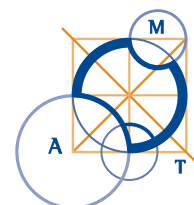# Computational & Algorithmic Thinking

MANAGER'S HANDBOOK
A guide for running the 2017 Online CAT

COMPUTATIONAL AND ALGORITHMIC THINKING

AN ACTIVITY OF THE AUSTRALIAN MATHEMATICS TRUST

Contents

About the CAT

Computational and Algorithmic Thinking (CAT) focuses on the skills behind computer programming and algorithm design, but does not require any specific knowledge of programming or programming languages. There are 9 questions to be completed in one hour.

Competition site

The CAT competition site is located at: amt.edfinity.com

Competition date

Tuesday 21 March 2017

There will be a 36-hour window to sit the CAT between 7 am Tuesday 21 March and 7 pm Wednesday 22 March (Australian Eastern Standard Time). This is to assist schools who may have limited access to computers and those in different time zones.

Duration: The actual competition takes 60 minutes. Please allow additional time for student registration and competition administration.

Note that there may be some randomisation of questions to maintain the integrity of the contest.

After the competition, the manager should complete the online certification form (link on page 11).

Sitting the Online CAT on an earlier date will not be possible.

Contact us

by mail	Australian Mathematics Trust University of Canberra Locked Bag 1 Canberra GPO ACT 2601 Australia
by phone	(02) 6201 5136 (within Australia) +61 2 6201 5136 (from outside Australia)
by email	informatics@amt.edu.au

Using this handbook

This handbook is intended for use by schools who are interested in conducting the Online CAT. It covers all of the information that a school-designated competition manager will need to ensure a successful competition.

It can also be found online at: amt.edfinity.com/help

How the competition works

Here is a high-level walkthrough of how the competition works.

The school competition manager registers student numbers for the competition on behalf of a school, and pays the appropriate entry fees for the competition and/or GetSet courses.	See *Registering for the competition*.
The manager ensures that the **competition prerequisites** have been met, and that everyone involved with the competition is adequately prepared.	See *Preparing for the competition* and *Manager checklist*.
The manager with the help of other supervisors (if required) oversees the running of the competition in a controlled environment according to competition guidelines.	See *Supervisor instructions*.
After the competition results are released by AMT, managers can see the results for each student online.	

Registering for the competition at amt.edfinity.com

A manager is a school administrator or educator responsible for conducting the competition. To register students, a manager will need their AMT school code and password, as distributed to the school at the beginning of every year. Managers enter student numbers for the competition and pay the appropriate entry fees for the competition and/or GetSet preparatory courses.

After an order is placed, the manager will receive an email with important information. Note: all of this information is also available on the competition website.

1. **GetSet CAT access codes** (if applicable), one for each division, to be distributed to students immediately so that they may register and start preparing for the competition. In addition to preparing students effectively, GetSet provides a simulation of the online competition experience.

2. **Activation codes**, used by a supervisor to start the competition. See *Supervisor instructions* for information on the use of this code.

> *An activation code will work for any competition session run by the school, across multiple divisions. If you have multiple groups of students sitting for the competition at __different__ times, you will need one activation code for each group. See Handling multiple groups of students for how to obtain extra activation codes.*

3. One **administration code**, used by a supervisor to add time to a student's timer during the competition if a computer malfunction or other serious event occurs. This code should be kept private, and given only to trusted supervisors. See *Supervisor instructions* for more information on the use of this code.

Student registration

Students register individually for the Online CAT on the day of the competition.

1. The registration process should take no more than five minutes.
2. Students will be asked to create an account (or sign in) and provide some personal information. They will then enter their school code and the competition division and year level for which they want to register.

Preparing for the competition (please read carefully)

System requirements

The online competition application is cloud-based and only requires broadband connectivity and an internet browser. There is no software installation required.

1. **Internet access** Schools often block access to unknown sites, so ensure that your school network allows access to the locations found at amt.edfinity.com/about/sysadmin
2. **Device** Students may use a desktop, laptop or handheld device but not a mobile phone.
3. **Browser** JavaScript and cookies must be enabled in your browser. We strongly recommend one of the following browsers for an optimal experience: IE 9+, Firefox 31+, Chrome 31+, Safari 7+, iOS Safari 7.1, Opera 26+ or Android Browser 4.3+.

A Systems Requirement Check to test for online school access and device compatibility is available on the Help page amt.edfinity.com/help

Room requirements

The competition should be conducted in a quiet area under supervision. The following should be made available:

1. desks, chairs, and computers or tablets with internet access (one device per student)
2. ample supply of pencils and scrap paper
3. calculators (optional), but not an internet-connected calculator
4. whiteboard or blackboard and a clock visible to all students (optional, but recommended).

Handling multiple groups of students

Each manager receives a number of activation codes when they enter the competition. Normally just one activation code is required per session of students sitting at the same time. In the case of a computer malfunction, where a student needs to restart, an extra activation code may be useful. To view available activation codes or to obtain additional activation codes, a manager can do the following:

1. Log in to the competition website with your school code and password.
2. Click on your school name in the top-right corner and select Assessment Supervision from the drop-down menu. This will display current codes.
3. To generate more codes, click on 'Create' button.
4. Copy the resulting activation codes and give them to the appropriate supervisor.
5. Repeat as necessary.

> *Unlike activation codes, each supervisor can use the SAME administration code. Additional administration codes do not need to be generated.*

Selecting competition supervisors

An authorised supervisor may be a competition manager, or any other staff member authorised to supervise the competition. Students are NOT permitted to supervise the CAT under any circumstance.

1. One supervisor per 40 or fewer students is required.
2. A supervisor must supervise students for the duration of the online competition to ensure 'fair play' by all the students.
3. Supervisors use the activation and administration codes obtained from their manager to start the competition and deal with unexpected issues on a case-by-case basis. Bring a mobile phone in case it's necessary to contact the AMT. While not essential, a computer may be useful if extra activation codes are required.
4. Review *Supervisor instructions* for guidelines on how a supervisor should conduct the competition. This document should be photocopied, completed, and distributed to each supervisor.
5. It is strongly recommended that you meet with supervisors at least once before the competition to go over the entire competition process.

Scribble sheets

Scribble sheets are diagrams and figures from the actual competition papers to assist students. They will be made available to managers for download a few days prior to the competition at amt.edfinity.com/help. Print these sheets (one set for each student in each division of the competition) and keep them in a secure place. Distribute them to supervisors to give to the students on the day of the competition.

After the competition

After competition results have been released by AMT, they will also be available online on the competition site.

Manager checklist

☐ 1. Register for the competition and optional GetSet CAT courses.

☐ 2. Confirm receipt of your email containing competition information.

☐ 3. If you have purchased GetSet courses, distribute the access codes to your students and encourage them to register and get started.

☐ 4. Identify supervisors for the competition. See Selecting competition supervisors for more information. For each supervisor, fill out and distribute a copy of *Supervisor instructions* for their careful review.

Name	Class	Location	Time

☐ 5. Confirm compliance with system and room requirements in every room. See Preparing for the competition for more information.

☐ 6. Meet with supervisors before the competition to go over the process.

☐ 7. One week prior to the competition, display reminder notices advising students of the competition date and time and advising staff of supervisor arrangements.

☐ 8. A few days before the competition, download, print and distribute scribble sheets to supervisors. See Scribble sheets for more information.

☐ 9. After the contest, complete the online certification form at http://www.amt.edu.au/informatics/cat-results/certification-form/

Supervisor only instructions

Competition URL: amt.edfinity.com

Supervisor's name _____

Class _____   Location _____

Start time _____   *Competition duration is 60 minutes. Please allow additional time for registration.*

School code _____

Activation codes _____   Administration code _____

_____

As a supervisor, it is your responsibility to ensure that the competition is conducted in accordance with the guidelines below in order to preserve the integrity of the competition.

Understanding the competition codes (please read carefully)

Activation codes (private until start of competition)	When you are ready to start the competition, you will give a single activation code to all the students and they will enter it on the competition site to begin. This will activate the online competition timer. Please keep this code private until you are ready to start. The activation code is *only valid for 30 minutes* from the time of its first use. If you are supervising another group of students more than 30 minutes later, ask your manager for a new activation code. Or in case of a computer malfunction where a student needs to restart, use the extra activation code.
Administration code (private)	Use the administration code to add time to a student's timer if a computer malfunction or other serious event occurs. This is a private code and should NEVER be given to students.

Before the competition

Competition URL: amt.edfinity.com

1. Collect scribble sheets, one per student (different for each division) from your competition manager. Place them face down on each desk.
2. Ensure there is an adequate supply of spare pens or pencils and scrap paper.
3. Provide a safe place to store students' mobile phones.
4. Arrange the desks so that no student can see the computer screen of another student in the same division.
5. Write the competition URL and the school code on a whiteboard.

> **Browser Requirements:** JavaScript and cookies must be enabled in your browser. We strongly recommend one of the following browsers for an optimal experience: IE 9+, Firefox 31+, Chrome 31+, Safari 7+, iOS Safari 7.1, Opera 26+ or Android Browser 4.3+.

Registering students

Before beginning, you should ensure that every student in the room is registered and ready to begin the competition.

1. Each student should have their browser open at the competition URL.
2. Assist them as necessary to enter the required information to complete their registration. Certificates are printed with each student's name, school and school year as entered on the registration page. If the school year is not completed correctly, their competition answers will NOT be marked.
3. Once a student has registered and logged in, they will be automatically taken to the competition start page for their division where they will be prompted to enter an activation code to begin.
4. Australian school year level equivalents can be found at www.amt.edu.au/wp-content/uploads/School-year-equivalent.pdf

After students are registered and seated

1. Check that each student:
    a. **has** a pen or pencil, scribble sheets and access to scrap paper
    b. **has** the competition start page showing on their computer and **no** other tabs or windows are open
    c. **does not** have a mobile phone at their desk
    d. **has not** brought aids other than hand calculators and language dictionaries (check dictionaries for loose pages or insertions).
2. Read out the following instructions and ensure that students understand them:

a. There are 9 questions. Questions 1–6 are multiple-choice and worth 3 points each, questions 7–9, each consisting of three parts, require a numeric answer from 0–999, and are worth 2 points each.
b. You may have the competition window ONLY open on your device; you may use hand calculators, but NOT online calculators.
c. Use photocopied scribble sheets supplied to assist in questions with diagrams.
d. You can skip questions and return to earlier questions using the menu buttons provided.
e. You have 60 minutes to complete the competition.

Starting the competition

1. Start the competition by giving out the activation code to the students. Each student should enter it on their computer to begin. The competition will close off automatically 60 minutes after they have entered the code.

During the competition

1. Please ensure that examination conditions are maintained. Supervisors will need to be vigilant that students are not accessing any windows other than the competition site. Record and report any breach of regulations to the AMT office.
2. Any student who experiences a serious computer malfunction can alert the supervisor, who can override the timer on that individual computer if they believe this is justified. Click on the 'Supervisor Access' link on right side of the student's screen and enter the administration code.

> **Important:** If you use the administration code, you must keep it secret from students. Additionally, be sure to indicate that you do NOT want to save this password if prompted by the student's browser.

3. If a student wishes to leave the room, a supervisor must accompany the student; otherwise the student will not be re-admitted.
4. Ensure no student leaves the competition area until the last student has finished.

Finishing the competition

The competition will finish automatically when time has elapsed. There is nothing else required.

The manager should complete the online certification form at
http://www.amt.edu.au/informatics/cat-results/certification-form/