

CSGAMES 26

Polytechnique Montréal



COMPETITIONS BOOKLET

COMPETITIONS SCHEDULE

	FRIDAY	SATURDAY	SUNDAY
8h30		AI SHADER FPGA	PROOF CTF SPORT
11h30			
13h00		COBOL Data Management EMBEDDED SYSTEM	
16h00			
16h30	UI/UX AGENT DEVOPS	WEB HPC MYSTERY	
19h30			
21h30	FLASHOUT	GODFATHER-GODMOTHER ACTIVITY	
00:00			

High Performing Computing

presented by Tracel

Do you ever feel like today's sound lacks character? That it's too clean, too perfect? It's time to give music back its soul... and its neon frequencies! In this competition, you'll need to harness the raw power of both CPU and GPU using CubeCL and Burn to transform audio signals into Synthwave masterpieces. Your mission: manipulate waves at lightning speed to recreate that retro-futuristic aesthetic.

Required materials Paper / Pencil

Technology CubeCL / Burn

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



COBOL

presented by National Bank

An AI named TINA, developed by National Bank with the goal of improving and securing IT infrastructures, has gone out of control! It now controls access rights and application source code, and has taken all of National Bank's systems and services hostage.

Fortunately, in case of a major incident, the bank's COBOL developers created special programs called "Destruction Codes" which, once combined, can destroy the AI and prevent it from causing further damage. However, the AI was not fooled—it carefully hid these codes, and National Bank's developers are no longer able to find them.

Your objective is to locate all the Destruction Codes hidden by the AI and neutralize it.

You have 3 hours. Beyond that point, the systems and services will be irrecoverable.

Required materials Paper / Pencil

Technology GNU Cobol

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



CTF

The SAAQ is not the only one to use retro technologies. In fact, the technological infrastructure hidden behind our daily lives is actually older than one might think—and so are its vulnerabilities.

This competition will take you on a journey through different eras to discover them. You will be required to put your skills to good use and to properly distribute tasks in order to speed up the discovery of the temporal flags.

Required materials

One computer per participant and headphones

Technology

Linux (Kali, Parrot, ...), a decompiler of your choice

Allowed resources

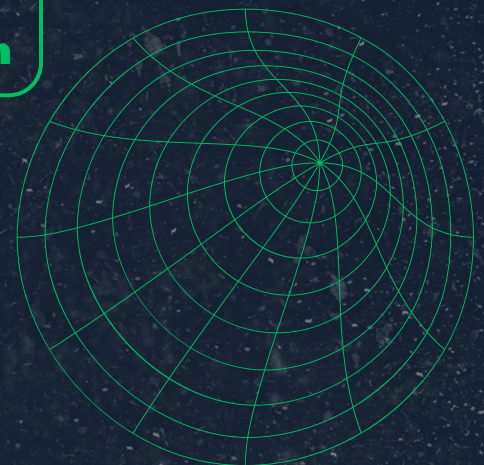
Everything except:

- Generative AI
- Paid software
- External communication

★★ % CS Cup : 6 % ★★

2 people

3 hours



DevOps

In this DevOps-focused competition, you are part of a CI/CD team responsible for maintaining numerous open-source projects developed in multiple languages and for various platforms.

A new custom CI/CD system, fully integrated with your preferred hosting provider, has just been deployed. To standardize development workflows, the team must now implement requests coming from different projects, each with its own specific needs and technologies.

Your performance will be evaluated not only on the quality of your implementations, but also on how efficiently you use resources such as the network, CPU, memory, and disk space.

Required materials Paper / Pencil

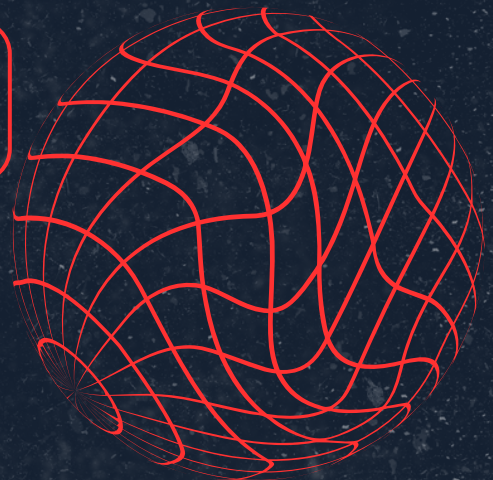
Technology Pulse runner CI/CD

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



Ag

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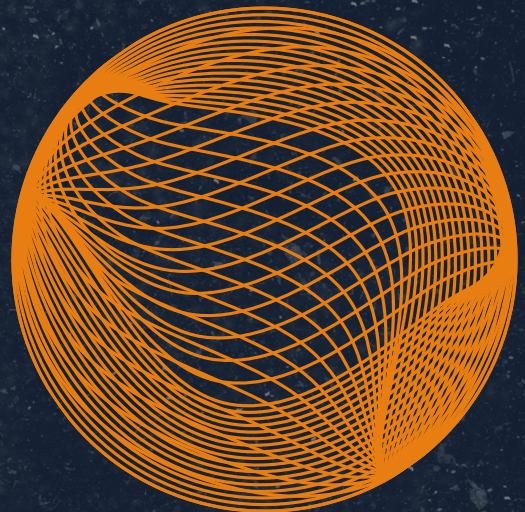
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Required materials Paper / Pencil

Technology **Internal**

Allowed resources	None
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Figure 1. The effect of the concentration of the solution on the adsorption of the dye. The concentration of the solution was 0.05, 0.1, 0.2, 0.3, 0.4, 0.5, 0.6, 0.7, 0.8, 0.9, 1.0, 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.0, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.0, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 4.0, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 5.0, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 6.0, 6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 7.0, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.9, 8.0, 8.1, 8.2, 8.3, 8.4, 8.5, 8.6, 8.7, 8.8, 8.9, 9.0, 9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9, 10.0, 10.1, 10.2, 10.3, 10.4, 10.5, 10.6, 10.7, 10.8, 10.9, 11.0, 11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 12.0, 12.1, 12.2, 12.3, 12.4, 12.5, 12.6, 12.7, 12.8, 12.9, 13.0, 13.1, 13.2, 13.3, 13.4, 13.5, 13.6, 13.7, 13.8, 13.9, 14.0, 14.1, 14.2, 14.3, 14.4, 14.5, 14.6, 14.7, 14.8, 14.9, 15.0, 15.1, 15.2, 15.3, 15.4, 15.5, 15.6, 15.7, 15.8, 15.9, 16.0, 16.1, 16.2, 16.3, 16.4, 16.5, 16.6, 16.7, 16.8, 16.9, 17.0, 17.1, 17.2, 17.3, 17.4, 17.5, 17.6, 17.7, 17.8, 17.9, 18.0, 18.1, 18.2, 18.3, 18.4, 18.5, 18.6, 18.7, 18.8, 18.9, 19.0, 19.1, 19.2, 19.3, 19.4, 19.5, 19.6, 19.7, 19.8, 19.9, 20.0, 20.1, 20.2, 20.3, 20.4, 20.5, 20.6, 20.7, 20.8, 20.9, 21.0, 21.1, 21.2, 21.3, 21.4, 21.5, 21.6, 21.7, 21.8, 21.9, 22.0, 22.1, 22.2, 22.3, 22.4, 22.5, 22.6, 22.7, 22.8, 22.9, 23.0, 23.1, 23.2, 23.3, 23.4, 23.5, 23.6, 23.7, 23.8, 23.9, 24.0, 24.1, 24.2, 24.3, 24.4, 24.5, 24.6, 24.7, 24.8, 24.9, 25.0, 25.1, 25.2, 25.3, 25.4, 25.5, 25.6, 25.7, 25.8, 25.9, 26.0, 26.1, 26.2, 26.3, 26.4, 26.5, 26.6, 26.7, 26.8, 26.9, 27.0, 27.1, 27.2, 27.3, 27.4, 27.5, 27.6, 27.7, 27.8, 27.9, 28.0, 28.1, 28.2, 28.3, 28.4, 28.5, 28.6, 28.7, 28.8, 28.9, 29.0, 29.1, 29.2, 29.3, 29.4, 29.5, 29.6, 29.7, 29.8, 29.9, 30.0, 30.1, 30.2, 30.3, 30.4, 30.5, 30.6, 30.7, 30.8, 30.9, 31.0, 31.1, 31.2, 31.3, 31.4, 31.5, 31.6, 31.7, 31.8, 31.9, 32.0, 32.1, 32.2, 32.3, 32.4, 32.5, 32.6, 32.7, 32.8, 32.9, 33.0, 33.1, 33.2, 33.3, 33.4, 33.5, 33.6, 33.7, 33.8, 33.9, 34.0, 34.1, 34.2, 34.3, 34.4, 34.5, 34.6, 34.7, 34.8, 34.9, 35.0, 35.1, 35.2, 35.3, 35.4, 35.5, 35.6, 35.7, 35.8, 35.9, 36.0, 36.1, 36.2, 36.3, 36.4, 36.5, 36.6, 36.7, 36.8, 36.9, 37.0, 37.1, 37.2, 37.3, 37.4, 37.5, 37.6, 37.7, 37.8, 37.9, 38.0, 38.1, 38.2, 38.3, 38.4, 38.5, 38.6, 38.7, 38.8, 38.9, 39.0, 39.1, 39.2, 39.3, 39.4, 39.5, 39.6, 39.7, 39.8, 39.9, 40.0, 40.1, 40.2, 40.3, 40.4, 40.5, 40.6, 40.7, 40.8, 40.9, 41.0, 41.1, 41.2, 41.3, 41.4, 41.5, 41.6, 41.7, 41.8, 41.9, 42.0, 42.1, 42.2, 42.3, 42.4, 42.5, 42.6, 42.7, 42.8, 42.9, 43.0, 43.1, 43.2, 43.3, 43.4, 43.5, 43.6, 43.7, 43.8, 43.9, 44.0, 44.1, 44.2, 44.3, 44.4, 44.5, 44.6, 44.7, 44.8, 44.9, 45.0, 45.1, 45.2, 45.3, 45.4, 45.5, 45.6, 45.7, 45.8, 45.9, 46.0, 46.1, 46.2, 46.3, 46.4, 46.5, 46.6, 46.7, 46.8, 46.9, 47.0, 47.1, 47.2, 47.3, 47.4, 47.5, 47.6, 47.7, 47.8, 47.9, 48.0, 48.1, 48.2, 48.3, 48.4, 48.5, 48.6, 48.7, 48.8, 48.9, 49.0, 49.1, 49.2, 49.3, 49.4, 49.5, 49.6, 49.7, 49.8, 49.9, 50.0, 50.1, 50.2, 50.3, 50.4, 50.5, 50.6, 50.7, 50.8, 50.9, 51.0, 51.1, 51.2, 51.3, 51.4, 51.5, 51.6, 51.7, 51.8, 51.9, 52.0, 52.1, 52.2, 52.3, 52.4, 52.5, 52.6, 52.7, 52.8, 52.9, 53.0, 53.1, 53.2, 53.3, 53.4, 53.5, 53.6, 53.7, 53.8, 53.9, 54.0, 54.1, 54.2, 54.3, 54.4, 54.5, 54.6, 54.7, 54.8, 54.9, 55.0, 55.1, 55.2, 55.3, 55.4, 55.5, 55.6, 55.7, 55.8, 55.9, 56.0, 56.1, 56.2, 56.3, 56.4, 56.5, 56.6, 56.7, 56.8, 56.9, 57.0, 57.1, 57.2, 57.3, 57.4, 57.5, 57.6, 57.7, 57.8, 57.9, 58.0, 58.1, 58.2, 58.3, 58.4, 58.5, 58.6, 58.7, 58.8, 58.9, 59.0, 59.1, 59.2, 59.3, 59.4, 59.5, 59.6, 59.7, 59.8, 59.9, 60.0, 60.1, 60.2, 60.3, 60.4, 60.5, 60.6, 60.7, 60.8, 60.9, 61.0, 61.1, 61.2, 61.3, 61.4, 61.5, 61.6, 61.7, 61.8, 61.9, 62.0, 62.1, 62.2, 62.3, 62.4, 62.5, 62.6, 62.7, 62.8, 62.9, 63.0, 63.1, 63.2, 63.3, 63.4, 63.5, 63.6, 63.7, 63.8, 63.9, 64.0, 64.1, 64.2, 64.3, 64.4, 64.5, 64.6, 64.7, 64.8, 64.9, 65.0, 65.1, 65.2, 65.3, 65.4, 65.5, 65.6, 65.7, 65.8, 65.9, 66.0, 66.1, 66.2, 66.3, 66.4, 66.5, 66.6, 66.7, 66.8, 66.9, 67.0, 67.1, 67.2, 67.3, 67.4, 67.5, 67.6, 67.7, 67.8, 67.9, 68.0, 68.1, 68.2, 68.3, 68.4, 68.5, 68.6, 68.7, 68.8, 68.9, 69.0, 69.1, 69.2, 69.3, 69



★★ % CS Cup : 6 % ★★

2 people



3 hours

Shader

We are used to developing on the CPU, but for image processing the GPU is much more suitable. Your objective will be to produce 2D images, video, to “optimize” code (are you familiar with code golfing?), to do a bit of 3D, path tracing, and even to create fully playable games entirely on the GPU!

Get ready to write shaders and to think in a way that is truly different from your usual programming languages. Will you rise to the challenge?

Required materials Paper / Pencil

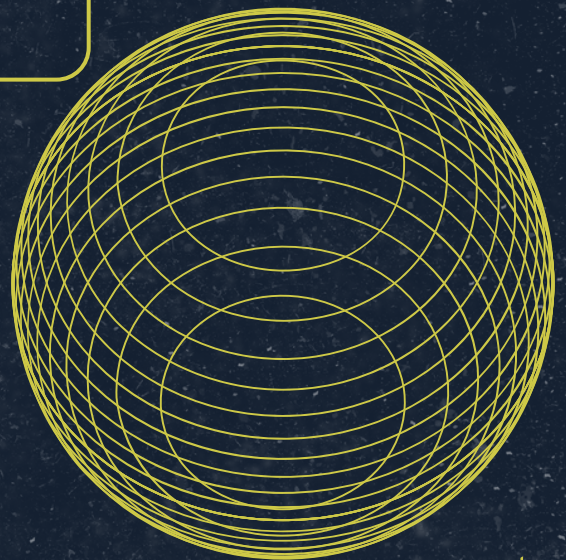
Technology GLSL

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



FPGA

Before overpowered processors and comfortable abstractions, you had to think in terms of logic, signals, and clock cycles. In this competition, it's a return to a time when every bit truly mattered.

In this competition, you'll implement a logic system using a hardware description language. You'll need to understand hardware behavior, structure your logic properly, and make the whole system run reliably.

On your logic gates, get set, design!

Required materials

Paper / Pencil / Non-programmable calculator

Technology

VHDL

Allowed resources

Internet / Documentation



★★ % CS Cup : 6 % ★★

2 people

3 hours



WEB

Do you enjoy venturing into the dark depths of the MDN Web Docs documentation? Are you brave enough to face mysterious bugs and 404 errors that appear out of nowhere?! Maybe... but will you be up to the challenge? In this challenge, you will use your knowledge of React, Node.js, Express, and TypeScript to complete a series of tasks designed to determine who is truly brave.

Required materials Computer / Paper / Pencil

Technology

**Frontend : React + Typescript,
Backend : Node.js + Express + Typescript**

**Allowed
resources**

**Internet / No LLM /
Documentation**

★★ % CS Cup : 6 % ★★

2 people

3 hours



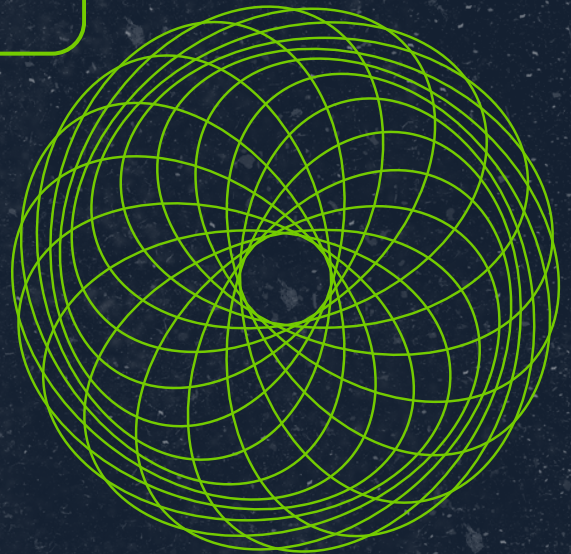
Proof

To wage this fierce battle between theorems and axioms, you'll need to choose your tactics wisely to reach your goals and progress from result to result. You may be tempted to exclaim "it's trivial!", but in this competition, no proof can be left as an exercise to the reader and you'll be facing the most uncompromising judge of all: the machine!

Required materials Paper / Pencil

Technology lean4

Allowed resources Documentation (provided)



★★ % CS Cup : 6 % ★★

2 people

3 hours



Data Management

In this challenge, we will put your declarative and algorithmic programming skills to the test. Each declarative language, such as SQL, requires compilation and execution that is often procedural relying on a variety of algorithms.

Given a set of questions, you will be asked to write SQL to answer them. You will also be challenged to write algorithms in C++ that a SQL query engine can use when it is evaluating your queries.

Required materials Paper / Pencil

Technology C++ / SQL

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



Sport

Get ready for a competition full of action, challenges, and adrenaline!

One thing to remember: be ready, be active, be reactive!

Too many details? That would be too easy...

Come in top shape and with a true team spirit

You've got it: a sports competition awaits you at the CSGames!

Required materials Sportswear

Technology Aucune

Allowed resources None

★★ % CS Cup : 6 % ★★

2 people

3 hours



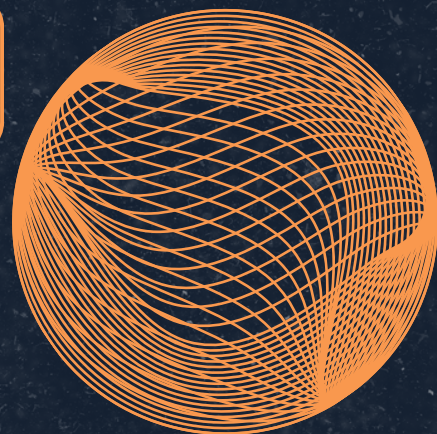
Embedded system

"Things were better back in the good ol' days!"
If you are the type to say this while using modern technology, don't worry, we have the perfect competition for you! Come travel back in time to an era when systems were ultra-specialized and your only tool was the manufacturer's oh-so-clear documentation. Watch out for your fingers, the metal is bare...

Required materials Paper / Pencil / Calculator

Technology C

Allowed resources Documentation (provided)



★★ % CS Cup : 6 % ★★

2 people

3 hours



UI/UX

Design a user experience worthy of the greatest trips back to the future—uh, sorry, the past!

Beyond its visual appearance, your interactive mockup must meet the (countless) needs and requirements of your client. As we used to say back then—and still do today—“the customer is always right!”

That said, be careful: this journey through time should never compromise compliance with today’s highest industry standards.

Unleash your creativity! And above all, dream in color!

Required materials Paper / Pencil

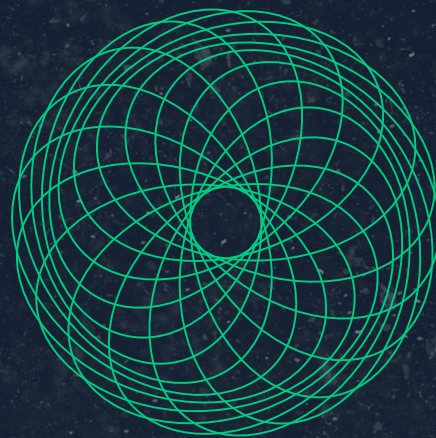
Technology Figma

Allowed resources Internet / No LLM / Documentation

★★ % CS Cup : 6 % ★★

2 people

3 hours



AI

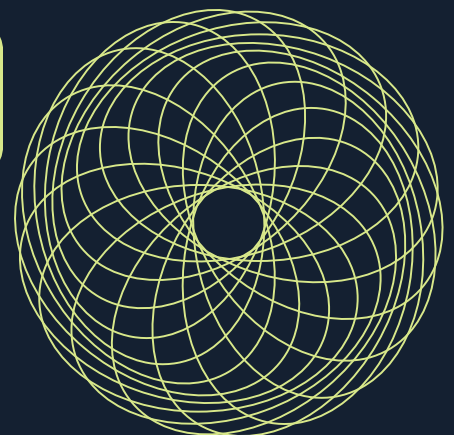
Before modern tools and magical solutions, thinking was essential. At a time when artificial intelligence was still in its early days, every decision mattered. In this competition, you will return to the basics: observe a situation, make a choice, and live with the consequences.

Your goal is to create a model capable of making sound decisions in a competitive and uncertain environment. The best approaches will know how to adapt and react effectively when the situation changes.

Required materials Paper / Pencil / Computer

Technology Python

Allowed resources Internet / Documentation



★★ % CS Cup : 6 % ★★

2 people

3 hours

Mystery



★★ % CS Cup : 6 % ★★

2 people

3 hours



Puzzle héros

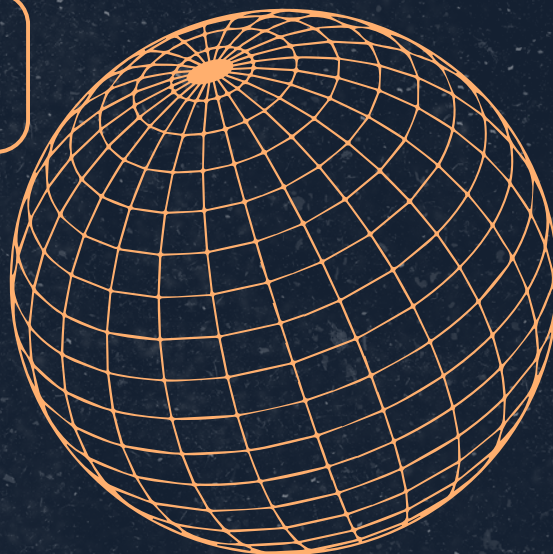
The must-have CS Games event is back!
This timeless classic allows all team members to take on a wide variety of challenges throughout the entire weekend.

Note: The Puzzle Heroes site will be open from 7h30 to 22h00.

Required materials Collective intelligence

Technology Various

Allowed resources All



★★ % CS Cup : 7 % ★★

**Entire
team**

**Whole
weekend**



Flashout

Gather your team and film a high-energy retro-style introduction that showcases your determination to win the CS Cup. The video must be no longer than 3 minutes and should demonstrate how your school stands out—both in the future and in the past!

Team member introduction	35%
Delegation theme presentation	20%
Creativity	25%
Audience vote	20%

Penalty: 1% deducted per second beyond the 3-minute limit

Required materials Camera and your smiles

Technology MP4

Allowed resources Retro Inspiration and vibes

★★ % CS Cup : 3 % ★★

**Entire
team**

3 minutes

