curiosity and a desire to understand a problem deeply in order to identify what you'll need to learn to solve it. You like to make decisions based on data, not feelings. Your Hackathon Personality makes you a STEM asset since you favor logic, systems, and perfectionism.

THE ALTRUIST: You're a person who's guided first and foremost by your desire to live and act by your morals and values. You know that big problems need innovative solutions that directly impact those most affected. You make decisions by consensus, making sure that everyone is on board to work together. Your Hackathon Personality makes you a STEM asset since you can envision how technology can be used to directly impact the lives of others in positive ways.

THE CREATOR: You're a person who is ruled by creativity and joy. You have a keen sense of what trends are emerging and are a lover of all things music, art, and culture. You can always find beauty in the everyday. Your decisions are guided by your imagination and creativity. Your Hackathon Personality is a STEM asset, since you can see all the details that lead to the big picture, and you're a dreamer who can be a part of creating "the next big thing."



See page 26 of the Tool Kit for the full questionnaire.



If students submit their questionnaires electronically, consider having them receive a message like this: We're so excited that you want to be a part of "Coding Outside the Lines: Exploring Alternative Applications of Computer Science!" Your answers to this questionnaire will reveal your Hackathon Personality, pair you with classmates with whom you can collaborate and code during the event, and help select a question you'll be excited about working on.

Each Hackathon Personality "path" can feature its own selection of different prompts for students, with more info on what those possible prompts could be located on page 28.

RECOMMENDED PROGRAMMING LANGUAGES AND PLATFORMS

The College Board hackathon used Scratch and App Inventor for the event, as they're both platforms that could be used by hackathon participants to create and code their projects across a wide range of subject areas. For your hackathon, you're welcome to use any programming language, but consider having students code in a language they will be able to use for the Create Task portion of the AP CSP exam. If engaging in a virtual event, you will need to select a video conferencing platform that allows your students to have separate breakout rooms, and ideally some form of white board functionality to help the brainstorm. During the College Board's 2022 hackathon event, teams reported positive experiences using Zoom.





CUSTOMIZING THE EVENT

We have developed this Tool Kit to be flexible enough for you to customize. You can create your own sequence and flow of components and activities, fine-tune the prompts you use with your students, and choose the programming languages you think will work best with your class.

Our prompts and questions have been designed to spark students' problem-solving energies and creativity. You can use the suggested prompts on page 28 or further personalize the event by developing your own prompts. For example, you may want to develop prompts around:

A local news story: Create a program that generates a personalized email to your local representatives about an issue.

A pop culture moment: Create a program that organizes all the Marvel movies by main character.

A need of your school: Create a program that randomly assigns lockers to students.

SECTION SUMMARY:

- The title of the event is "Coding Outside the Lines: Exploring Alternative Applications of Computer Science."
- Students will be placed onto different "paths" based on their Hackathon Personalities according to a fun questionnaire that you'll circulate to them prior to the event.
- A series of prompts will be used to help define their projects and develop work.
- Students will work with their teammates to solve a real-world problem.
- You are encouraged to customize the structure, flow, and specifics of the event according to your preferences and your students' personalities and interests.
- Consider enlisting the aid of near-peers who can serve as helpers and support each team's efforts.

ORGANIZING THE EVENT



PRE-EVENT CHECKLISTS

To help you stay organized, here's a list of items to deal with before the main event:

SCHEDULE THE DATE/TIME	The scheduling of this event can be flexible. Some examples for how the event can be scheduled include: one long session on a Saturday, several shorter sessions after school, or during National Computer Science Education week in mid-December. This event would be appropriate to schedule after the AP exam period, but note that it will have no impact on student confidence in relation to the AP exam.	
	A recommended schedule for a Saturday or after-school event can be found on pages 18 and 19.	
SECURE A VENUE	We recommend holding the event in the school cafeteria, the gym, your classroom, or another large communal space.	
SET YOUR BUDGET	Determine any costs associated with hosting your event. These might include: event t-shirts, motivational snacks and prizes, gifts for near-peer and other volunteers, advertising for your event, or any fees associated with using your venue. Often parents and other school sponsors are willing to make donations to cover these costs. See page 12 for recommended prizes.	
FIND SUPPORT	Enlist support from other teachers and near-peers who can serve as judges or speakers. Likely, allies can be found among computer science alumni and other beloved teachers.	

CONTINUED ON NEXT PAGE

PRE-EVENT CHECKLIST CONTINUED

NOTIFY STUDENTS AND PROMOTE THE	Letting your students know about the event could be as straightforward as:		
EVENT	- Posting it on your course page		
	- Announcing the event in class		
	- Including it in your syllabus		
	- Offering an extra credit incentive		
	Or, in the case of an all-school event:		
	 Posting flyers around school and encouraging other teachers to do so 		
	- Including in your school announcements		
	 Placing an announcement in your school newsletter or on its website 		
CHOOSE PROMPTS	Customize the prompts you plan to use based on the unit you're currently teaching and the interests of the class.		
O ASSIGN TEAMS	Give students their Hackathon Personality Test approximately one week before the event, and use those results as one input in creating teams. For more information, please see the "Creating Teams" section below.		

CREATING TEAMS

To make sure you have enough time to create teams, assign the Hackathon Personality Test as homework 1-2 weeks before the event. We recommend announcing these team assignments to students 1-2 days before the start of the hackathon to give them a chance to meet with their teammates.

As you start putting teams together, aim to balance personality paths, interests, and skill sets within each team. This is the best way to ensure that all teams are equitable. You can also keep in consideration your knowledge of students who do or do not work well together.

Ideally, each participant will be placed into the Hackathon Personality path that was ranked as their top choice on

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the questionnaire. If some personality tracks turn out to have a significantly higher or lower number of students assigned to them, you can even things out by placing some participants into teams based on their second choice Hackathon Personality. This way, you can achieve an even distribution of personality types across all teams. While we recommend using the Hackathon Personality questionnaire to help assign teams, feel free to make assignments whichever way works best for your participants or classroom, and take into consideration students who do/do not work well together or do/do not have experience working together in the past.

As for team size, 3-5 students per group is recommended. The size of your class may be a determining factor. You should strive to assign a roughly equal number of participants per team.

If using near-peers, a general rule of thumb is to have one per team, though the helpers can rotate between many groups.

In addition to near-peers, consider assigning to each team a student facilitator — a team member who takes responsibility for making everything run smoothly and keeping the other students ontask and motivated. While not required, the facilitator role is something to consider based on your sense of its effectiveness in the context of your classroom dynamic.

You can assign facilitators randomly or you can let teams pick their own facilitator.







OPTIONAL TEAM-BONDING ACTIVITIES

Depending on when in the year you plan the event, you may want to incorporate some team-bonding activities into the mix, so students will feel more comfortable with their teammates. Some examples are:

"Two Truths and a Lie"

Each participant will introduce themselves to their teammates with their name, pronouns, and age, along with two true facts about themselves and one lie. Then, after the introductions, the entire team will work together to guess which of the facts presented was a lie.

Team Art

Each team's participants can draw a representation of their team name—a logo, if you will. This can be created using any medium and hung near where the team will work.

If you are conducting the hackathon virtually, teams can use the Whiteboard functionality on Zoom by having one person click "Share Screen," choose "Whiteboard," and then click "Share." Each participant will then click "Annotate" in the upper panel. Then, using any type of tool they wish—drawing, shapes, stamps, or text they'll draw their team name. Students can download the final canvas as a PNG or JPG, which can be used as their Zoom background for the event.

Team Photo

Participants may decide to take a picture with their teammates. They can choose to take a photo in different styles, such as Funny Faces, Favorite Hat, or School Pride, and share it as their Zoom background or on social media.



To recreate the experience virtually, teams can find ways to distinguish themselves from the rest of the event participants. The simplest way to do this is by having them create a Zoom background, as described above, or pick one from a pre-curated set of Zoom backgrounds or from a generic stock photo library.

Team Color

Team members can decide in advance to wear the same color or to create special t-shirts to wear during the event.

IDEAS FOR PRIZES

The hackathon can be required or an optional activity. If the event is mandatory, the prospect of winning may be enough to generate a healthy spirit of competition among students. If your event is optional, you may need to provide additional incentives to inspire students to participate.

Let's talk prizes!

Free homework pass:

Winners can select an assignment they won't have to complete.

Pizza Party:

Top winners will be invited to an after-school pizza party.

Extra course credit:

Winners can be awarded extra credit on an assignment.

School swag:

Winners can be presented with school spirit wear.

Prize donations:

Prizes can be donated by parents, judges, mentors, or speakers.

Cafeteria coupon:

Winners are presented with a sweet from the cafeteria.

We recommend you pick one or two winning teams. See page 32 for judging criteria.





SECTION SUMMARY:

- Use the pre-event checklists to help you stay on top of the process.
- Give your students the Hackathon Personality Test prior to the event.
- Create teams based on the test results. Aim to balance personality paths, interests, and skill sets within each team.
- Consider assigning a facilitator for each team or have team members select one.
- Choose any optional team-building activities to promote team spirit and camaraderie.
- Determine prizes or seek out any event sponsors.



PUTTING ON THE

RECOMMENDED HACKATHON ACTIVITIES

The time has come to kick off the event! The following are detailed recommendations of the phases for the hackathon event.

EVENT KICK-OFF

As you are introducing the event, include the following details in your welcome:

- Have students watch the College Board's pre-recorded orientation video, also known as Hackathon 101.
- Introduce students to the event theme.
 Introduce outside guests.
- Explain how the hackathon will be judged and what prizes await the winners. See page 32 for suggested judging criteria.
- Prepare students for the flow of the event.
- Remind them that their work during the hackathon cannot be used for the "Create Performance Task" portion of the AP exam.

HACKING SESSION 1 - CREATIVE SOLUTIONS

The primary goal of this session is for students to think creatively around the prompt problem they were given and ultimately decide upon a solution to develop. If using nearpeers, they can help to facilitate this session by taking notes, asking probing questions, and helping to map all the ideas generated by participants.

Participants will come together with ideas for their proposed project and work together to establish a plan. The outcome of this portion of the session will give participants a clear

SECTION 04: PUTTING ON THE EVENT



audience and problem, which will guide the remainder of their work as they continue to develop their program.

We recommend each project is approved by either a teacher or mentor to ensure students are set up for success. Here are some guiding questions near-peer helpers can ask students to help them along:

- What's a version of this that we can make today given our time constraints?
- Is this simple for the user to use?
- Does this solve the problem we picked?
- Can we imagine a version of this we could create and/ or pitch today?

Participants will end this session with the ONE most viable idea that will have the greatest positive impact on the end user.

You may want to assign as homework individual pre-event brainstorming activities to ensure that students can come up with their proposed solution in a timely manner.



For a virtual event, consider using a digital facilitation tool such as the Zoom Whiteboard to have participants collaborate on the answers to their guiding questions and to map out their designed solution.





HACKING SESSION 2 - GETTING DOWN TO BUSINESS

Once groups have decided on their project, they'll need to create a clear plan for how to create and implement their solution. This should include assigning roles to each person in the group. By the end of this session, teams should also have considered these important points:

- What is the problem-interaction-solution that this program will offer their identified user?
- What is the functionality that a user might encounter?
- Can we build that today? What's a version or portion of it we can make today?

Near-peers should make themselves available throughout this event to not only help with programming issues, but also by supporting participants in their thinking and prodding their ideas to ensure they will be innovative and competitive.

HACKING SESSION 3 - POLISH UP

In this last hacking session, teams will finalize their project code and put together the presentation they will show to the judges.

As participants complete their program code, the mentor will work to test the project's success. Additionally, the mentor will guide and demonstrate a troubleshooting process to participants. This is an opportunity to work collaboratively with the mentor, taking on a larger "teaching" role about how to test and verify the program solution.

The teams will also use this time to ensure their presentation and final materials are ready for judging. While you are in charge of what the teams ultimately create for the event, our recommendations for team presentations are located on the next page.



PRESENTATIONS

We recommend that each team deliver a presentation showcasing their program solution. The presentation should include the following elements:

HACKATHON FINAL PRESENTATIONS

- A link or project export of what they have created
- A short descriptor of their app that states:
 - Name of their creation
 - How their creation solves for the identified prompt/problem
- Who would be the end user of their creation
- A storyboard, proposed structure, diagram, or examples of a proposed user interface or functionality
- One program code segment that has an effect on a specific function of their solution
 - Shared as a screenshot or image inserted into the slide deck
 - Function demonstrated via a video capture or Live Demo
- A short descriptor of what their creation process was:
 - How did peers collaborate on code?
 - How did peers collaborate on brainstorming?
 - How did peers collaborate on design?

Some teachers may choose to create their own template with their school's branding for students to copy and paste into their work.

A judging scorecard created based on these presentation requirements can be found on page 32.







AT THE END OF THE EVENT, DON'T FORGET TO:

Celebrate all the students who participated.

Remind students of the skills they've developed to be successful in the course and exam.

If near-peers are comfortable sharing contact info, share it with students so that they can reach out, if they like, for advice or guidance.

OPTIONAL ACTIVITIES

If you'd like to provide any fun activity breaks within the event, we would recommend one of the following:

Schedule a Fireside Chat:

Consider having a Fireside Chat with your students during or after the event. Fireside Chats are in-depth conversations with an individual and serve as a way for participants to listen and learn from event speakers, near-peers, or judges.

To run your Fireside Chat, reach out to possible speakers, including near-peers and AP CSP alumni. Facilitate the chat by posing a series of questions such as:

How did you figure out how to apply your computer science

skills to your interests and passions?

Were there moments when you felt isolated on your computer science journey? What were these like?

Were there moments when you felt like you belonged in the world of computer science? Please describe one.

Invite a Keynote Speaker:

You might also consider inviting a keynote speaker, such as a department head or principal, alumni doing work in the field, or a parent with some industry knowledge. In a back-and-forth exchange with your speaker, you could ask:

How did you embark on the career path that led to where you are today?

What's something you wish you had known as a beginning computer science student?

When did you start feeling you totally belonged in the world of computer science?

PUTTING IT TOGETHER

Now that you've gotten a sense of all the possible phases for the event, the time has come to map out your own version of the hackathon. You can pick and choose the activities that resonate best with you and your students.

See these sample "runs of shows" for recommended sequences of activities:

5 HOUR SCHEDULE

Example assumes:

- In-person event
- 24 student participants:
 6 teams with 4 students
 each
- 3 near-peers
- 2 judges
- Students given prompts ahead of time and told to brainstorm solutions as homework
- Teacher monitors groups
- Announcement of winner takes place in class the next day/Monday

ТІМЕ	SESSION TITLE	EVENT DESCRIPTION	KEY PLAYERS
11.00	WELCOME	Teacher reintroduces the hackathon topic to students Near-peers and judges are each introduced Time for questions	Teacher
11.15	TEAM BONDING	Team building activities Near-peers cycle between groups to personally introduce themselves	Near-Peers Participants
11.20	Hacking Session 1: CREATIVE SOLUTIONS	Team brainstorms solutions to the problem/track selected. Participants have been given prompt as homework before the event, so they're prepared with solution ideas Near-peers and teachers cycle between groups	Near-Peers Participants
11.55	BREAK	Free time	
12.00	Hacking Session 2: GETTING DOWN TO BUSINESS	Team works together to begin mapping out design, structure or diagram of tool and coding an identified function of the tool Near-peers cycle between groups	Near-Peers Participants
	ETDESTDE	Teacher to facilitate Fireside	Near-Peers
1.35	CHAT	Chat with near-peers	Teacher
1.50	BREAK	Free time	
2.00	Hacking Session 3: POLISH UP	Team finalizes the structure and code for the function to showcase Team finalizes presentation Near-peers cycle between groups	Near-Peers Participants
3.00	BREAK	Free time	
3.05	PRESENTATIONS	Assuming 6 teams, ~5 min per team for presentations and ~2 min for Q+A	Judges Participants Teacher
3.55	CLOSING	Thank participants for joining Let them know the judges need time to deliberate and that they'll find out winners in class Monday Remind students how they can meet and interact with other groups participating in the event Remind students of the importance of taking the AP exam	Teacher
	4:00	PM END OF EVENT	

2 HOUR SCHEDULE

Example schedule assumes:

- Students have been more specifically told what they'll be programming, eliminating the need for Session 1, and the resulting project they need to create has been scaled back (i.e. students just present a proposed structure or program something small).
- Virtual event
- 24 students: 6 teams with 4 students
- 3 near-peers
- 2 judges
- Students are given prompts ahead of time and told to brainstorm solutions as homework
- Teacher will monitor groups
- Announcement of winner takes place in class the next day/Monday

ТІМЕ	SESSION TITLE	EVENT DESCRIPTION	KEY PLAYERS		
3.00	WELCOME	Teacher reintroduces the hackathon topic to students Near-peers and judges are each introduced Time for questions	Teacher		
3:10	Hacking Session 2: GETTING DOWN TO BUSINESS	Team works together to begin mapping out design, diagram or structure of tool and programming an identified function of the tool Near-peers cycle between groups	Near-Peers Participants		
4:20	Hacking Session 3: POLISH UP	Team finalizes the structure and code for the function to showcase Team finalizes presentation Near-peers cycle between groups	Near-Peers Participants		
4.40	PRESENTATIONS	Assuming 6 teams, ~2 min per team for presentations and ~1 min for Q+A	Judges Participants Teacher		
4.58	CLOSING	Thank participants for joining Let them know the judges need time to deliberate and that they'll find out winners in class Monday Remind students how they can meet and interact with other groups participating in the event Remind students of the importance of taking the AP exam	Teacher		
5:00 PM END OF EVENT					

SECTION SUMMARY:

- Include any or all optional activities per our list.
- Follow the 3 hackathon session details provided for the event: Creative Solutions, Getting Down to Business, and Polish Up (or tweak as needed).
- See our guidelines for the teams' presentations.
- Consider scheduling a Fireside Chat during or after the event. You may also wish to invite a keynote speaker who can share their computer science journey with your students.
- Consult the Appendix for Hackathon Resource Materials with recommendations and guidance you might need.

PLUS-UPS FOR THE EVENT



MEASURING SUCCESS

We suggest distributing a survey to your students to help assess the success of the hackathon. A survey can be a great way to optimize future events, building on what worked well and learning about what could be improved. The information you gather in a survey will also help you determine whether the event was effective in inspiring students to take the AP CSP exam.

A pre-event survey might look something like this:

SAMPLE QUESTIONS	SAMPLE ANSWERS
How likely do you think you are to use computer science skills in your future career?	1 - 10 (not at all likely - very likely)
What are the words you associate with computer science?	(Multiple Choice) Science Data Software Code Creativity Community Engineering Data science Math Technology Impact Media Entertainment Other (please describe)
From 1-10, how much do you feel like you belong within the computer science community?	1 - 10 ("not at all" - "I fit right in")

CONTINUED ON NEXT PAGE

	SAMPLE ANSWERS	
What do you expect from the hackathon?	(Multiple Choice) To have fun To build something cool that solves a problem To learn new skills To gain confidence in myself and my abilities To meet people To hear from computer science professionals and learn about their experiences To feel more inspired to pursue Computer Science more seriously Nothing To prepare for the AP CSP exam Other (please describe) I don't know	
How prepared do you feel to take the AP CSP exam?	1 - 5 (not prepared - very prepared)	
How likely do you think it is that you will take the AP CSP exam this year?	1- 10 (not likely - very likely)	
If you had to name one reason, what might prevent you from taking the AP CSP exam this year?	(Open Ended)	
If you had to name one reason, why would you take the AP CSP exam this year?	(Open Ended)	
Do you think you will be pursuing computer science or STEM courses in college?	Yes No Not sure Other	





A pre-event survey might look something like the this:

	SAMPLE QUESTIONS	SAMPLE ANSWERS	
	On a scale of 1-10, how would you rate the hackathon experience overall?	1 - 10 (didn't love it - it was great!)	
NEW	What can we do to make future hackathons even better?	(Open Ended)	
QUESTIONS	What is the one thing you will remember the most about the hackathon after a year?	(Open Ended)	
	If you had to name one reason, why would you take the AP CSP exam this year?	(Open Ended)	
	How likely do you think you are to use computer science skills in your future career?	1 - 10 (not at all likely - very likely)	
REPEATED QUESTIONS	What are the words you associate with computer science?	(Multiple Choice) Science Data Software Code Creativity Community Engineering Data science Math Technology Impact Media Entertainment Other (please describe)	
	From 1-10, how much do you feel like you belong within the computer science community?	1 - 10 ("not at all" - "I fit right in")	
	How likely do you think it is that you will take the AP CSP exam this year?	1- 10 (not likely - very likely)	
	If you had to name one reason, what might prevent you from taking the AP CSP exam?	(Open Ended)	
	If you had to name one reason, why would you take the AP CSP exam this year?	(Open Ended)	

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	SAMPLE QUESTIONS	SAMPLE ANSWERS
REPEATED QUESTIONS	Which of the following did you experience from the hackathon?	(Multiple Choice) It was fun I built something cool that solves a problem I learned new skills I gained confidence in myself and my abilities I met new people I heard from computer science professionals and learned about their experiences I feel more inspired to pursue Computer Science more seriously Nothing Other (please describe) I don't know







SECTION OG: CONCLUSION

We hope "Coding Outside the Lines: Exploring Alternative Applications of Computer Science" will encourage your students to embark on the next leg of their computer science journey. Infused with a spirit of competition and designed to engage students where they are, the event provides them with a glimpse of who they might become as future programmers, but there's a near future that comes first.

With the Tool Kit as your guide, you'll be well-equipped to help your students take the next step: the AP CSP exam. Creating a sense of belonging in the classroom and building their self-confidence will be key aspects of a strategy to attract them to the field of computer science — especially if they're members of identity groups that are under-represented in tech.

We also hope they'll have a great time working in teams to come up with exciting, relevant projects that channel their talents toward their real-world interests. Anything and everything is an appropriate subject area: from media to pop culture, and from art to politics and beyond!

The Tool Kit has been organized to help you at every step of the way and can be customized to meet your students' needs.

If you have questions, don't hesitate to send them to apcs@info.collegeboard.org.

Have fun and enjoy the experience of "Coding Outside the Lines: Exploring Alternative Applications of Computer Science"!





HACKATHON RESOURCE

The following resource materials further break down items you've seen in the Tool Kit, so you can easily reference our recommendations. They've been designed to streamline the flow of the event from beginning to end, and will give you a head start on everything you'll need to make the hackathon engaging. We've also included links to these materials in Word Document format, so you can customize them to your needs.

Here, you'll see the following materials:

- Hackathon Personality questionnaire
- Suggested prompts sorted by personality type
- A best practice sheet to give to near-peers
- Norms and expectations for students to supplement your school's Code of Conduct
- Sample judging score card
- Graphic to be used for any emails or flyers you might want to use to spread the word about the event

THE HACKATHON PERSONALITY QUESTIONNAIRE



WHAT'S YOUR FAVORITE SUBJECT IN SCHOOL?

- A. AP CSP, Math
- B. Social Studies, English
- C. Art, Chemistry

YOU'RE ASSIGNED TO WORK ON A GROUP PROJECT. WHAT'S YOUR "ROLE" IN THE GROUP?

- A. I'm most likely to be the one asking questions about what we're doing and making sure that everyone connects the dots to our objective.
- B. I'm most likely to make sure that everyone is staying on task, that we're all working together to make it to the end, and that I'm doing my part to contribute.
- C. I'm most likely to be leading a brainstorming session and helping people get inspired about what we could make together.

WHICH OF THESE BEST DESCRIBE YOU?

- A. I'm always the one who knows everything there is to know about something totally random.
- B. I'm always the one that people come to for help.
- C. I'm always the one singing songs from musicals.

WHEN YOU'RE WORKING AT SCHOOL, WHAT KIND OF ENVIRONMENT DO YOU PREFER?

- A. I mostly like to work by myself.
- B. I like to work with other people, and I think I work really well in groups by taking on any role that's needed.
- C. I like to work with other people to figure out what we're doing, but then I like to work on my own tasks by myself.

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WHICH TYPE OF PROJECT WOULD YOU MOST LIKE TO WORK ON?

- A. Helping people discover where they can find scholarships for college and making it a super-easy process.
- B. Creating a platform for young people to learn about social issues happening in their community and how they can help others.
- C. Designing a video game to help others understand the experience of people facing homelessness.

WHICH OF THESE THINGS ARE YOU MORE LIKELY TO DO TO RELAX?

- A. Build with Legos.
- B. Hang out with friends.
- C. Paint.

WHAT'S YOUR PERSONAL STYLE?

- A. What's clean and what fits.
- B. Thrifted and comfortable with a few flourishes of personality.
- C. Depends what mood I'm in that day.

CHOOSE A DREAM LOCATION TO LIVE IN:

- A. A mid-size city where I can escape if I need to.
- B. A college town with easy access to nature and a main street with an art house cinema.
- C. A big city filled with people from all walks of life.

WHAT ROLE DO YOU PLAY IN YOUR FRIEND GROUP?

- A. The Brainy One
- B. The "Parent" Friend
- C. The Trendsetter

WHICH OF THESE THREE PERSONALITY TYPES DO YOU THINK SOUNDS MOST LIKE YOU?

- A. The Questioner
- B. The Altruist
- C. The Creator

ANSWER KEY:

The Questioner (if the survey responses were mostly As)

The Altruist (if the survey responses were mostly Bs)

The Creator (if the survey responses were mostly Cs)

SUGGESTED PROMPTS SORTED BY PERSONALITY TYPE



THE QUESTIONER		THE ALTRUIST		THE CREATOR	
CIVIC ENGAGEMENT	Broad: This summarizes the characteristics of the voting- age population. Investigate the data, identify an audience who might be interested in it, and build a hack or tool that could be helpful for that audience. Please note, while people of all genders vote, the US Census only reports options for men and women.	MENTAL HEALTH	Broad: What are things happening in your world that are affecting your mental health or that of your peers or generation? What hack, tool, or solution might you create to support them?	MUSIC	Broad: You don't need to know an instrument or be a musician to make music anymore. What hack, solution, or tool might you create for anyone to make a song?
	Narrow: Build a tool that helps someone better understand the voting population of a certain state. Suggested: App Inventor		Narrow: Build a clicker game for young people to get advice on their mood/mental health. <i>Suggested: Scratch</i>		Narrow: Build a clickable tool to make a music beat on the go. <i>Suggested: Scratch</i>
SPORTS	Broad: <u>This</u> summarizes info about the world's highest- paid athletes since 1990. In- vestigate the data, identify an audience (e.g., business, local or state government, public official, non-profit, average citizen) who might be interested in it, and build a hack or tool that could be helpful for that audience.	RACIAL JUSTICE	Broad: What's important for people to know to take action on racial justice? What hack, tool, or solution would you build to help them?	ART	Broad: Artists are often inspired by the work of others. What hack, solution, or tool might an artist need for inspiration?
	Narrow: Build a tool that picks the best athlete to partner with on a brand sponsorship project. <i>Suggested: App Inventor</i>		Narrow: Build a search tool that people can access to learn about the racial history of their town or community Suggested: App Inventor		Narrow: Build a game where an artist can remix a popular piece of art. <i>Suggested: Scratch</i>

If teams aren't inspired to create anything from the pre-made prompts, you can decide if you'd like to give them an option to decide one on their own.

- Team members should decide on a particular overarching category that embodies their idea.

- They should have an identified problem/need and a platform in mind to create.
- The team mentor will need to approve their prompt before participants can begin to ideate for the hackathon.

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SUGGESTED PROMPTS SORTED BY PERSONALITY TYPE



THE QUESTIONER		THE ALTRUIST		THE CREATOR	
ARTS & ENTERTAINMENT	Broad: This summarizes information about 42 films adapted from video games since 1993. Investigate the data, identify an audience (e.g., business, local or state government, public official, non-profit, average citizen) who might be inter- ested in it, and build a hack or tool that could be helpful for that audience.	CLIMATE CHANGE	Broad: What information are people lacking about changes they can make in their community that impact Climate Change. Build a hack, tool, or solution to educate your community	FILM	Broad: A great film starts with a great plot. But where to start? What are the questions, scenarios, and characters that make a great movie?
	Narrow: Create a game that helps someone decide what movie to watch Suggested: Scratch		Narrow: Build a game for a child to learn how to recycle correctly. <i>Suggested: Scratch</i>		Narrow: Build a generator that creates a mad libs-style film summary that a writer could use for inspiration. Suggested: App Inventor

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- Team members should decide on a particular overarching category that embodies their idea.
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BEST PRACTICES FOR NEAR-PEERS



So, you're a hackathon helper! You've been hand picked as someone who not only has strong computer science skills but can also be someone that hackathon participants can look up to and be inspired by. Thank you for your contribution to the hackathon! We hope you find the experience fun and rewarding. To guide you, see some Best Practices for nearpeers on the following pages.

As a mentor, your ultimate goal is to make participants feel like they are capable and that they belong not just at the hackathon, but in the world of CS. You can help them along this journey in a few ways:

TECHNICAL GUIDANCE

Set students up for success:

Especially at the beginning of the event, technically evaluate whether or not the students have picked a hack or tool that is reasonable for them to accomplish in the set amount of time. Don't be afraid to ask students to focus on a smaller aspect of their tool for the competition, and remind them they can always continue iterating on it after the hackathon is over.

Make sure that the students are excited about the project and are passionate about what they've created!

Help them get off to the right start:

Students may not know exactly how to start their project, so they may be floundering to try to map out the exact steps one might need to take when doing their project.

Give technical feedback:

Before getting to the hackathon, we'd recommend brushing up on the programming language that your team will be using. Students are looking to use this hackathon as a learning opportunity, so feel free to try to teach and guide them throughout the event. If a team is struggling, look at the time that is left in the hackathon to balance letting them debug/figure things out themselves versus just pointing them in the exact right direction.

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BEST PRACTICES FOR NEAR-PEERS



GENERAL GUIDANCE

Ask questions:

Prompt conversations by asking questions whenever you can — whether it's about the hackathon itself or about the students' lives. Asking questions can be a great way to build rapport.

Get everyone talking:

Not all students will be equally as extroverted or comfortable interacting with their group. Be sure to specifically prompt or pay special attention to the more shy or introverted students to make sure their voices are equally heard and valued by their classmates.

Speak from the heart:

If you are comfortable, open up about your own experiences, whether that has been struggling to debug something, not knowing how to start with a project, or just being really excited about something you're working on.

Provide positive encouragement:

Participants are still somewhat new to CS, and many may feel a bit of imposter syndrome about whether they "belong" at the event or even in CS in general. Even if a student is struggling, make sure you're keeping their spirits high and encouraging them however you can.

NORMS AND EXPECTATIONS FOR STUDENTS



Prior to, or at the start of the event, participants should be aware of the Code of Conduct in terms of how they should interact with their team and with their peers and mentor.

TECHNOLOGY

Participants will be heavily encouraged to have their cameras on during any session or activity with their team.

- Participants can have their cameras off when they are working independently or taking part in a plus-up activity.
- Participants should use the "Hand Raise" functionality on Zoom to indicate when they have a question or a response to a question from a teammate.

BRAINSTORMING/HACKING SESSIONS

- Participants should never negatively judge an idea or opinion from a peer during a collaborative brainstorming session. Instead, participants will actively practice affirmative brainstorming by adding to or questioning ideas or opinions in order to expand them.
- Participants will contribute their thoughts and ideas one at a time and will not speak over others. (To that end, participants can also use the "Chat" functionality on the platforms to decrease speaking over their peers.)

GENERAL BEHAVIOR

 Anyone engaging in bullying or disrespectful behavior should be automatically disqualified from participation and should be asked to leave the event.

SAMPLE JUDGING SCORECARD



JUDGE'S NAME

Each team can earn a maximum of 50 points for participating. Teams can earn up to 5 points for each criteria they manage to achieve. The judging scale is as follows:

Θ	1 2	2	3	4	5							
MISSING ENTIRELY		SAT	SFACTORY		EXCEPTIONA	L						
BUCKET	CRITERIA						POINTS					
IMPACT	- Offers a clear solution to the identified problem						1	2	3	4	5	
	- Concept is interesting, engaging, and appealing to target audience						1	2	3	4	5	
	- Concept is clearly marketable and potentially financially feasible						1	2	3	4	5	
TECH	- Program Code functions without issue					Θ	1	2	3	4	5	
	 Functionality showcased is essential to application of tool 					0	1	2	3	4	5	
	- Proposed structure and/or diagram is clearly explained/showcased and flows logically					Θ	1	2	3	4	5	
INNOVATOR	- Tool represents creative and outside-the-box thinking					0	1	2	3	4	5	
PRESENTATION	- Presentati	on has a	clear, logica	al flow		Θ	1	2	3	4	5	
	- All team members are on the same page on details of the app/tool					Θ	1	2	3	4	5	
	- Team members demonstrate an understanding of the collaborative process					Θ	1	2	3	4	5	

TOTAL

GRAPHIC USED FOR PROMOTIONAL PURPOSES



School NAME HERE | MM.DD.YYYY

CODING OUTSIDE THE LINES:

Exploring Alternative Applications of Computer Science

COLOR

School NAME HERE | MM.DD.YYYY

CODING OUTSIDE

Exploring Alternative Applications of Computer Science

BLACK & WHITE

Use <u>this</u> Canva template to personalize your event's logo.