

INFORMATION PACK



BEAVER COMPUTATIONAL THINKING COMPETITION 2024



Enriching
Computational
Thinking

COMPETITION
DAY!

15th
MAY



BEAVERMALAYSIA



MALAYSIANEDUCOMPETITION



WWW.BEAVER.MY

SCAN ME



INTRODUCTION



- 🐿 The Beaver Computational Thinking Competition is an online-based competition that is part of the international Bebras effort. The Bebras competition was organized in Lithuania, and the word "Bebras" means beaver in Lithuanian.
- 🐿 Bebras aims to promote interest in Information Technology, Informatics and Computational Thinking among students.
- 🐿 As of 2023, nearly 3 million participants from more than 59 countries have participated in Beaver worldwide with 4,910 of them registered as participants from Malaysia. For more information on the Bebras initiative, visit www.bebras.org.



OBJECTIVES



- Cultivates students' creativity, information culture, and algorithmic and computational thinking.
- Facilitates a deeper understanding of information technology.
- Illustrates to students the advantages of information technologies that are helpful in learning various subjects.
- Solves problems through computational thinking using computer-based solutions.
- Provides students with a solid foundation for future jobs in the digital economy.

WHAT IS COMPUTATIONAL THINKING (CT) ?

Computational thinking is a thought process that allows one to break down problems and formulate solutions like how computers "think". It involves a problem-solving process that includes (but not limited to) the following characteristics:

- Formulating problems in a way that enables us to use a computer and other tools to help solve them.
- Logically organizing & analyzing data.
- Representing data through abstraction such as simulations.
- Automation solutions through algorithmic thinking (a series of ordered steps).
- Identifying, analyzing, and implementing possible solutions to achieve the most effective combination of steps and resources.
- Generalizing and transferring the problem-solving process to a wide variety of problems.

WHO SHOULD JOIN THIS COMPETITION?

- With just the ability to think logically as well as patience, students are more than equipped to join this competition.
- No prior background in computer science is needed.
- If you are 7 years old to 18 years old, you are automatically eligible to participate in the following categories:

LANGUAGE

In the online contest system, two language versions are available for participants to choose from: **English** and **Bahasa Melayu**. However, each participant can only access one language version at a time and cannot change versions.

CATEGORIES

Pre-Ecolier - Year 1 & 2

Ecolier - Year 3 & 4

Benjamin - Year 5 & 6

Cadet - Year 7 & 8
(Form 1 & 2)

Junior - Year 9 & 10
(Form 3 & 4)

Student - Year 11 & 12 /
(Form 5 & pre-university)

student should be registered into the mentioned categories according to their academic year in 2024/2025 session.

COMPETITION FORMAT

- The competition will be held online and will be administered at each participating schools under the invigilation of the respective school teachers. Each registered participants will be given a username and password.
- There are 15 questions with 3 levels of difficulty that are to be answered in 45 minutes.
- It is strongly advisable for all participants to sit down for the competition at once. However, the teacher-in-charge may arrange for participants to answer the question in batches should there be any hindrance.
- The questions are multiple choice and interactive: presenting a puzzle-like problem involving basic concepts in mathematics, computer science and problem solving that does not require any programming. Students can test their logical reasoning too!
- A laptop or personal computer is needed to answer the question.
- The scoring rules are as follows:

TECHNICAL REQUIREMENT



- All participants need a stable internet connection to take part in the competition.
- Participants are recommended to use any browser such as Google Chrome, Mozilla Firefox or Safari, **EXCEPT** Internet Explorer.
- If a participant is disconnected during the competition, it is possible to resume after the internet connection is restored, but the lost time will be counted towards the 45 minutes time limit. Therefore, it helps to ensure that the internet connection is stable before starting the competition.

COMPETITION PROCEDURE

Registration for the competition is done by teacher-in-charge at www.contesthub.my/register



Fill in the school, teacher and student detail and make payment



Competition manual, username and password for participants will be provided in the contesthub few days before the competition day



During the competition period, schools conduct the competition at their own venues, invigilated by the teacher-in-charge



Schools enforce the standard examination or competition regulations



3 months after the competition, the results will be announced



The e-certificate will be provided in the contesthub



Hardcopy of the certificates and medals for winners are couriered to the schools

HOW TO REGISTER?

- Registration can only be done by the school's teacher-in-charge.
- Each school or education centre may have more than one invigilator but should only be ONE teacher-in-charge to handle the registration.
- Registration must be made online. The information needed for the registration are the students' full name, IC number, age, category, race, gender, and school name.

AWARDS & CERTIFICATES



Every participant will receive a certificate signed by the Founder & Chairperson of the Bebras Board, Prof Valentina Dagiene, and the President of Malaysian Computational Thinking Association, Mr Khairul Anwar Mohd Zaki.

The allocation of percentage for participants from each category is as follows:

**TOP
10%**



**NEXT
40%**



**NEXT
50%**



SAMPLE QUESTIONS

(Pre-Ecolier, Ecolier & Benjamin)





Primary

Most Popular Book

1. Three children often borrow books from the library. They always show the librarian their library card. The librarian made a borrowing table to work out which book was most.

Using the borrowing table shown below, work out which book was most?

	?	?
		
		
		
		
		
		

- A.  B.  C.  D. 

Explanation:

The crocodile book was borrowed by two children. The cat book was borrowed by three children. Only one child borrowed the chicken book and only one child borrowed the beaver book. That means, the cat book was borrowed the most.

Real-world examples:

Tables show how things (or children) are related to other things. Therefore, tables provide a systematic and efficient means of organizing, presenting, and analyzing data, making them an essential tool in various fields, including database management, research, business, and reporting.

(Pre-Ecolier, Ecolier & Benjamin)





Primary

Gobstoppers

2. Brian's favorite candies come in five flavors. Brian puts one of each flavor into a tube to take to school every day. During the day, Brian eats the candies in the order they come out of the top of the tube. Today he wants to eat them in the following order:



Which tube should Brian pick so that he gets the candies in the preferred order?

- A.  B.  C.  D. 

Explanation:

For the candies to come out of the tube in the preferred order, it is important to understand that the first one in will be the last one out. This means that the tube of sweets needs to be filled like B.

Real-world examples:

One of the first things computer scientists learn is how important it is to have everything correctly ordered. In essence, the importance of ordering in computer science stems from the need for efficiency, logical processing, and the ability to apply algorithms and data structures that rely on ordered data.

ohrid pearls

3. Monica and Veronica brought necklaces back from their holidays.

Monica's necklace:



Veronica's necklace:



They used six of their pearls to make a new necklace for their friend, Anastasija. Now their necklaces look like this.



Which is Anastasija's necklace?

A.



C.



B.



D.



Explanation:

Monika's necklace is missing three violet pearls and Veronica's is missing three red pearls, and that is exactly what is in this necklace.



is not correct because it contains four violet pearls. Monika's necklace started with five violet pearls and she now has two left, so the maximum number that can be on Anastasija's necklace is three.



is not correct because it contains blue and green pearls. All the green and blue pearls remain on Monika's and Veronica's necklaces, so Anastasija's necklace cannot have any green or blue pearls.

For the same reason, answer D is not correct.

Real-world examples:

This task illustrates the computational thinking concept of algorithms, specifically, inventing an algorithm. If a young child has solved this task, it is likely that they will have invented an algorithm for set subtraction. In some high-level computer programming languages such as Python, a set is an abstract data type that allows binary operations such as subtraction.

SAMPLE QUESTIONS

(Cadet, Junior & Student)

Secondary



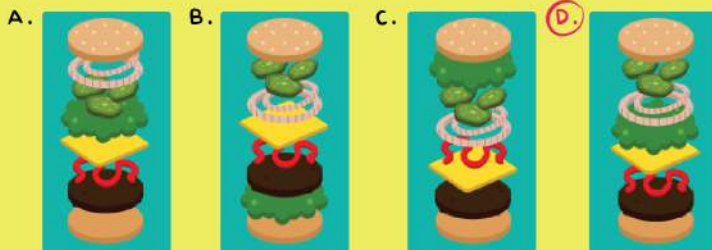
Hamburger Recipe

4. Beaver Jessica is making hamburgers according to the rules below.

1. The sauce should be right above the meat.
2. Meat and cheese should be below the pickles, lettuce and onions.
3. Onions should not be in contact with the buns.



Which hamburger is correctly made according to the rules?



Explanation:

Option A: This hamburger follows rules #1 and #2, but the onion touches the top bun, so it doesn't follow rule

Option B: This hamburger follows rule #1, but the lettuce is below the meat and the cheese, so rule #2 was not followed

Option C: The cheese is between the meat and the sauce, so it doesn't follow rule #1

Option D: This hamburger satisfies all the rules, so this is the correct answer!

Real-world examples:

In computer science, finding out whether a solution obeys all the given rules is called constraints checking. Checking whether a given solution satisfies the constraints is one thing, finding such a solution is another. (This is called the constraint satisfaction problem.) Most of the time, finding a solution is much, much harder than just checking constraints, even for a computer.

(Cadet, Junior & Student)

Secondary



Seashells and pebbles

5. Ann and Bob are playing on the beach. Ann has collected many light colored shells, Bob has collected many dark pebbles.

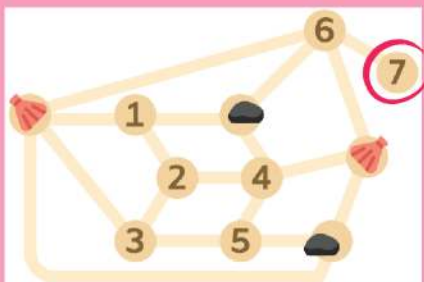
They made holes in the sand and connected them with furrows.

They then take turns to put one of their pieces in an empty hole.

The loser is the first player to place two of their pieces into two holes connected by a furrow.

Ann started the game. They have reached the position shown in the figure below. It is Ann's turn.

In which empty hole must Ann place a shell to ensure victory for herself?



Explanation:

Holes 1, 3, 4 and 6 are "closed" to Ann; holes 1, 4, 5 and 6 to Bob. After Ann has put a shell in 7, Bob can play either 2 or 3; in both cases, Ann just puts a shell on 5 to force Bob to lose.

If, from the position shown in the figure, Ann had put a shell in 2, the game would have continued in this way: Bob 7, Ann 5, Bob 3, and Ann loses.

Finally, if Ann had put a shell in 5, the game would have continued in this way: Bob 7, Ann 2, Bob 3 and Ann loses again.

Real-world examples:

There are many popular games in which the two players, after placing their pieces on the game board, take turns moving them to reach a certain goal (e.g., a "mill" in Nine men's morris, or three-in-a-row in Picaria). The board has a fixed pattern, or it is built ad hoc by the players or someone else (as in COL and SNORT). In any case, the game analysis and "solution" can be performed by setting up a specific computer program.



REGISTRATION FEE

EARLY REGISTRATION	NORMAL REGISTRATION	INDIVIDUAL REGISTRATION
RM 36	RM 40	RM 60
per participant	per participant	per participant

Payment Method: Online Payment (BillPlz) or manual payment (cheque or local order (LO))

IMPORTANT DATES

Early Bird Registration : 1st Dec 2023 - 15th Mar 2024

Normal Registration : 16th Mar 2024 - 22nd Apr 2024

Registration Deadline : 22nd Apr 2024

Competition Day : 15th May 2024

Result Announcement : September 2024

HOW TO REGISTER



Registration can be made at
www.contesthub.com

REGISTER NOW!

CONTACT INFO

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