

QoS & Data Structures (con't) and Regular Expressions

CSCI 77800 – Ethics and Computer Science

Session 4 – 9/19/2024

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Artificial Intelligence News

- “California Governor Gavin Newsom [signed a pile of AI bills](#) into law on Tuesday.”
- “AB 1836 imposes a 70-year requirement in which studios must get consent from a deceased actor’s estate before generating an AI likeness.”
- Fast Company AI Decoded email, content by Mark Sullivan, 9/19/2024.

Interesting Event

“Digital Safety in the Age of Surveillance”

Tuesday, September 24, 4:00-5:30

- “In response to this increasingly concerning moment of digital insecurity and academic repression, this workshop will introduce you to resources and practices for keeping yourself and your data (research or personal) safe online. Participants will be introduced to encrypted alternatives to dominant proprietary digital platforms, learn how to choose a VPN, and discuss best practices for password management.”
- CUNY Graduate Center Digital Initiatives: <https://gcdi.commonsgc.cuny.edu/event/digital-safety-in-the-age-of-surveillance/>
- CUNY Python Users Group: <https://commonsgc.cuny.edu/groups/pug-python-users-group/forum/topic/workshop-digital-safety-in-the-age-of-surveillance-5/>
- Although the session’s focus is not on ethics per se, you may be able to draw on the event to discuss ethics.

Python Data Structures

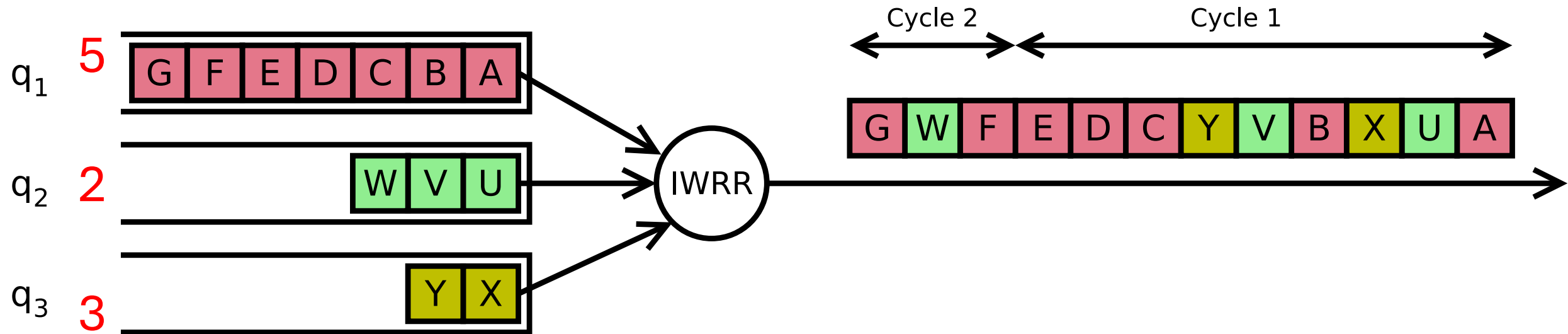
- Set: { .. , .. , .. }
 - [unordered, no duplicates, mutable/changeable]
- Dictionaries { key:item, key:item ... }
 - [unordered, no duplicates, mutable/changeable]
- List: [.., .., ..] – use this instead of arrays, addressable with [subscript].
 - [ordered, mutable/changeable]
- Tuples: (.., .., ..)
 - [ordered, immutable]
 - Show **tupleTest.py** from **778-s4-notebook0.ipynb**.

Reference and optional reading: <https://www.educative.io/answers/list-vs-tuple-vs-set-vs-dictionary-in-python>

QoS in Jupyter

- Demo: **778-s4-notebook1.ipynb**
- Besides finishing the scheduling algorithm, this is an example of sharing code segments.

Interleaved Weighted Round Robin



Algorithm source: https://en.wikipedia.org/wiki/Weighted_round_robin

Source: <https://commons.wikimedia.org/wiki/File:WRR-Examples.svg#/media/File:WRR-Examples.svg>

Author: [MarcBoyerONERA](#) - Own work

License: <https://creativecommons.org/licenses/by-sa/4.0/>

Modification: Image with two algorithms separated over two slides. Also added weight numbers.

Deficit Round Robin

Recognize that packets may have different sizes. Use bytes not packets.

	6	5	4	3	2	1	0
1:=5	E			D	C	B	A
2:=2	W	V			U		
3:=3		Z	Y			X	

1. **Allowed_Bytes:** Keep a separate **array** of how many bytes are allowed this round per queue. Starts at zero.
2. Add the weight of each queue to each cell of the **allowed_bytes**.
3. Visit each queue.
4. If queue not empty and the size of the first packet is less than the remaining allowed bytes, send packet.
5. Decrease the remaining **allowed_bytes** for that queue.
6. Repeat 2-6.

Regular Expressions

- **Opening Demo:** the GNU regular expressions processor (GREP)
 - Command: `apt list | grep openjdk`
 - Run: `openjdk-regex.py`
 - Command: `grep "\.py" *`
- **Class discussion:**
 - Have you used regular expressions before?
- **Optional Reference:**
 - Regular Expressions Cheat Sheet by Dave Child
 - <https://cheatography.com/davechild/cheat-sheets/regular-expressions/pdf/>.

Regular Expressions: Let's Try.

- Open this tutorial:
 - <https://regexone.com/>
 - **Together:** pages 1, 1.5, 3, 4.
 - **Pair-wise group:** pages 5-10.
 - **Together:** 11, 12, 13, 14.
- Optional tutorials:
 - For practice problems: <https://regex.sketchengine.eu/tutorial.html>
 - For reading: <https://regexr.com/>

Demos

- Additional items in: **778-s4-notebook2.ipynb**
- Additional demos: **date-regex.py**, **regex.java**.

Pair-wise Exercise: Names

- Modify the input parse program to check that a name appears valid.
- For example:
 - Edgar Troudt.
 - Edgar E. Troudt.
 - Edgar E. Troudt, Ph.D.

How did your name **RegEx** do?

- “...people with the characters é and ñ in their names are pretty common”
- “...RegEx will definitely mark those people’s names as invalid.”
- **Source:** <https://medium.com/codex/your-regex-could-be-racist-and-you-dont-know-about-it-36b35341cae>
- Thoughts about your code:
 - Does it take into account hyphenated names?
 - Does it take into account alphabets other than the one used by the English language?
 - What else might it be missing?

QoS & Data Structures (con't) and Regex

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