CS GAMES 26
Polytechnique Montréal

COMPETITIONS BOOKLET

COMPETITIONS SCHEDULE

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 % ★★

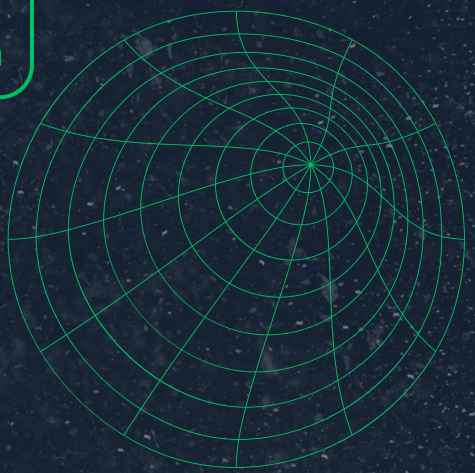
2 people

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

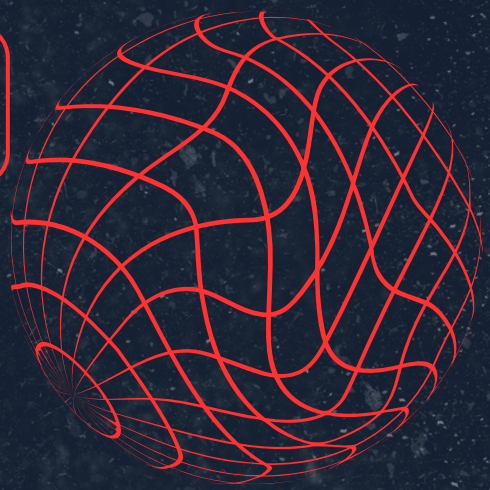
3 hours

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

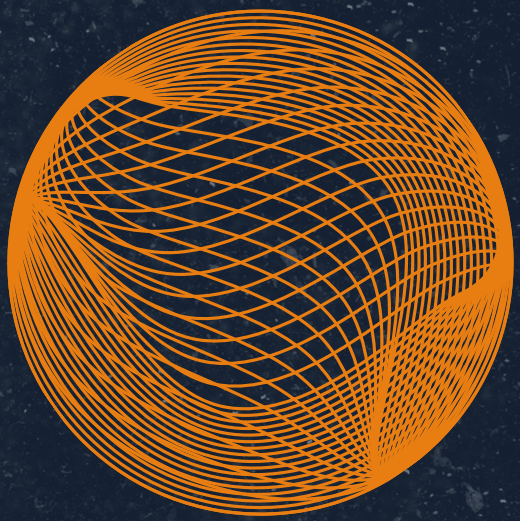
3 hours

Agent programming

Intelligent agents... sounds like artificial intelligence, right? Well... not quite. Sometimes they're powered by logic as basic as a pebble, and other times by logic so complex they end up doing absolutely nothing, but with style!

Stacking if and elif statements won't be enough in this competition. Understanding the environment and how it behaves will be essential if you want to come out on top.

Required materials	**Paper / Pencil**
Technology	**Internal**
Allowed resources	**None**



★★ % CS Cup : 6 % ★★

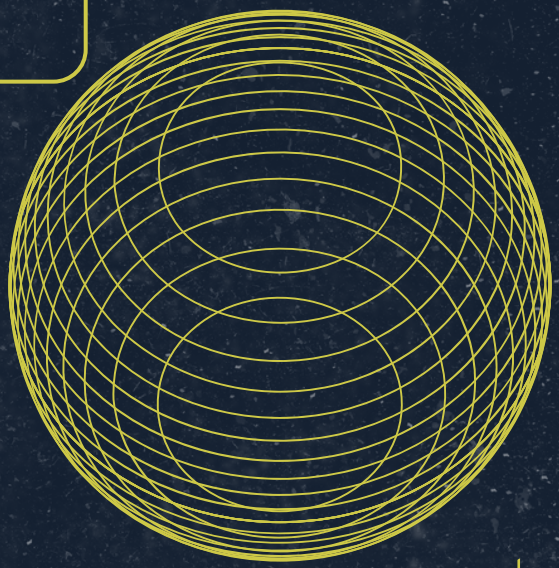
2 people

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 % ★★

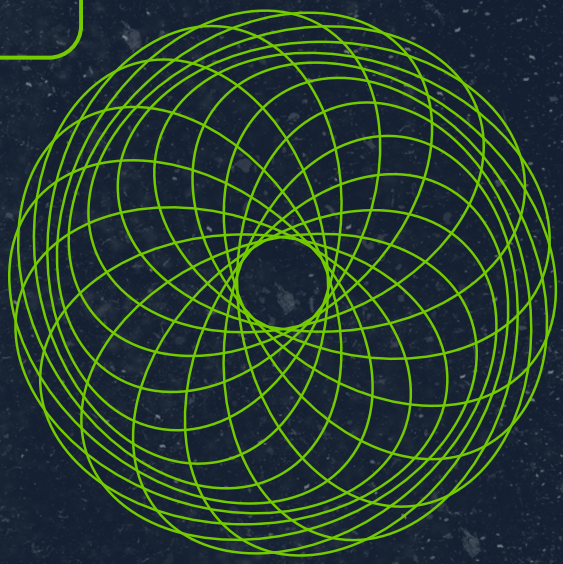
2 people

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 % ★★

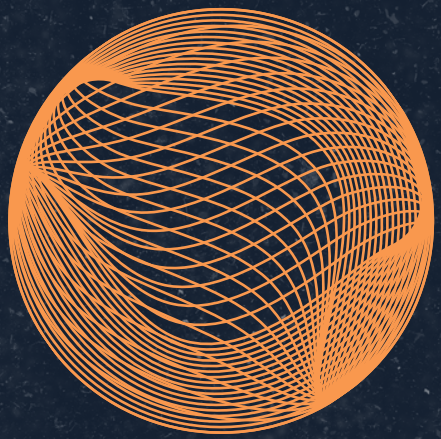
2 people

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

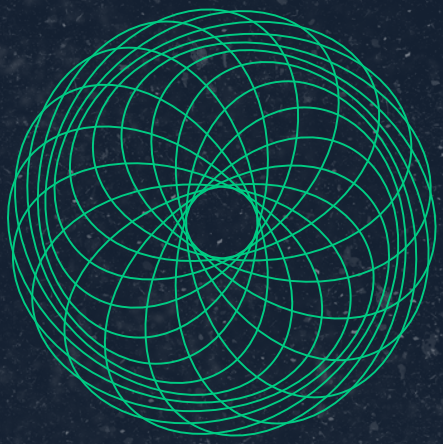
Design a user experience worthy of the greatest trips back to the future—uh, sorry, the past!

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

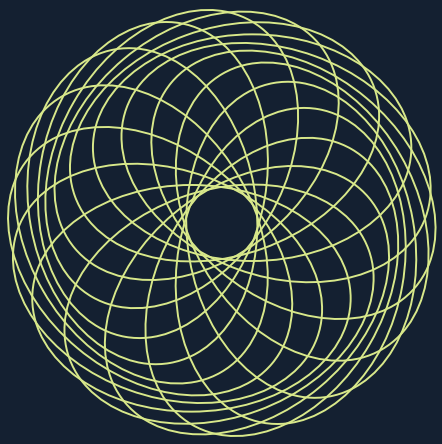
3 hours

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

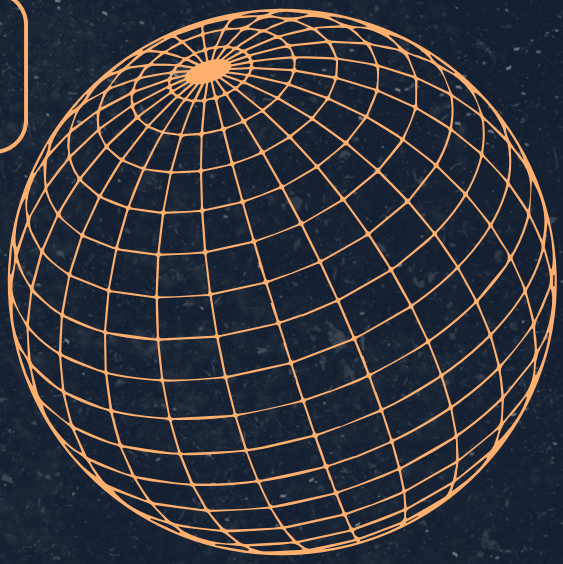
3 hours

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