CGSC 1005A – Computational Methods in Cognitive Science
DEPARTMENT OF COGNITIVE SCIENCE, CARLETON UNIVERSITY
Fall 2022

Lecture dates:	Mondays and Wednesdays, September 7th – December 9th, 2022
Lecture time:	11:35am – 12:55pm
Lecture location:	**synchronous and online (Zoom)**
Tutorials:	A1: 2:35-3:55, Friday (TA: TBA) A2: 11:35-12:55 Friday (TA: TBA) A3: 8:35-9:55, Thursday (TA: TBA)
Instructor:	Kasia (Katarzyna) Muldner, Ph.D.
Office:	**synchronous and online** (Zoom)
E-mail:	kasia.muldner@carleton.ca
Office Hours:	TBA or by appointment
TAs:	Veronica Chiarelli (VeronicaChiarelli@cmail.carleton.ca) Amanda Keech (AmandaKeech@cmail.carleton.ca) Sean Riley (Sean.Riley@cunet.carleton.ca)
TA Office Hours:	By appointment
Pass Coordinator:	Rabeaa Khan (email TBA)

Course Description

Introduction to computational methods, with an emphasis on programming. No prior programming background required. Programming is inherently a creative problem-solving activity that requires computational thinking. We will approach programming using the lens of cognitive science, namely that programming involves finding appropriate *representations* for the problem at hand and implementing *operations on those representations*.

On the representation side, we will cover *variables*, *standard data types (e.g., numeric, strings, Boolean)*, *data scope*, advanced data structures (e.g., lists). On the operation side, we will cover standard programming building blocks needed to create operations on these representations, including *iteration*, *conditional execution*, and *functional abstraction*.

The skills that we will emphasize during the class include *program design*, by discussing various algorithms and approaches to solving problems, *program implementation*, by writing Python code, and *debugging*, namely the ability to identify errors in programs through pattern matching and code tracing.

Software requirements

All students taking CGSC 1005 are required to either own or have daily access to a computer (either Mac or PC; desktop or laptop) that has the programming language Python installed. ***Netbooks, Chromebooks, and Smartphones are not suitable*** – the computer must be running either Windows or a Mac operating system. Wifi functionality on this computer is required; we also recommend at least 16GB of RAM and sufficient hard drive space (128GB +).

Text book required

There is no required text book. A supplementary source that is freely available includes:

"*Python for Everybody: Exploring Data Using Python 3*", by Charles R. Severance . The textbook is freely available online under an open source license, and can be downloaded here:

http://do1.dr-chuck.com/pythonlearn/EN_us/pythonlearn.pdf

Course Web Page (Brightspace)

The course website is located at https://carleton.ca/brightspace/ On this site you will find the course syllabus, slides, and any supplementary materials. Please note that the course slides are there for you to use and you are welcome and encouraged to do so, **but you are prohibited from sharing the slides.** My slides are my intellectual property, are Copyrighted and may not be shared or repurposed outside of this class. Sharing the slides either by electronic or non-electronic means is a violation of Copyright and I reserve the right to take action if you do so. For more information on Carleton's policy on Copyright infringement see: https://calendar.carleton.ca/copyrightcompliance/

Evaluation

Assignments

There are 5 assignments (see table below for due dates and weights). **All assignments are due by 9:30am on the specified date**. Please avoid putting the assignment off until the last minute as this does not work well with programming tasks. Note that the assignments are not weighted equally – see below.

Assignment	Due Date	Weight
A1	Tuesday, Sept 27, 9:30am	3%
A2	Friday, Oct 14, 9:30am	3%
A3	Tuesday, Nov 1, 9:30am	4%
A4	Tuesday, Nov 22, 9:30am	5%
A5	Wed, Dec 7 9:30am	5%

Late policy: Assignments must be passed in on time – there is no grace period. This policy is to ensure that we can provide feedback in a timely manner. Late assignments will be accepted for up to 2 days after the posted deadline, but they incur a penalty of 10% for each 12 hours, as follows: 0-12 hours late = -10%; over 12 hours late up to 24 hours = -20%; over 24 hours up to 36 hours = -30%; over 36 hours up to 48 hours = -40%. If the submission is more than 2 days late (i.e., 48 hours) the assignment will be assigned a grade of 0. Technical problems such as connectivity issues do not exempt you from this penalty, so please don't wait till the last minute to submit. Some advice:

1. upload partially completed submissions as you work on them (you can submit multiple times)
2. submit the correct type of file (all the assignment require a python file, so please submit a file that ends in .py, not a word file or a PDF file; likewise pictures of a program will not be accepted)
3. aim to submit your final submission at least 30 minutes in advance of the due date and time
4. download your submission and verify the contents after submitting

Issues with uploaded files. You will be asked to upload python code, which must be a .py file, rather than a word/PDF document. It is your responsibility to ensure that the file you uploaded is correct (see point 4 above, i.e., after uploading, download to ensure the correct file(s) was uploaded). If you are not sure, please ask before the deadline – we are happy to help.

Plagiarism and collaboration policy: You may collaborate with others at the **conceptual** level of assignments and tutorials (where conceptual is the algorithmic level, but NOT the code level). You may also collaborate at the code level with **one** other person – if you do, you must clearly indicate the name of the person you worked with on the assignment you pass in. **Group collaboration at the code level with more than 2 people is not permitted – this will be strictly enforced**. **Using code from another source (e.g., an individual outside of this class, a tutor, or a website) is considered plagiarism**. Please see the notice on academic integrity towards the end of the syllabus (e.g., "A student found in violation of academic integrity standards may be awarded penalties which range from a reprimand to receiving a grade of F in the course or even being expelled from the program or University").

Appeals: Contact the TA that marked your assignment within one week of the date the assignment was returned (posted to Brightspace).

Tutorials

Like the class, the tutorials will be conducted virtually. The goal of the tutorials is to provide hands on practice on concepts discussed in tests, and thus solidify learning of those concepts. To receive a grade for a given tutorial, you must be virtually present* and work on the tutorial material. This is because the only way to learn programming is through repeated practice, and the tutorials provide that practice over and beyond assignments. However, some time will be provided in certain tutorials for assignment work. Each tutorial grade is out of 1, assigned as follows: 0 if did not show up or did not do any work during the tutorial, 0.5 if you came late and/or did some work, and 1 if came on time and worked on the tutorial materials the whole period.

* virtually present means online during the tutorial time. You have **one** "work asynchronously" pass, allowing you to complete a tutorial at another time; the work must be submitted before the following week's tutorial by uploading to brightspace **and** emailing your TA to let them know. Two caveats: (1) you must let you TA know **before** the tutorial if you plan to use this pass and (2) you are responsible for figuring out the tutorial material on your own.

Tests + Exam

Test 1: The first test will cover content from the first portion of the course prior to test 1. More details will be provided before the test. The test will be conducted online during class time.

Test 2: The second test will focus on content starting with material after test 1 up to the content covered prior to test 2, but it will also include concepts prior to test1 (since the nature of programming is inherently cumulative). The test will be conducted online during class time.

Final Exam: The final exam will be **cumulative**. More details will be provided closer to the exam date. The final exam will be conducted in person on the Carleton campus. As per Carleton policy, (1) if you reside at least 160 km away from campus on exam day you can apply to write remotely, (2) the deadline to apply to write at a distance is September 22 (contact information TBA by Carleton) and (3) remote arrangements will be involve use of CoMaS, Carleton's automated e-Proctoring software, to ensure the integrity of the test/exam process.

The tests and exam are based on: (1) course slides, which will be made available on brightspace, (2) problem solving exercises done during tutorials and/or homework, (3) any assigned readings, (4) information presented during class, including class discussions. In particular, virtual class attendance is strongly encouraged because **information will be provided during class beyond that in the textbook or slides**, including explanations of course themes, perspectives that are not in the textbook or in the slides, hints for tests, etc.

Policies: Illness and bereavement (supported by appropriate documentation – see Carleton procedures) are the only reasons accepted for missed tests. If you miss a test for one of these reasons, obtain the appropriate documentation and contact me immediately (within 24 hours) to arrange a make up test. If you are unable to write the final exam, please follow the procedures listed in the section, Petitions to Defer, located later in the outline. Note that if a test is missed, the Department does not support the reweighting of exams (e.g., offering an exam that is worth 100% of the final grade).

Since the tests are written online, we reserve the right to conduct a follow up oral exam if class policies are not followed – details will be provided in class.

Weighting of the Final Grade

Test 1:	19%	[October 3]
Test 2:	19%	[November 9]
Assignments:	20%	See table on previous page for exact dates
Tutorials:	10%	Weekly – see table on next page for schedule
Final Exam:	32%	[Regularly scheduled exam period, in person – see note above re Final Exam]

E-mail Protocol and Guidelines

I will respond to e-mails within 24-48 hours (excluding weekends and holidays). Please do not send us code to be debugged over email unless you include a detailed code trace (details on what that involves will be provided in class) and a hypothesis for why it does not work. Often, if you have questions that require more than a yes/no type answer, the best forum for answering them is during class or virtual office hours.

Lecture Schedule

Please note that dates for topics are approximate and may change; weeks colored blue have an assignment due; yellow highlighting indicates a test:

Lecture Date(s)	**Lecture Topic**	**Tutorial Information**
Week 1 Sept 7	welcome and introduction	*No tutorials this week*
Week 2 Sept 12, Sept 14	foundations (variable, data types) conditionals	Tutorial 1 (intro, conditionals)
Week 3 Sept 19, Sept 21	conditionals iteration (1)	Tutorial 2 (conditionals, iteration)
Week 4 (A1 due, T) Sept 26, Sept 28	iteration (2) review	Tutorial 3 (iteration)
Week 5 Oct 3, Oct 5	**Test 1** sequences, iteration with for loops	Tutorial 4 (for loops)
Week 6 (A2 due, F) *No class Oct 10*, Oct 12	files	Tutorial 5 (for loops, files)
Week 7 Oct 17, Oct 19	lists	Tutorial 6 (lists)
reading week (Oct 24 - 28)		
Week 8 (A3 due, T) Oct 31, Nov2	lists nested lists	Tutorial 7 (lists, nested lists)
Week 9 Nov 7, Nov 9	review **Test** 2	Tutorial 8 **(**assignment time 4)
Week 10 Nov 14, Nov 16	nested lists con't functions	Tutorial 9 (nested lists, functions)
Week 11 (A4 due, T) Nov 21, Nov 23	functions	Tutorial 10 (functions)
Week 12 Nov 28, Nov 30	functions, algorithms	Tutorial 11 (functions con't)
Week 13 (A5 due, W) Dec 5, Dec 7	algorithms review	*No tutorials*

Additional Information

In accordance with the Carleton University Undergraduate Calendar (p 34), the letter grades assigned in this course will have the following percentage equivalents:

A+ = 90-100	B+ = 77-79	C+ = 67-69	D+ = 57-59
A = 85-89	B = 73-76	C = 63-66	D = 53-56
A - = 80-84	B - = 70-72	C - = 60-62	D - = 50-52
F = Below 50			

Grades entered by Registrar:
WDN = Withdrawn from the course
DEF = Deferred

Plagiarism

The University Academic Integrity Policy defines plagiarism as "*presenting, whether intentionally or not, the ideas, expression of ideas or work of others as one's own.*" This includes reproducing or paraphrasing portions of someone else's published or unpublished material, regardless of the source, and presenting these as one's own without proper citation or reference to the original source. Examples of sources from which the ideas, expressions of ideas or works of others may be drawn from include but are not limited to: books, articles, papers, literary compositions and phrases, performance compositions, chemical compounds, artworks, laboratory reports, research results, calculations and the results of calculations, diagrams, constructions, computer reports, computer code/software, material on the internet and/or conversations.
Examples of plagiarism include, but are not limited to:

- any submission prepared in whole or in part, by someone else;
- using ideas or direct, verbatim quotations, paraphrased material, algorithms, formulae, scientific or mathematical concepts, or ideas without appropriate acknowledgment in any academic assignment;
- using another's data or research findings without appropriate acknowledgement;
- submitting a computer program developed in whole or in part by someone else, with or without modifications, as one's own; and
- failing to acknowledge sources through the use of proper citations when using another's work and/or failing to use quotations marks.

Plagiarism is a serious offence that cannot be resolved directly by the course's instructor. The Associate Dean of the Faculty conducts a rigorous investigation, including an interview with the student, when an instructor suspects a piece of work has been plagiarized. Penalties are not trivial. They can include a final grade of "F" for the course.

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Statement on Student Mental Health

As a University student you may experience a range of mental health challenges that significantly impact your academic success and overall well-being. If you need help, please speak to someone. There are numerous resources available both on- and off-campus to support you. Here is a list that may be helpful:

Emergency Resources (on and off campus): https://carleton.ca/health/emergencies-and-crisis/emergency-numbers/

Carleton Resources:

- Mental Health and Wellbeing: https://carleton.ca/wellness/
- Health & Counselling Services: https://carleton.ca/health/
- Paul Menton Centre: https://carleton.ca/pmc/
- Academic Advising Centre (AAC): https://carleton.ca/academicadvising/
- Centre for Student Academic Support (CSAS): https://carleton.ca/csas/
- Equity & Inclusivity Communities: https://carleton.ca/equity/

Off Campus Resources:

- Distress Centre of Ottawa and Region: (613) 238-3311 or TEXT: 343-306-5550, https://www.dcottawa.on.ca/
- Mental Health Crisis Service: (613) 722-6914, 1-866-996-0991, http://www.crisisline.ca/
- Empower Me: 1-844-741-6389, https://students.carleton.ca/services/empower-me-counselling-services/
- Good2Talk: 1-866-925-5454, https://good2talk.ca/
- The Walk-In Counselling Clinic: https://walkincounselling.com

Statement on Pandemic Measures

It is important to remember that COVID is still present in Ottawa. The situation can change at any time and the risks of new variants and outbreaks are very real. There are a number of actions you can take to lower your risk and the risk you pose to those around you including being vaccinated, wearing a mask, staying home when you're sick, washing your hands and maintaining proper respiratory and cough etiquette.

Feeling sick? Remaining vigilant and not attending work or school when sick or with symptoms is critically important. If you feel ill or exhibit COVID-19 symptoms do not come to class or campus. If you feel ill or exhibit symptoms while on campus or in class, please leave campus immediately. In all situations, you should follow Carleton's symptom reporting protocols.

Masks: Masks are no longer mandatory in university buildings and facilities. However, we continue to recommend masking when indoors, particularly if physical distancing cannot be maintained. We are aware that personal preferences regarding optional mask use will vary greatly, and we ask that we all show consideration and care for each other during this transition.

Vaccines: While proof of vaccination is no longer required to access campus or participate in in-person Carleton activities, it may become necessary for the University to bring back proof of vaccination requirements on short notice if the situation and public health advice changes. Students are strongly encouraged to get a full course of vaccination, including booster doses as soon as they are eligible and submit their booster dose information in cuScreen as soon as possible. Please note that Carleton cannot guarantee that it will be able to offer virtual or hybrid learning options for those who are unable to attend the campus.

All members of the Carleton community are required to follow requirements and guidelines regarding health and safety which may change from time to time. For the most recent information about Carleton's COVID-19 response and health and safety requirements please see the University's COVID-19 website and review the Frequently Asked Questions (FAQs). Should you have additional questions after reviewing, please contact covidinfo@carleton.ca.

Requests for Academic Accommodations
ACADEMIC ACCOMMODATION
You may need special arrangements to meet your academic obligations during the term. For an accommodation request the processes are as follows:
Pregnancy obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For accommodation regarding a formally-scheduled final exam, you must complete the Pregnancy Accommodation Form (click here).
Religious obligation: write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. For more details click here.
Academic Accommodations for Students with Disabilities: The Paul Menton Centre for Students with Disabilities (PMC) provides services to students with Learning Disabilities (LD), psychiatric/mental health disabilities, Attention Deficit Hyperactivity Disorder (ADHD), Autism Spectrum Disorders (ASD), chronic medical conditions, and impairments in mobility, hearing, and vision. If you have a disability requiring academic accommodations in this course, please contact PMC at 613-520-6608 or pmc@carleton.ca for a formal evaluation. If you are already registered with the PMC, contact your PMC coordinator to send me your Letter of Accommodation at the beginning of the term, and no later than two weeks before the first in-class scheduled test or exam requiring accommodation (if applicable). After requesting accommodation from PMC, meet with me to ensure accommodation arrangements are made. Please consult the PMC website for the deadline to request accommodations for the formally-scheduled exam (if applicable).

Survivors of Sexual Violence
As a community, Carleton University is committed to maintaining a positive learning, working and living environment where sexual violence will not be tolerated, and where survivors are supported through academic accommodations as per Carleton's Sexual Violence Policy. For more information about the services available at the university and to obtain information about sexual violence and/or support, visit: https://carleton.ca/equity/sexual-assault-support-services

Accommodation for Student Activities
Carleton University recognizes the substantial benefits, both to the individual student and for the university, that result from a student participating in activities beyond the classroom experience. Reasonable accommodation will be provided to students who compete or perform at the national or international level. Write to me with any requests for academic accommodation during the first two weeks of class, or as soon as possible after the need for accommodation is known to exist. https://carleton.ca/senate/wp-content/uploads/Accommodation-for-Student-Activities-1.pdf

Important Information
- Students must always retain a hard copy of all work that is submitted.
- All final grades are subject to the Dean's approval.
- For us to respond to your emails, we need to see your full name, CU ID, and the email must be written from your valid CARLETON address. Therefore, in order to respond to your inquiries, please send all email from your Carleton CMail account. If you do not have or have yet to activate this account, you may wish to do so by visiting http://carleton.ca/ccs/students/
- The last day for academic withdrawal for Fall courses is November 15th, 2022.
- For a list of dates and deadlines, including holidays and exam dates, please visit: https://calendar.carleton.ca/academicyear/