McGill initiative in Computational Medicine

Intro to Python
Part 1

Benjamin Rudski
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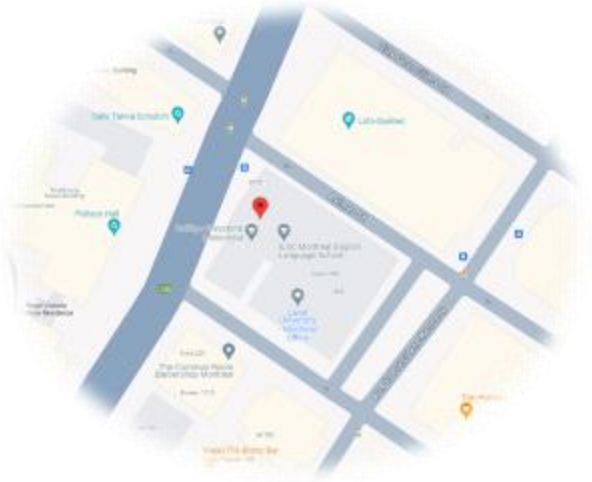
McGill | Quantitative Life Sciences | Sciences quantitatives du vivant

MiCM McGill initiative in Computational Medicine

QLS-MiCM mission statement: deliver quality workshops designed to help biomedical researchers develop the skills they need to succeed.



Location: 550 Sherbrooke Street, Montreal, Quebec

Scan the QR code to sign up for our **mailing list**

Contact: workshop-micm@mcgill.ca

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Workshop Series

Workshop	Date	Location	Registration
How to think in Code	Jan. 28 1PM-3PM	EDUC 133	Closed
Intro to Git & GitHub	Jan. 30 1PM-5PM	EDUC 133	Closed
Intro to Unix	Feb. 6 1PM-5PM	EDUC 133	Closed
Intro to Python (Part 1)	Feb. 11 1PM-5PM	EDUC 133	Open
Intro to R (Part 1)	Feb. 13 1PM-5PM	EDUC 133	Open
Exploring MATLAB	Feb. 18 1PM-5PM	EDUC 133	Open
Statistics in R (Part 2)	Feb. 20 1PM-5PM	EDUC 133	Open
Data Processing in Python	Feb. 25 1PM-5PM	EDUC 133	Open
Intro to Machine Learning	Mar. 13 1PM-5PM	EDUC 133	TBA
Intro to R (Part 1)	TBA	EDUC 133	TBA
Intro to Python (Part 1)	TBA	EDUC 133	TBA

https://www.mcgill.ca/micm/training/workshops-series

Outline

1. **Module 1 – Python Basics (1 hour 15 minutes)**
    a. Foundations of Python - A Brief Overview of Types and Variables
    b. Numbers and Comparisons
    c. Intro to Control Flow and Loops (if, while and for)
    d. Exercise
2. **Module 2 – Strings and Collections: An Object Primer (1 hour)**
    a. Introducing Objects
    b. Introducing the String!
    c. Introduction to Tuples, Lists and Dictionaries
    d. Exercise
3. **Module 3 – Introduction to Functions (45 minutes)**
    a. Function Overview
    b. Writing Custom Functions
    c. Documenting Functions
    d. Exercise
4. **Module 4 – Where to go from here (10 minutes)**

Interactive Workshop!

- That's pretty much all that will be in the slides… For the rest, we'll go to a Jupyter Notebook:

To the repository!

Module 2
Strings and Collections
An Object Primer

What is an Object?

Object

Attributes

- Variables
- Describe the object

Methods

- Functions
- Compute values
- Alter the object

Objects

Car

- colour
- year
- model
- turn_on()
- turn_off()
- change_gear()
- toggle_headlights()

Mouse

- height
- weight
- age
- sex
- genotype

To summarize

- ✓ Data can be stored in **variables** of several types, including **strings**, **integers**, **floating point numbers** and **Booleans.**
- ✓ **Collection types**, such as **tuples**, **lists** and **dictionaries** can be used to store **multiple** data points.
- ✓ **Control flow** and **loops** help decide which lines to run and allow lines to be repeated.
- ✓ **Functions** help package up behaviour into units that you can easily reuse.

Now you are ready to:

- Store data in variables and collections.
- Perform basic operations on these data.
- Use control flow and loops to write powerful code.
- Write functions to repeat complicated tasks.

Acknowledgements

- Thank you to QLS-MiCM for giving me this opportunity and for helping me along the way.
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